


Dariusz Szostek | Mariusz Załucki (eds.)

Legal Tech

Information technology tools in the administration of justice



Nomos

<https://doi.org/10.5771/9783748922834>, am 24.05.2024, 19:14:54
Open Access –  – <https://www.nomos-elibrary.de/agb>

Dariusz Szostek | Mariusz Załucki (eds.)

Legal Tech

Information technology tools in the administration of justice



POLISH HUB



Nomos

Please note that this publication is supported by the European Law Institute (ELI)'s Polish Hub. The statements and recommendations contained in this publication have not been approved or endorsed by any statutory body of ELI and thus should not be taken to represent an official statement or position of ELI.

The book was financed by AFM Kraków University (Poland).

Scientific reviewer: Prof. Jacek Gołaczyński, University of Wrocław (Poland)

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the Internet at <http://dnb.d-nb.de>

ISBN (Print): 978-3-8487-7879-9

ISBN (ePDF): 978-3-7489-2283-4

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library.

ISBN (Print): 978-3-8487-7879-9

ISBN (ePDF): 978-3-7489-2283-4

Library of Congress Cataloging-in-Publication Data

Szostek, Dariusz | Załucki, Mariusz

Legal Tech

Information technology tools in the administration of justice

Dariusz Szostek | Mariusz Załucki (eds.)

673 pp.

Includes bibliographic references.

ISBN (Print): 978-3-8487-7879-9

ISBN (ePDF): 978-3-7489-2283-4

1st Edition 2021

© The Authors

Published by

Nomos Verlagsgesellschaft mbH & Co. KG

Waldseestraße 3–5 | 76530 Baden-Baden

www.nomos.de

Production of the printed version:

Nomos Verlagsgesellschaft mbH & Co. KG

Waldseestraße 3–5 | 76530 Baden-Baden

ISBN (Print): 978-3-8487-7879-9

ISBN (ePDF): 978-3-7489-2283-4

DOI: <https://doi.org/10.5771/9783748922834>



This work is licensed under a Creative Commons Attribution
– Non Commercial – No Derivations 4.0 International License.



Onlineversion
Nomos eLibrary

Table of Contents

Introduction	11
--------------	----

PART ONE Information Technology Tools in the Administration of Justice: Definitions, Possibilities, Barriers, Doubts

SECTION ONE. The Concept of Legal Technology and its Borderlands

The Concept of Legal Technology (LegalTech) and Legal Engineering	19
---	----

Dariusz Szostek

Algorithmisation and Tokenisation of Law	29
--	----

Rafał Prabucki, Rafał Skibicki, Dariusz Szostek, Jakub Wyczik

Borderlands of the Law and Technology: from Digital Machines to LegalTech	67
---	----

Maria Dymitruk

Legal Tech - Bringing Law into the “Twentieth” Century	81
--	----

Tomasz Grzegory, Janos Puskas

SECTION TWO. Towards Algorithmic Legal Reasoning and Law-Making

Computational Legal Problem Solving. What can Legal Tech Learn from AI and Law Research, and Beyond?	101
--	-----

Michał Araszkiewicz

Computer Aided Legislation	129
----------------------------	-----

Wojciech Cyruł

Table of Contents

Two Sides of the Same Coin. Possible Interactions Between Text-written Law and Computer Code in the Near Future	141
---	-----

Patryk Ciurak

SECTION THREE. Possibilities of Applying LegalTech Tools in Legal Practice

The Changing Role of the Lawyer. The Case of Digital Accessibility.	165
---	-----

Ewa Fabian, Przemysław Polanski

LegalTech in Law Firms and the Work of In-house Lawyers	179
---	-----

Iga Kurowska, Kamil Szpyt

Implementation of LegalTech Solutions in a Law Firm – Methodology of Risk Assessment and Risk Management	195
--	-----

Malgorzata Kurowska

LegalTech and Cloud Computing	223
-------------------------------	-----

Katarzyna Biczysko-Pudelko

Legal Tech in the Law Enforcement Agencies	251
--	-----

Maria Dymitruk

Smart Contracts, Blockchain and Distributed Ledger Technology (DLT) in the Work of a Lawyer	267
---	-----

Agnieszka Kubiak-Cyrul, Dariusz Szostek

Legal Tech vs Data in Organisation	287
------------------------------------	-----

Malgorzata Kurowska

LegalTech Insurance	299
---------------------	-----

Kamil Szpyt

Basic Principles for the Effective Use of Legal Tech Tools	315
--	-----

Tomasz Zalewski

SECTION FOUR. Possibilities of Applying AI-based LegalTech Tools in Legal Practice

AI and the Work of Lawyers in the Light of the Council of Europe Guidelines	335
---	-----

Marek Swierczynski

AI In Law Firms	347
-----------------	-----

Gabriela Wiktorzak

Artificial Intelligence in the Law Firm of the Future	361
---	-----

Gabriela Bar

LegalTech in a Law Office in the context of Standardization and Autonomic Intelligence	375
--	-----

Michał Wódczak

LegalTech in the Judiciary: Technological Developments and the Future of the Court System	387
---	-----

Mariusz Żalucki

SECTION FIVE. Possibilities of Applying LegalTech Tools in Legal Communication

Self Sovereign Identity	407
-------------------------	-----

Michał Tabor

Electronic Delivery	415
---------------------	-----

Sylwester Szczepanik, Michał Tabor

Electronic Communication	433
--------------------------	-----

Anna Zalesinska, Dariusz Szostek

Cyber Security, Cyber Hygiene or Cyber Fiction of our Time	463
--	-----

Tomasz Chomicki

Table of Contents

Information Security in Legal Firms	473
<i>Robert Pajak</i>	

PART TWO Use of Information Technology Tools in the Administration of Justice of Selected Countries

Brazil	487
<i>Thiago Santos Rocha</i>	

China	503
<i>Maddalena Castellani</i>	

France	521
<i>Iga Kurowska</i>	

Germany	527
<i>Wilfried Bernhardt</i>	

Hungary	543
<i>Zsolt Zódi</i>	

Italy	553
<i>Pierpaolo Marano, Mario Zanin, Enrico Maria Scavone</i>	

Lithuania	583
<i>Vytautas Nekrošius</i>	

Mexico	587
<i>Mauro Arturo Rivera León</i>	

Poland	597
<i>Aleksandra Partyk</i>	

Table of Contents

Summary of the book	615
About the authors	617
Bibliography	629

Introduction

The use of technological solutions, increasingly often referred to as *LegalTech*, in the administration of justice is nowadays necessary. It is impossible to imagine courts functioning without information systems or law firms not using electronic databases of case law and legal literature. However, technology is developing further and starting to go beyond the comfort zone of traditional legal services. Solutions are appearing which can and sometimes do replace people in tasks which people used to deal with not so long ago. Such solutions are e.g. those based on artificial intelligence, resulting in various algorithms functioning in practice, not always understandable for statistical users of legal services. This is, among other reasons, why in many aspects the use of the LegalTech tool raises significant doubts and leads to many unavoidable questions, including: Will traditional lawyers survive? Will robots and automatons replace us? Will artificial intelligence replace us in providing legal advice, creating contracts or issuing judgments? Is the effectiveness of LegalTech tools greater than the work of traditional lawyers? Or perhaps we are irreplaceable, irremovable and have nothing to worry about, and the role of the lawyer will not change? Of course, such and similar questions can be multiplied, and the answer to them basically boils down to explaining what the various LegalTech tools are, whether and how to implement them, and whether it is necessary or just useful?

In this monograph we try to explore this research area and to bring the reader closer to the next stage of development of law, which more and more courageously uses various technological tools. Undoubtedly, the previously separate “worlds” of law, engineering, information technology and technology have come together in everyday life. Traditionally, the law regulated technical issues, defined technical standards, influenced the way IT systems were built or operated, including Internet platforms, while engineers followed the advice or opinions of lawyers. It was the law and lawyers who regulated technology and indicated the directions of implementation. However, the last stage of the digital revolution has quite significantly changed this situation, resulting in the equalization of law and technology, and thus the influence of lawyers on engineers. Increasingly, engineering is entering a domain that until recently was reserved exclusively for lawyers, and information systems are effectively replacing the work of a lawyer. In some aspects, such as Blockchain or

Bitcoin, engineering has even overtaken the law, forcing lawyers to learn, pioneered research directions and forced new, necessary regulations on the market. And, as you might think, more challenges lie ahead, and there is no turning back from the digital road. It is the time of algorithms, the time of legal technologization, the time of LegalTech. Therefore, the aim of our research is not only to indicate how the law and the lawyer's work is changing now, but also how much this area will change in the coming years.

The book is an effect of scientific research of an inter-university team of an international group of scientists dealing with problems of new technologies and law in the aspect of digital economy 3.0 and economy 4.0. The first results of the team's work have already been published in Polish as part of the publication "LegalTech. Czyli jak bezpiecznie z narzędzi IT w organizacji, w tym w kancelarii oraz dziale prawnym" (LegalTech. How to safely use IT tools in an organisation, including a law firm and a legal department), published by C.H. Beck (Warsaw 2021). The current publication is a slightly revised and updated version of the Polish book, which also includes new texts and a new perspective on the rapidly changing technological reality that surrounds us.

The publication is divided into two parts. The first part is more theoretical and explains the basic aspects and legal framework of technological tools, while the second part presents LegalTech solutions functioning in selected countries around the world. In the first part, we reflect on the limits of technology, algorithms and various possibilities of applying LegalTech tools in practice. In turn, in the second part, we show how particular legislators have applied technological possibilities and how this has improved the work of their judiciary.

Undoubtedly, our publication does not explain all aspects of technological tools in the administration of justice. However, we believe that it can provide a voice in the discussion on the current and future shape of the legal services market. Therefore, we encourage you to discuss it with us. Since the work has a collective character, it should be emphasised here that the individual authors represent their own views. The fact that in such a group we do not always agree on a particular thought, in our opinion, only proves that we are open to other views, and the law is only the art of interpretation, for which in the changing technological reality, there is much room.

We must add that the publication was financed within the framework of a scientific project conducted at the Andrzej Frycz Modrzewski Krakow Academy.

30.06.2021 Kraków, Dariusz Szostek, Mariusz Załucki

PART ONE
**Information Technology Tools in the Administration of
Justice: Definitions, Possibilities, Barriers, Doubts**

SECTION ONE.

The Concept of Legal Technology and its Borderlands

The Concept of Legal Technology (LegalTech) and Legal Engineering

Dariusz Szostek

1. Definition

Information technology extends its scope to further new fields. This does not exclude the work of lawyers, or the law itself for that matter, both public and private.

The concept of “Legal Technology” (abbreviated to “LegalTech”, and its synonyms “Law Tech”, “Legal IT”, or “Legal Informatics”¹), which exists in the academic sphere, is not currently reflected in any legal definition. It is a doctrinal concept, understood differently by many authors. At its broadest understanding, that concept is understood as IT solutions that include both hardware and software utilised in the law².

LegalTech is a combination of the concepts of a “legal service”³ and “technology”⁴. Both of those are imprecise and do not meaningfully contribute to the possibility of defining the scope of that phrase. The concept at issue originally had a marketing-related nature, and was, at first, used by start-ups during the second decade of the 21st century in the USA, to signify their area of practice. This does not preclude the fact that the concept at hand, when viewed more broadly (i.e., as a technology for

1 Micha-Manuel Bues and Emilio Matthaei, ‘LegalTech on the Rise: technology Changes Legal Work Behaviors, But Does Not Replace Its Profession’ in Kai Jacob, Dierk Schnidler and Roger Strathausen (eds), *Liquid Legal* (Springer International Publishing 2017) 90.

2 Jens Wagner, *Legaltech und Legal Robots. Der Wandel im Rechtswesen durch neue Technologien und Künstliche Intelligenz*, (Springer 2020) 2; Michael Grupp, ‘Legal tech – Impulse für Streitbeilegung und Rechtsdienstleistung’ (2014) 8-9 *Anwaltsblatt* <https://www.juris.de/jportal/portal/page/bsabprod.psml?doc.id=jzs-AnwBl2014080019-000_660&st=zs&showdoccase=1¶mfromHL=true> accessed 18 November 2020; Bues and Matthaei (n 1) 90.

3 On the subject of “legal service”, see Brian Sheppard, ‘Incomplete Innovation and the Premature Disruption of Legal Services’ (2015) 1797 *Michigan State Law Rev* 1800.

4 Markus Hartung, Micha-Manuel Bues and Gernot Halblieb, *Legal Tech, How Technology is Changing the Legal World* (Nomos 2018) 5.

the benefit of law and lawyers, including expert systems), was subject to research as early as in the 1950s⁵.

One of the first definitions of LegalTech in Europe⁶ (in a manner true to the new technologies themselves – by posting it on a blog) was presented in September 2015 by Martin Bues: “If one were to attempt at defining LegalTech as a general concept, it would have to be conceded that the use of modern, digital information technology, for automation, simplification and – let us hope – betterment as regards search, application, and access to public authorities and the administration of justice, through innovation, is being described⁷. It was posited in a monograph “LegalTech”, edited by Nomos, that Legal Technology refers to the use of technology and software for the purposes of providing legal services and supporting the legal industry⁸. In his newest monograph, M. Ebers indicates that the applications of LegalTech come in various forms and shapes, beginning with the infrastructure connecting clients with lawyers, through automation of drafting documents, ODR services, to algorithmic (automated) decision making⁹. As that author puts it, some of those are standalone technologies, such as legal chatbots and virtual assistants, while others are only enablers of legal advice.

Remarkably, as late as in 2015, Brian Sheppard¹⁰ (Harvard Law School) in his extensive paper on the influence of new technologies on the law, lawyers and their services did not use the term “Legal Technology”, for it was not commonly used in the doctrine at that time. A descriptive approach to that concept or using it without a prior definition are more prevalent in older academic works.

5 Further on the issue of history of LegalTech and expert systems: Bues and Matt-haei (n 1) 91–92.

6 Hartung, Bues and Halblieb, (n 4) 5.

7 Legal Tech Blog, ‘Was ist “Legal Tech”?’ 2 September 2015 <<https://legal-tech-blog.de/was-ist-legal-tech>>, accessed 18 November 2020.

8 Hartung, Bues and Halblieb, (n 4) 5; see also Wikipedia, ‘Legal technology’ <https://en.wikipedia.org/wiki/Legal_technology#cite_note-LawTechToday-3>, accessed 18 November 2020.

9 Martin Ebers, *LegalTech and EU Consumer Law* (Cambridge 2021) 2-3.

10 Sheppard (n 3) 1800.

2. The Categorisation of LegalTech

There are three stages of Legal Technology indicated by the German academic literature¹¹, pursuant to the proposal by O. Goodenough¹² from the US: LegalTech 1.0, 2.0., and 3.0.

LegalTech 1.0 refers to technology, including software, that supports the work of lawyers as professionals. This pertains to long-known IT systems meant for organisation and the workings of a law firm, document drafting and production, legal information system (also known as legal research system(s)), expert systems, as well as other online services, such as videoconferencing, online communication with the courts, online trials, online education, etc. Those are not new solutions. Nevertheless, it is worth noting that they have finally entered widespread usage among lawyers due the COVID-19 pandemic. Those solutions are used within the framework of existing procedures and the traditional manner of legal work. It is only the method of communication that is altered.

LegalTech 2.0 relates to the far more advanced technology, not only supporting lawyers, but also substituting itself for the work of humans and automating the acts to be taken. LegalTech 2.0. solutions are offered by many providers, either from the technology industry, from the legal sector, or from the academia. Those solutions are used in many activities, including fact-finding or fact assessment (e.g. as applied by investigative bodies), automatic document, contract or claim drafting, etc. Smart contracts or tokenisation of processes are also counted among the solutions belonging to this category. It is interesting to note that, during the past two years, there were legislative proposals or legislation introduced that regulate the use of such tools in specific areas of law, for instance smart contract in

11 Hartung, Bues and Halblieb (n 4) 5; Wagner (n 2) 15.

12 Oliver R. Goodenough, 'Legal Technology 3.0' (HuffPost, 2 April 2015) <https://www.huffpost.com/entry/legal-technology-30_b_6603658?guccounter=1&guce_referrer=aHR0cHM6Ly9kZS53aWtpcGVkaWEub3JnLw&guce_referrer_sig=AQAAAjmq5R47vQkZD-CLSEI62GMZFfamcZbEroAVqRj0BgQ3GNQ-M7_Mp42oSaiMJThfkfRjZ2XRPcDqKQplfWZyMly0joNI6cn_4BElooGzWowCm_XIpcCajidFyB_gju_bruNDzgN9wcy-tWt9MbZUWKIDaN8n4FSY6sEDJ5t-RSeB> accessed 19 November 2020; see also Oliver R. Goodenough, 'Legal Technology 3.0' (HuffPost, 2 April 2015) <https://www.huffpost.com/entry/legal-technology-30_b_6603658?guccounter=1&guce_referrer=aHR0cHM6Ly9kZS53aWtpcGVkaWEub3JnLw&guce_referrer_sig=AQAAAjmq5R47vQkZD-CLSEI62GMZFfamcZbEroAVqRj0BgQ3GNQ-M7_Mp42oSaiMJThfkfRjZ2XRPcDqKQplfWZyMly0joNI6cn_4BElooGzWowCm_XIpcCajidFyB_gju_bruNDzgN9wcy-tWt9MbZUWKIDaN8n4FSY6sEDJ5t-RSeB> accessed 19 November 2020.

crypto-assets. More of that type of regulation is to be expected. We are at the stage of rapid development of extant solutions in the framework of LegalTech 2.0, and of finding new solutions thereof, as well.

Finally, there is the stage of LegalTech 3.0, in the scope of which automation and substitution of a human by technology is not the crux of the matter – the possibility to make autonomous decisions is. Using AI or advanced algorithms utilising machine learning are indicated here. LegalTech 2.0 is a recreation of pre-programmed instances and automation, yet on pre-set terms. LegalTech 3.0 is the higher tier where the decision is made by a system, on the basis of independently acquired data and self-learning (which may take various forms). The final decision may be made directly by the IT system, or by approval thereof by a human. As of now, we are at the stage of pilot implementation of such systems. There is an intense debate in the academia on the prospective regulatory framework for AI, including accountability for its decisions. At times, smart contract is included in LegalTech 3.0 by the doctrine¹³. When choosing the criterion of independent decision-making to differentiate LegalTech 3.0, a self-standing smart contract deprived of an AI-based oracle, and thus performing pre-programmed sequences, irrespective of the fact whether such sequences would be independently initiated, initiated by a human, or by a different occurrence, should be placed in the category of LegalTech 2.0 solutions.

This work adopts the above categorisation as the basic one.

LegalTech may be categorised pursuant to other criteria. One of them is the manner of coding, of providing data, or of providing knowledge by LegalTech solutions. Data (knowledge) may be input manually by a human or made available directly to a human (most commonly within the framework of LegalTech 1.0 or 2.0), or such data (knowledge) may be acquired independently by the system and used thereby, to the exclusion of a human (LegalTech 3.0). Coding may be manual or automatic¹⁴. The former category comprises several expert systems, where, based on output data, conclusions are formed.

A different categorisation is as follows:

1. technologies facilitating access to data and their processing,
2. assisting solutions for legal work (including law firm management),

13 Hartung, Bues and Halblieb (n 4) 6.

14 Ebers (n 9) 4.

3. solutions supporting activities in the scope of substantive law, such as automatic contract drafting, Online Dispute Resolution (ODR), smart contract¹⁵.

Another distinct classification is linked to the levels of technical solutions; finally, there is a classification according to the thematic areas (Prof. Braidenbach's idea, Europa-Universität Viadrina): industrialised legal services, AI and blockchain¹⁶.

3. *The Scope of the Concept of LegalTech vis-à-vis Other Concepts, such as RegTech, FinTech, Insure Tech, or Legal Informatics*

Regardless of the adopted criteria, the definition of LegalTech put forward in the doctrine is very broad, and such is the definition adopted herein for the purposes of our research. There appears a number of other new concepts apart from that one, such as FinTech¹⁷, RegTech¹⁸, or lately, InsureTech¹⁹. They are linked to the application of IT in their respective sectors, which are regulated rather restrictively (banking sector, insurance sector, or securities). The scope of those concepts in principle falls within the definition of LegalTech, constituting a regulatory section of LegalTech, distinguished by virtue of both the sector (subjective criterion) and the object of regulation (objective criterion).

15 Bues and Matthaei (n 1) 91.

16 Wagner (n 2) 15.

17 <<https://home.kpmg/xx/en/home/insights/2019/11/2019-fintech100-leading-global-fintech-innovators-fs.html>> accessed 19 November 2020.

18 RegTech: Tanel Kerikmäe (ed), *Regulating eTechnologies in the European Union. Normative Realities and Trends* (Springer 2014); See also: ROFIEG, '30 Recommendations on regulation, innovation and finance. Final Report to the European Commission' (13 December 2019) 27 ff <https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/191113-report-expert-group-regulatory-obstacles-financial-innovation_en.pdf> accessed 24 February 2021. Analysis of the scope of the concepts of FinTech and RegTech exceeds the scope of this paper.

19 Pierpalo Marano and Kyriaki Noussia (eds), *InsurTech: A Legal and Regulatory View* (Springer 2020); Pierpalo Marano, Dariusz Szostek, *Smart Contract and Insurance* (Palgrave MacMillan 2021).

While not going into much detail, LegalTech should be distinguished from legal informatics²⁰, whose scope is significantly narrower than that of Legal Technology.

4. *The Consequences of Development of LegalTech*

Most experts in the field of LegalTech point to significant changes that are induced, today, and even more in the future, by the development of information technology for the work of a lawyer. There is no escape from such changes. De-regulation of the law is most often highlighted, as is the upcoming change of the market in legal services. Richard and Daniel Susskind²¹ posit in their monograph *The Future of Professions* that automation and computerisation is going to alter the functioning of professionals, lawyers included, whose hitherto expert knowledge shall be, to a large extent, available both easily and inexpensively to the general public. The demand for lawyers would not cease, yet their role and manner of functioning would change. New challenges are going to appear (such as certification, cybersecurity analysis) which are not necessarily going to be linked only to the law. An even more insightful analysis of the impending changes is offered by R. Susskind in monographs *Tomorrow's Lawyers. An Introduction to Your Future*²² and *Online Courts and the Future of Justice*²³. Similar views are expressed by other authors²⁴, at the same time necessitating a greater degree of competition in the field of expert knowledge not only with other lawyers, but also with inexpensive-to-use LegalTech solutions. It is thus suggested that the next two decades are going to be even more revolutionary for lawyers as far as the change of the manner of functioning is concerned than the last century. Many challenges await us, including the changes as to how the professional associations operate, in

20 Wojciech R. Wiewiórowski, Grzegorz Wierczyński, *Informatyka prawnicza* (4th edn, Wolters Kluwer 2006).

21 Richard Susskind and Daniel Susskind, *The Future of the Professions* (Oxford University Press 2015) 231.

22 Richard Susskind, *Tomorrow's Lawyers. An Introduction to Your Future* (Oxford University Press 2nd edn, 2017).

23 Richard Susskind, *Online Courts and the Future of Justice* (Oxford University Press 2019) 19.

24 Paul Lippe and Daniel M. Katz, '10 Predictions about how IBM's Watson will impact the Legal Profession' (ABA Journal: Legal Rebels, 2 October 2014) <https://www.abajournal.com/legalrebels/article/10_predictions_about_how_ibms_watson_will_impact> accessed 19 November 2020; Bues and Matthaei (n 1) 90.

privileges, duties, and to the lifestyle. Straightforward activities of lawyers are being taken over by IT systems, while a lawyer has the upper hand as regards the more complicated ones, for now. The professional bylaws and hitherto extant procedural rules, requiring the participation of counsel, are not without importance for inhibiting the process of superseding the lawyers by the LegalTech solutions. However, that also is subject to change. Indeed, that change is slow where arbitration is concerned, and gradual as regards the judiciary, both of which we address below. The lawyers shall not perish. Their manner of functioning and operational procedures will. Likewise, the medical profession has not perished, despite the introduction of technological solutions which support, and at times replace their work (including advanced AI). However, that profession has also had to learn using such solutions.

5. Legal Engineering

Digital Economy 3.0 and Industry 4.0 are based on information technology, data (often including personal data), Internet of Things (IoT), cloud, etc. The law, algorithms and engineering intertwine ever more intensively. The last of those three appears even more frequently either at the faculties of law, or in law firms. Technology and engineering, codes included, interact ever more boldly with the law through a complex system of dependencies and interdependencies. The law, both public and private, governs the manner in which given entities behave or function (duties to behave in a certain way, or prohibitions thereof). On the other hand, algorithms specify the scope of discretion for those who use software while in cyberspace. One cannot perform an action within an IT system which would not be predetermined. Step by step, that situation is going to undergo changes, especially where a strong AI would be involved, which however does not preclude the fact that algorithms must take account of the rules and the legal order of the European Union¹, according to the opinion of experts. An ever more intensive technologisation of the law, in the scope of which the law is, in a way, “sewn into” programming codes², is taking place. Many behaviours in cyberspace emerge through custom, evolving then into *soft law*, including technological norms.

Interaction of the law and technology may be divided into three stages³. First of those, and the one which is largely beyond us, is the digitalisation of the legal system, i.e. the transfer of the contents of the law (statutes, executive acts, judicial decisions, etc) to the legal information systems and databases. At that stage, on one hand, the law hitherto introduced was

digitised, while promulgating new regulation in digital form in official journals in parallel (the new official journals allow for significantly more possibilities than their publication on paper)⁴. At that stage, a lawyer still performs his or her work in a similar manner to the “analog” one, the difference being that they use electronic sources of the law and (quite simple) search engines.

Another stage is based on automating decisional processes⁵. It is implemented in various ways, beginning with simple setup wizards, templates, simple office suite solutions, through more complex expert systems (LES, Legal Expert System) that use advanced algorithms (which more and more often include machine learning), suggesting and proposing solutions to case studies for a lawyer, pointing to a prospective decision. Jordan Furlong points to the following components of such systems: knowledge databases representing information used by the system in the problem-solving process; a mechanism of inference, that constitutes, at various levels, advanced algorithms that ensure interaction between the database and input data related to the problem that has to be solved, and provides conclusions based on that interaction; and a user interface – a mechanism ensuring information exchange between the user⁶. The final decision belongs to a human, however.

The third stage consists in a direct fusion of the provisions of law or the contents of agreements with programming code, in a manner allowing for their performance or enforcement⁷. This is the so-called legal engineering⁸ - the linking of legal regulation, as theses, with IT modules that are program codes (implementation of the provisions of law into programming codes). We observe legal engineering both in private law and (ever more boldly) in public law. Intense development thereof mainly occurs in the field of private law, and chiefly through increasingly widespread implementation of *smart contracts* or tokenisation of values. Linking of codes with the law was not subject to legal regulation until only recently. The European legislator and (above all) national legislators have noticed this problem, ever more boldly introducing regulation pertinent to, on one hand, substantive issues, and to engineering of the law and control over algorithms on the other, connecting the respective entries in algorithms with legal presumptions⁹.

Other views on the interaction of the law and algorithms are appearing, as well¹⁰. It was pointed out that, for many years, those were the lawyers who had enormous influence on codes, through introduction or application of respective legal regulation, judicial decisions, and in states creating their system on precedent – through appropriate precedents referring directly or indirectly to algorithms. Cyberspace is (made of) algorithms. By

creating legal rules pertinent to behaviour in cyberspace (prohibitions and duties), lawyers specify the manner of behaviour in the virtual world, and indirectly, the principles of its creation, and thus the manner in which algorithms function. When they are making decisions, including judicial decisions, lawyers base themselves mainly on the law, while often lacking basic knowledge in the scope of algorithms, software codes and the interactions occurring between them. Those were the lawyers who imposed and still impose certain behaviour through specifying requirements relating to digital platforms, online services, etc. The second, indirect way to influence the codes and the architecture, and thus the cyberspace, are regulations (including best practices) requiring modifications of basic codes for the purposes of upholding legal assumptions. An example of that may be found in the eIDAS Regulation, which vests express obligations in the trusted entities as regards software architecture. Others are found in Digital Rights Management (DRM) systems, which are a direct modification in algorithms. Putting it differently, there is an indirect implementation of the law into codes at work here - enforcing the architecture of the code in conformity with the requirements of legal regulation.

A further step is found in the direct implementation of the law into codes within the framework of legal engineering, where the law and code are one – complete interaction. Instances of that are *smart contract*¹¹, autonomous decision-making systems, and the ever-bolder attempts at incorporating legal regulations into codes, as well.

For the purposes of correct implementation of legal regulation or an agreement into codes, the cooperation between lawyers and programmers is required:

- 1) lawyers – not only as architects and designers, but also interpreters of social rules inscribed into legal rules;
- 2) programmers as architects of cyberspace through the creation of code allowing for one to function in the cyberspace pursuant to the rules of the law, or even for enforcement of law.

Recreating the law within the architecture of an algorithm, implementation of the law into codes (be it that which follows from an agreement, or statutory law), requires joint preparation by lawyers and programmers. Lawyers introduce legal regulations, perform the interpretation thereof, and oversee their transcription (see Chapter II of the present monograph). Programmers impose codes and algorithmize, or inscribe the law into codes¹². As a result, lawyers and programmers contribute to the mechanism of regulating social relations – which is their joint regulatory contribution¹³, by forming an approach to regulating social norms. An intersec-

tion of science, and informatics in particular, with the legal discipline forces a change of methodology for applying knowledge from both of those domains, as well as a link between legal language and programming language(s). It further forces acquiring basic knowledge of IT by lawyers, and legal knowledge by programmers, and collaborative work on a project at many stages. This includes constant monitoring of proper operation of the law, which was implemented in codes, and of codes containing the law. That requires a new type of specialists, both on the side of lawyers and the side of programmers. Legal engineering is not a simple transposition of the work of a lawyer and that of an IT specialist. It is an amalgamation of both those domains, requiring expert knowledge.

The manner in which lawyers function undergoes change¹⁴, both due to using solutions of LegalTech 1.0, 2.0 or 3.0, and due to the fact that the expertise required on the market is subject to change. Apart from traditional lawyers that concern themselves with legal process, contracts, the applicable law, the regulated market(s), etc., the legal market expands to include specialists in the field of legal engineering, combining unique expertise in law and IT, or at least specialising in one of those fields and having basic knowledge of the other. Apart from coding the law into algorithms, there are specialists in the scope of tokenisation, blockchain coding, cybersecurity, knowledge on the functioning of machine learning, or AI ecosystems. Richard Susskind¹⁵ points to new specialisations of lawyers, to a large extent based on legal engineering: *The Expert Trusted Adviser*, *The Legal Knowledge Engineer*, *The Legal Technologist*, *The Legal Hybrid*, *The Legal Project Manager*, *The Legal Data Scientist*, *The R&D Worker (Research and Development)*, *The ODR Practitioner*, *The Legal Risk Manager*, etc. That group is going to constantly expand. The role of a lawyer undergoes major changes. As of now, the career path for legal alumni includes not only the possibility of practice in traditional roles, such as a judge, prosecutor, advocate, attorney-at-law, notary, or an enforcement officer, but also new specialisations which were not existing until recently, and which are either functioning on their own or together with the traditional ones. The role of the universities is to properly prepare the lawyers to operate in the near future.

Algorithmisation and Tokenisation of Law

Rafał Prabucki, Rafał Skibicki, Dariusz Szostek, Jakub Wyczik

*Donda's Law: "What a small computer can do with a large program,
a large computer can also do with a small program;
hence the logical conclusion is that an infinitely large program
can work alone, i.e. without any computer".
- S. Lem, "From the memoirs of Ijon Tichy"*

1. Introduction

Codes, after Legal Design, are the second most rapidly growing branch of legal engineering within LegalTech, which is a consequence of increasing the willingness to have the impact of law on society by transcribing regulations into code or, similarly, increasing the impact of arrangements between parties in commercial transactions. More than 22 years ago, at the end of the 20th century, Lawrence Lessig in his bestselling monograph "Code and Other Laws of Cyberspace"¹ proposed to link law with algorithmic code. Since law regulates the rights and obligations of subjects, and algorithmic code is the regulator of cyberspace, it is natural to link them. Code is law. A year earlier, J. Reidenberg² had proposed that "Lex Electronica" should regulate itself through "architecture standards", e.g. through properly configured codes as the legal regulator of cyberspace. Two decades ago this concept was considered by many to be futuristic, or at most, futurological. Today we are witnessing its realization and this phenomenon can be observed not only in private law in smart contracts, but also in increasingly daring government projects, such as the ones relating to the legislative process or even the incorporation of law into codes. By way of examples only, here can be mentioned the proposal of

1 Lawrence Lessig, *Code and Other Laws of Cyberspace* (1st edn, Basic Books 1999).

2 Joel Reidenberg, 'Lex Informatica: The formulation of information policy rules through technology' (1998) 76 Texas Law Review 553.

G. Wood³ to regulate the law on cryptocurrencies in algorithmic codes as well as the concepts of A. Wright & P. De Filippi⁴ and additionally also the one which relates to D. Szostek's⁵ proposal to regulate AI codes with algorithmic codes, at least by using RegTech.

Undoubtedly, for several decades now, there has been an increasing integration of law and algorithmic codes at various levels starting from the regulation of algorithms, through law, to the incorporation of law (e.g. contracts) into codes. This integration will continue to deepen more and more. In this chapter some aspects and problems related to the use of algorithmic codes in law will be pointed out.

2. Code, Algorithms, Algorithmic Technology

Operating with the terms - code and algorithm - is difficult, mainly due to their interdisciplinary nature. However, it should be emphasised that the term "algorithm" is not reserved exclusively for an academic discipline such as computer science and the IT sector. The term has a universal meaning. A uniform and universally accepted definition of an algorithm has not been developed in the world. However, many researchers from different fields are taking attempts to solve this problem⁶. The main trouble arises from the fact that there is no single type of algorithm. Most agree, however, that the general concept of an algorithm involves general processes for producing some "output" data (ang. output) from an "input" data (ang. input), through the use of various symbols with a finite set of rules. All algorithms must be specified in a formal language with a set of well-defined rules. However, this still does not solve the problems of definition. Nevertheless, in American jurisprudence, algorithms were defined rather laconically in *Gottschalk v. Benson* case law as⁷ "(...) a procedure for solving a certain mathematical problem". International doctrine, however,

3 Gavin Wood, 'Ethereum: A secure decentralised generalised transaction ledger' GAVWOOD.COM <<https://gavwood.com/paper.pdf>> accessed 11 December 2020;

4 Aaron Wright and Primavera De Filippi, 'Decentralized blockchain technology and the rise of Lex Cryptographia' (2015) <<https://ssrn.com/abstract=2580664>> accessed 11 December 2020.

5 Dariusz Szostek, 'Sztuczna Inteligencja a kody' in Luigi Lai and Marek Świerczyński (eds), *Prawo sztucznej inteligencji* (C. H. Beck 2020) 15.

6 Samuel R. Buss, Alexander S. Kechris, A. Pillay and Richard A. Shore, 'The Prospects for Mathematical Logic in the Twenty-first Century' (2001) 7 *Bulletin of Symbolic Logic* 169.

7 *Gottschalk v Benson* (1972) 409 U.S. 63.

tries to perceive the issue of algorithms more broadly, presenting them as rules or instructions, the execution of which allows to solve a certain problem. In a nutshell, an algorithm is a synonym for a procedure that aims at solving a specific problem⁸. In this approach, therefore, a type of algorithm is both a mathematical formula and an instruction to assemble furniture.

As it has already been mentioned, algorithms may take various forms, including different implementations. Nowadays they are, among others, the basis of computer science and computer programs. The starting point for consideration of the legal status of computer programs in the international doctrine was the assumption that algorithms are written as programs by means of codes⁹. However, it is impossible to find an indisputable limit of the scope of these concepts on the grounds of legal logic. The first thing that should be stressed, therefore, is that there is no generally accepted meaning of the word. This is not an exceptional situation, as the same is the case with technology and with many other words from the sphere of exact sciences. Moreover, computer programs do not have a uniform definition. During the preparatory work on the WIPO Copyright Treaty (WCT)¹⁰, it was agreed that a computer program should be understood as "a set of instructions which, when placed on a machine-readable medium, will enable to cause a machine with information processing capabilities to indicate, perform or achieve a specific function, task or result"¹¹. However, this definition was not reflected in the final text of the act. Similarly, in the case of European Directive 2009/24/EC on the legal protection of computer programs¹² it was decided not to include a definition of this phrase, in order to avoid

8 cf Rob Kitchin, 'Thinking critically about and researching algorithms' (2017) 20:1 Information, Communication & Society 14; See Barfield Woodrow and Pagallo Ugo, *Advanced Introduction to Law and Artificial Intelligence*, Cheltenham (Edward Elgar Publishing 2020).

9 See Idelle R. Abrams, 'Statutory Protection of the Algorithm in a Computer Program: A Comparison of the Copyright and patent laws' (1989) 9:2 Computer Law Journal.

10 World Intellectual Property Organization treaty [1996].

11 WIPO document states: „*set of instructions capable, when incorporated in a machine-readable medium, of causing a machine having information-processing capabilities to indicate, perform or achieve a particular function, task or result*", (WIPO) <www.wipo.int/edocs/mdocs/copyright/en/wipo_ip_cm_07/wipo_ip_cm_07_ww_w_82573.doc> accessed 11 December 2020.

12 Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs (Codified version) [2009] OJ L11/16.

its rapid obsolescence due to technological progress¹³, and therefore, it was decided to be restricted to stating only that "the role of software is to interact and function together with other components of a computer system and with users, [and] in order to achieve this, it is required that there be logical and, where appropriate, physical interconnection and interaction so as to permit all elements of software and hardware to function with other software, hardware and users in all the forms of operation for which they are intended"¹⁴, further stating that its interfaces¹⁵ are part of it, which ensure interoperability¹⁶. Consequently, computer programmes are recognised by source and result codes. However, there is no clear definition at all of what programming code actually is. It is, however, impossible not to agree that it is simply a kind of written text, constituting a system of signs¹⁷, which is comprehensible for computers. Putting the abovementioned together with the notion of an algorithm, a computer program is essentially a type of algorithm, which is implementable as a text containing sets of commands to be executed by a machine. Programming code is in fact an algorithm that makes it possible to achieve a specific result. Although the legal

13 Which, it seems, was not necessarily the case. Modern computer programs in their nature have not changed that much from their original versions. The definition set out above still seems to touch the essence. This is confirmed by the still unchanged definition of computer programs in U.S. law, which does not hinder the thriving high-tech industry (17 U.S.C. § 101). See also African Regional Intellectual Property Organization, 'ARIPO Model Law on Copyright and Related Rights' (ARIPO, July 2019) <<https://www.aripo.org/wp-content/uploads/2019/10/ARIPO-Model-Law-on-Copyright-and-Related-Rights.pdf>> accessed 11 December 2020 10.

14 Recital 10 of Directive 2009/24/EC.

15 However, as is clear from the CJ case law, a graphical user interface does not allow for the reproduction of a computer program and therefore does not constitute a form of expression of a computer program within the meaning of the Software Directive and thus cannot benefit from the special protection granted thereunder. See Case 393/09 *Bezpečnostní softwarová asociace - Svaz softwarové ochrany v Ministerstvu kultury* [2010] ECLI:EU:C:2010:816, paras 28-42.

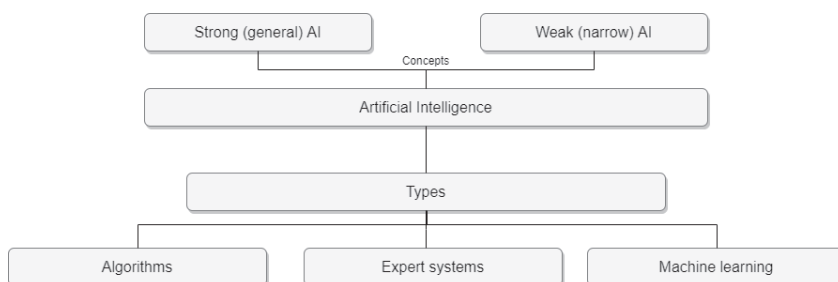
16 As defined in Directive 2009/24/EC, being the functional, interconnection and interaction of software, enabling it to function with other software, hardware and users according to its intended use.

17 According to Wikipedia: "**code** is a system of rules to convert information—such as a letter, word, sound, image, or gesture—into another form, sometimes shortened or secret, for communication through a communication channel or storage in a storage medium" Wikipedia, 'Code' <<https://en.wikipedia.org/wiki/Code>> accessed 11 December 2020.

status of programming code raises many doubts, particularly as a result the controversial CJEU case law affecting the interpretation of European law¹⁸.

In the last decade, however, algorithms as such have become of more intense interest to representatives of many scientific fields as a result of the development of AI, becoming its main core. The concept of AI is as undefined as the algorithm itself. For the purpose of scientific discussion, without having to delve into the definitional problem there can be encountered an approach of defining AI and algorithms collectively as algorithmic technology (*ang. Algorithmic-based technology*)¹⁹. However, attempts are being made in international doctrine to structure the systematics of artificial intelligence. Such a proposal was presented by B. Woodrow i P. Ugo (Figure 1).

Figure 1. Types and distinctions of artificial intelligence in international legal doctrine



Source: Own elaboration based on W. Barfield, U. Pagallo, Law and Artificial Intelligence, Cheltenham-Northampton 2020, pp. 19–23.

An independent group of experts from the European Commission also came up with a definition, proposing that AI systems are software (and possibly hardware) developed by humans that operate in the physical or digital domain in pursuit of goals, perceiving their environment by collecting and interpreting data, relying on knowledge or information derived from this data, and taking the best steps to accomplish the tasks

18 See for example Case 128/11 *UsedSoft GmbH v Oracle International Corp* [2012] ECLI:EU:C:2012:407.

19 See Marta C. Gamito and Martin Ebers, 'Algorithmic Governance and Governance of Algorithms: An Introduction' in Martin Ebers and Marta C. Gamito (eds), *Algorithmic Governance and Governance of Algorithms: Legal and Ethical Challenges* (Springer 2021).

assigned to them²⁰. This definition is therefore primarily based on viewing AI through the prism of a characteristic type of algorithms. AI systems can use well-known mathematical concepts for their operation, implementing them into modern technological solutions, as well as they can simultaneously adapt to the changing environment on the basis of previously made decisions. Intelligent algorithms thus differ from standard algorithms implemented in computer programs. However, such a broad definition of term leads at the same time to the inclusion in its scope of many different solutions, ranging from roboadvisors (or chatbots), interactive translators, facial or voice recognition systems, virtual opponents in computer games, to automated financial market management systems or autonomous androids. It seems obvious that this approach in defining will be insufficient. In fact, it is impossible to equate a translation system with an android. Hence, some representatives of the doctrine postulate that there is no need for a uniform definition of AI²¹. Thus, in order for the law to be effective, it is necessary to focus on individual solutions using AI instead of trying to complexly regulate all its types which appear to be doomed to failure from the outset. The general role of algorithms and AI in what we understand as LegalTech is related to the direction in which algorithmic techniques are to be used in legal practice. The theory of the path that depicts these directions was presented as early as 1897 by Oliver Wendell Holmes Junior²²:

- 1) direction one: it aims at creating useful solutions to minimise the risk of litigation between the parties;
- 2) second direction: it involves carrying out argumentation before the dispute resolution body.

20 High-Level Expert Group on Artificial Intelligence, established by the European Commission: „Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans, that given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal”, High-Level Expert Group on Artificial Intelligence, 'A definition of AI: Main capabilities and scientific disciplines' 6 (European Commission, April 2019) <https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=56341> accessed 11 December 2020.

21 Martin Ebers, 'Regulating AI and Robotics: Ethical and Legal Challenges' in Martin Ebers and Susana Navas (eds), *Algorithms and Law* (Cambridge University Press 2020) 42.

22 Oliver W. Holmes, 'The Path of the Law' (1897) 457 Harvard Law Review.

In the first direction, in addition to supporting the lawyer in his work, there will be encountered a tendency to write down the court decisions between the parties in such a way as to make them readable to a machine which will automate certain transactions between the parties. The desired effect is to reduce the risk of litigation and thus to make the solution highly usable (a smart contract is an example). According to *David Howarth* it is precisely the right direction for law to be perceived as engineering²³. The second direction is related to the implementation of solutions to both help the legal practitioner in the preparation of legal argumentation as well as can create tools for the dispute resolution body, indicating which arguments are properly constructed and supported by relevant evidence²⁴.

However, from a LegalTech perspective, it is freedom of contract and legal engineering skills in creating contracts that should be thoroughly discussed. Where there is freedom in the legal system, there is equally the need to build trust. This can be constructed between the parties through contractual provisions. Historically, landmark events requiring trust between parties (e.g. the establishment of the American stock exchange), required a contract to be written in natural language and were local initiatives. Thanks to the development of new technologies, as well as the global nature of the parties' relationship and also due to the need for a high level of trust, certain relationships are regulated by means of a computer program, and a computer program is de facto a code²⁵.

3. Law as a Code

As indicated at the beginning, technological developments have led to the concept of transcribing law into codes. The conceptual scope of legal engineering has also changed. The early conception of the cited view formulated by Howarth implied that law perceived as engineering is supposed to create useful solutions and, in the context of the work of a legal practitioner, it is expected to involve contracts²⁶. Nowadays, the conceptual scope has evolved. There is no doubt that this is due to the transition

23 David Howarth, *Law As Engineering: Thinking about What Lawyers Do* (Edward Elgar Publishing 2014).

24 See Douglas Walton, *Argumentation Methods for Artificial Intelligence in Law* (Springer 2005) 5-8.

25 Kevin Werbach, *The Blockchain and the new architecture of trust* (MIT Press 2018) 1-7.

26 Howarth (n 23) 51-152.

from the level of consideration of *lex informatica* to *lex cryptographia* in international legal doctrine. A modest approach to this process can be seen in the work of G. Wood, who observed that it was the development of cryptography that would result in the realisation of law as a code. In his view, crypto-law is characterised by the fact that it is possible to write certain rules known from traditional law in a strongly secure space, thanks to advanced cryptography (hence the term crypto-) of the space. According to Wood, the moment of real implementation of crypto-law is related to the development of blockchain technology. As an example, the author cites Ethereum²⁷. The concept of crypto-law practically refers to cryptocurrencies, but the basis of this approach is related to the work of Mark S. Miller, in which the process of moving away from law to its new approach was presented and where the impracticality of law in the era of developing new technologies was recognised. Along with the diminishing importance of law in the aspect of building trust in the relations of global society, the role of computer security techniques - including cryptography - is increasing. The intersection of decline and growth is the point at which law in the traditional model will stop existing²⁸. Although this theoretical approach sounds evolutionary, from the perspective of many years of law formation it looks like an abrupt change, especially as the basic assumptions of traditionally understood law are subject to ongoing changes²⁹.

Both Ethereum and Bitcoin are concepts that use advanced cryptography to build a trusted place in cyberspace where code-based solutions can be created. According to the Lex Cryptographia approach, they can be challenging for certain legal systems, due to the fact that the concepts used are created independently of the law factor assigned to a certain territory (e.g. DAO - equivalent to a certain type of company contract, foundation, etc., but with high anonymity of the partners or members of the organisation and with its own management rule)³⁰.

The quintessential point is that both cryptocurrency and Lex Cryptographia is a smart contract written in a block (as in Ethereum), or otherwise named place for transaction data in some register, code. This

27 cf Wood (n 3); See Wright and De Filippi (n 4).

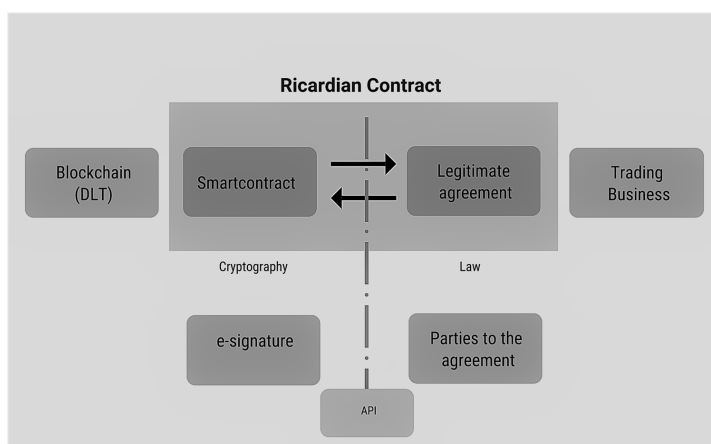
28 Mark S. Miller, 'The Future of Law' CAPLET.COM (August 1997) <www.caplet.com/security/futurelaw> accessed 16 March 2021.

29 Dariusz Szostek, 'Consequences of applying new technologies to sources of law' in García G. Javier, Alzina L. Álvaro and Martín R. Gabriel (eds), *El derecho público y privado ante las nuevas tecnologías* (Dykinson 2020).

30 See Wright and De Filippi (n 4).

code implements certain automated decisions (ADM, from automated decision making) regarding transactions. In certain legal systems, it may be a contract in its own right that complies with certain civil laws, or it may be an element of such a contract, i.e. its structure may fall within contractual regulations in certain provisions. The creator of this concept was Nick Szabo, and a smart contract in its current sense is associated with blockchain solutions. Additionally, D. Szostek, following the definitional scope indicated by the author, notes that bitcoin should also be considered as a certain zero form of smart contract³¹.

Figure 2. Graphical representation of the Ricardian contract concept



Source: Own elaboration.

However, fixing code in the form of a smart contract requires specialised, non-legal knowledge. Ethereum-based smart contracts typically use the Solidity programming language, which is a type of high-level object-oriented language developed on top of C++, Python and JavaScript³². Provisions for the parties written in this kind of artificial language will not be understandable to, for example, a court in the event of a litigation. On the other hand, it does not seem possible for this type of agreement to go completely beyond the current legal regulations and thus remain in a kind of magic

31 Dariusz Szostek, *Blockchain and the law* (1st edn, Nomos 2019) 111.

32 Solidity Documentation: <<https://docs.soliditylang.org/en/v0.8.0/>> accessed 17 January 2021.

circle³³. Therefore, for effective management of such contracts, close cooperation between the programmer and the lawyer will be necessary. The golden mean in this matter comes from the Ricardian approach and serves to balance things out. The so-called Ricardian contract assumes that, on the one hand, a provision will be drawn up for the parties in the form of a certain natural language using a specialised legal language, but an integral part of the contract will be the transfer of part or the writing of part of the provisions in a programming language³⁴. If this becomes applicable in the current reality, advanced cryptographic techniques (electronic signature, blockchain) will enable the operation of smart contracts, and moreover, a contract drawn up in a legal manner will guarantee the existence of provisions in artificial languages in business dealings regulated in a traditional manner, i.e. by law. In such a situation, the court is not likely to fail to recognise the existence of the records on the grounds that they are illegible. Moreover, in this case the possibility of using an API may allow the parties to observe smart contracts operating in coupling, through a party-friendly application. It also seems necessary to signal that the allegation that the parties will not understand the programming language is exaggerated. The parties may well not understand a specialist language such as a legal language expressed in a certain natural language. This is why contracts are increasingly being marketed using graphic symbols (simplification and visualisation), which can be understood even by people who cannot or do not fully use a certain natural language (see figure)³⁵.

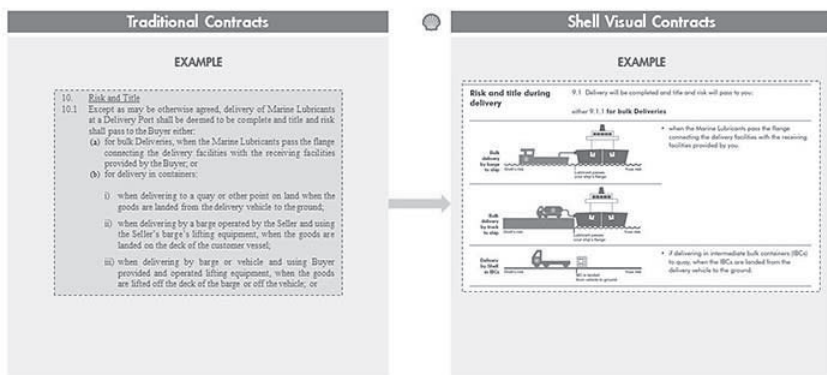
33 J. Huizinga, author of *Homo ludens*, is regarded as the creator of the concept of the magic circle. The concept of the magic circle is often used when considering virtual property - see Katie Salen and Eric Zimmerman, *Rules of play: game design fundamentals* (MIT Press 2003) 95. It is worth noting, however, that J. Huizinga himself seems to remain far from sceptical of this idea, while the actual originator of its adaptation is E. Zimmerman - see Eric Zimmerman, 'Jerked Around by the Magic Circle - Clearing the Air Ten Years Later' (Gamasutra, February 2012 <https://www.gamasutra.com/view/feature/135063/jerked_around_by_the_magic_circle_.php> accessed 17 January 2021).

34 Dariusz Szostek (n 31) 116.

35 See Helena Haapio and Thomas D. Barton, 'Business-Friendly Contracting: How Simplification and Visualization Can Help Bring It to Practice' in Kai Jacob, Dierk Schindler and Roger Strathausen (eds), *Liquid Legal* (Springer 2017); see Gerlinde Berger-Walliser, Thomas D. Barton and Helena Haapio, 'From Visualization to Legal Design: A Collaborative and Creative Process' (2017) 54:2 *American Business Law Journal* 347.

The same can be presented to the parties to a smart contract - in the form of mainly graphical signs³⁶.

Figure 3. An example of Legal Design (exactly visualisation and simplification) from practice, where graphic signs were used instead of signs that make up a certain natural language, in this case the English legal language



Source: <https://www.ft.com/content/032ddcb0-e6b1-11e9-b8e0-026e07cbe5b4>

However, it should be emphasised that both the theoretical framework of the concept of a contract written in a language other than natural, i.e. smart contracts, and the undertaking of some limited developments of regulating the relationship between parties by means of codes were already taking place before the introduction of the Ethereum distributed registry. This can be observed, inter alia, in certain solutions for gamers in the game industry³⁷. Solutions based on the automatic execution of contracts have already existed for many years in MMO games, particularly in the form of so-called auction houses, which act as automatic exchanges of virtual goods, where players can place bids to sell or buy goods. When another player accepts the offer, the system will automatically transfer the rights to the object of the transaction to the purchasing player, taking the appropriate amount of the in-game currency and assigning its value to

36 See O. S. Grin, E. S. Grin and A. V. Solovyov, 'The Legal Design of the Smart Contract: The Legal Nature and Scope of Application' (2019) 8 Lex Russia 51.

37 The mechanics of MMO games also seem to provide an important starting point for the theory of L. Lessig's theory, as evidenced by the many references contained in his book – see Lawrence Lessig, *Code and Other Laws of Cyberspace. Version 2.0* (2nd revised edn, Basic Books 2006) 9.

the selling player's account. At the same time, even in this type of games we can notice how the law is written in codes, because what the player and her/his virtual character can do, is limited to what the programmer envisaged at the stage of creating the code. It is therefore true that there are solutions where programming code replaces natural language, so that some representatives of the doctrine consider that such a program as a smart contract, is an alternative form of a legally binding contract³⁸.

This observation is, however, quite controversial, in particular because the moment such a smart contract has been activated, a doubt arises immediately regarding the additional powers of the party³⁹. This has led to the emergence of sharp criticism of blockchain-based solutions in international legal doctrine. On the one hand, there is the jellyfish perspective, which assumes that smart contracts that are heavily regulated, especially in the context of electronic data, will cease to thrive, just as a jellyfish, which after having been washed ashore, withers. The jellyfish perspective assumes that the implementation of N. Szabo's idea is not complete, and only the future will show how the concept of smart contracts will develop, i.e. whether contracts will actually become not only automatic, but also more complex and whether they will take into account more factors that influence the parties to the contract.

The second main problem arises from the need to transfer physical objects to the virtual realm (e.g. as part of so-called tokenisation). As long as digital goods, such as cryptocurrencies, remain the object of transaction, the transfer of "ownership" of such an object is technically not a problem. However, the dematerialisation of other assets is a significant challenge. In order to do an efficient transfer of ownership of a flat in the above manner, at the very least, a decentralised system of notarised property registry would be necessary. It is also possible to imagine installing smart locks in the flat that would verify the identity of their owner and fulfilling this realization appears much easier nowadays than in the earlier times⁴⁰, but it still seems that creating a technically advanced system, while at the same time ensuring its sufficient openness (e.g. through API) and security

38 Stephen McJohn and Ian McJohn, 'The Commercial Law of Bitcoin and Blockchain Transactions' (2016) 16-13 Legal Studies Research Paper Series Research Paper 15.

39 *ibid.*

40 Even so, it requires significant investment, which may not necessarily appear reasonable from the perspective of all owners.

(bearing in mind particularly the DAO Hack⁴¹), can happen not to be so simple⁴².

4. Tokenization of Assets

Let us introduce the definition of “token”. First of all, the linguistic interpretation of this word should be analysed. The etymology of the English word “token” allows us to conclude that it probably comes from the Old English word “tacen” which meant “sign, symbol, proof”⁴³. The American *Merriam-Webster* dictionary defines „token” as „a piece resembling a coin issued for use by a particular group on specified terms”⁴⁴. The Cambridge Dictionary indicates that it is a symbol, a paper worth money that can be exchanged for goods in a store, or a round metal or plastic disc that is used instead of money in various types of machines⁴⁵. The Black’s Law Dictionary proposed the same semantic explanation, as it defines token as a sign or symbol, being a material proof of a fact⁴⁶. To sum up, the linguistic interpretation helps us to capture the essence of a token, i.e. its symbolism. However, it does not explain the legal implications of it. Therefore, it is necessary to make a further interpretation on the basis of the legal scholarship.

Michelle Finck defines token as an artificially produced digital good, recorded *through blockchain*, which, due to the nature of the system, can only be used once⁴⁷. In our opinion, the aforementioned definition seems

41 Samuel Falcon, “The Story of the DAO — Its History and Consequences” (Medium, December 2017) <<https://medium.com/swlh/the-story-of-the-dao-its-history-and-consequences-71e6a8a551ee>> accessed 19 January 2021.

42 Focusing our attention at least for a moment on the economic analysis of law, it is impossible not to mention here also the total redundancy of notaries in such a system. See Jeff Lingwall and Ramya Mogallapu, ‘Should Code Be Law? Smart Contracts, Blockchain, and Boilerplate’ (2019) 88:1 University of Missouri-Kansas City Law Review 311.

43 ‘Token’, *Online Etymology Dictionary* <<https://www.etymonline.com/word/token>> accessed 2 February 2021.

44 ‘Token’, *Merriam-Webster Dictionary* <<https://www.merriam-webster.com/dictionary/token>> accessed 2 February 2021.

45 ‘Token’, *Cambridge Dictionary* <<https://dictionary.cambridge.org/dictionary/english/token>> accessed 2 February 2021.

46 Henry C. Black, ‘Token’, *The Black’s Law Dictionary* (Rev 4th edn, West Publishing Co. 1968) 1658.

47 Michèle Finck, *Blockchain Regulation and Governance in Europe* (CUP 2018) 16, which relies on Jean Bacon, Johan David Michels, Christopher Millard and Jatinder

to be too narrowed down to the concept of blockchain, and it is possible for token to exist without this technology⁴⁸. Nevertheless, this definition is a good starting point for further considerations. More broadly and universally speaking, *token can be defined as a digital good representing values or rights, within or outside the DLT register*. However, it should be borne in mind that tokens exist and have value primarily within their system⁴⁹, hence they are usually used in individual business models, without intermediaries and entities facilitating the distribution of the product⁵⁰.

We can distinguish two different aspects of the value of tokens⁵¹. Firstly, they can have exclusive value only within their blockchain. Secondly, they can be an avatar of real assets, such as goods (e.g. gold⁵² or medical marijuana⁵³), services (e.g. dental services⁵⁴), or specific rights (e.g. economic copyrights⁵⁵).

Singh, 'Blockchain Demystified' (2017) 268/2017 Queen Mary School of Law Legal Studies Research Paper 5 <<https://ssrn.com/abstract=3091218>> accessed 6 February 2021. See also regarding feature of one-time use Satoshi Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System' 1 <<https://bitcoin.org/bitcoin.pdf>> accessed 8 February 2021.

48 Szostek (n 31) 126.

49 Stefan Tönnissen, Jan Heinrich Beinke, Frank Teuteberg, 'Understanding Token-based Ecosystems – a Taxonomy of Blockchain-based Business Models of Start-ups' (2020), 30 Electron Markets 307, 309 <<https://doi.org/10.1007/s12525-020-00396-6>> accessed 8 February 2021.

50 William Mougayar, 'Tokenomics — A Business Guide to Token Usage, Utility and Value' (Medium, 10 June 2017) <<https://medium.com/@wmougayar/tokenomics-a-business-guide-to-token-usage-utility-and-value-b19242053416>> accessed 6 February 2021.

51 Finck (n 47) 10.

52 For example, PAX Gold, which is a cryptocurrency, where each token is secured by one troy ounce, the holder of which becomes the owner of the physical gold held by a trust company. See. <<https://www.paxos.com/paxgold/>> accessed 6 February 2021.

53 For example, CannabisCoin (CANN), it is a cryptocurrency created in 2014, the purpose of which was to directly exchange 1 token for 1 gram of medical marijuana. See. <<https://www.investopedia.com/news/top-marijuana-cryptocurrencies/>> accessed 6 February 2021.

54 For example, *dentacoin* cryptocurrency. See: <<https://dentacoin.com/>> accessed 6 February 2021.

55 For example, KodakCoin. It is a cryptocurrency created by a famous manufacturer of cameras that allows the photographer to manage his copyrights to photos, license them and collect remuneration for it.. See: David Gerard, 'The KodakCoin ICO failed, and now everyone wants their money' (*David Gerard*, 10 December 2018) <<https://davidgerard.co.uk/blockchain/2018/12/10/the-kodakcoin-ico-failed-and-now-everyone-wants-their-money/>> accessed 6 February 2021 and

The first type of the value of token, as undoubtedly more abstract, requires a deeper explanation. Cryptocurrencies will be an example of such an asset, including the most famous of them *bitcoin*, and, perhaps a more glaring example, *Dogecoin*⁵⁶, a joke cryptocurrency created in 2013 and inspired by the once-famous meme with a *shiba inu* dog, known as a "doge". Dogecoin has basically no value in the traditional sense and neither it is the equivalent of anything real, nor it is secured by a state monopoly. It does not change the fact that its market capitalization is currently close to \$ 6.5 billion, and the value of one Dogecoin has reached the level of 5 cents⁵⁷, while its initial value was 0.03 cents⁵⁸. Another, but also a thought-provoking example of this phenomenon is the digital work entitled "The First 5000 days" created by an artist nicknamed Beeple (Mike Winkelman), which is a non-fungible token, sold at Christie's for \$ 69.3 million⁵⁹.

<<https://www.ryde.one/>> accessed 6 February 2021. See also: Balazs Bodo, Daniel Gervais, Joao Pedro Quintais, 'Blockchain and Smart Contracts: the Missing Link in Copyright Licensing?' (2018) 26 International Journal of Law and Information Technology 311 <<https://academic.oup.com/ijlit/article/26/4/311/5106727>> accessed 7 February 2021; Michele Finck, Valentina Moscon, 'Copyright Law on Blockchains: Between New Forms of Rights Administration and Digital Rights Management 2.0.' (2019) 50 IIC – International Review of Intellectual Property and Competition Law 77; Annabel Tresise, Jake Goldenfein and Dan Hunter, 'What Blockchain Can and Can't Do for Copyright' (2018) 28 Australian Intellectual Property Journal 144 <<https://ssrn.com/abstract=3227381>> accessed 7 February 2021.

56 <<https://dogecoin.com/>> accessed 6 February 2021.

57 <<https://www.coingecko.com/pl/waluty/dogecoin>> accessed 6 February 2021.

58 <<https://finance.yahoo.com/quote/DOGE-USD/>> accessed 6 February 2021.

59 Hannah Denham, Gerrit De Vynck and Rachel Lerman, 'What is an NFT, and how did an artist called Beeple sell one for \$69 million at Christie's?' *The Washington Post* (Washington D.C., 12 March 2021) <<https://www.washingtonpost.com/technology/2021/03/12/nft-beeple-christies-blockchain/>> accessed 15 March 2021.

From the legal point of view, token raises many doubts, which mainly concern financial law and trading security⁶⁰, hence the vast majority of global regulations apply to this matter⁶¹.

However, the main problem related to tokens is the phenomenon of tokenisation. By tokenisation we mean a *process of representing a given value (goods, services or rights) as a unit of account within or outside the DLT register*⁶². This process is mostly carried out by an Initial Coin Offering (ICO), which is a fundraising technique of blockchain-based tokens sale in exchange for cryptocurrency or fiat money with the aim to collect financial support for a given initiative⁶³.

It is worth emphasizing that “smart contracts” play also important role in tokenisation as tokens offered in the ICO are most often distributed through smart contracts.⁶⁴ To put it simply, since such contracts are self-executing, they automatically exchange cash or other cryptocurrencies for tokens of a given publisher⁶⁵. However, smart contracts are usually much more complicated and subject to additional conditions, e.g. they enable the fastest investors to receive an additional 5 % of tokens or they make the payment dependent on collecting a predetermined minimum amount⁶⁶.

60 See more Robby Houben and Alexander Snyers, ‘Cryptocurrencies and blockchain. Legal context and implications for financial crime, money laundering and tax evasion’, (European Parliament's Special Committee on Financial Crimes, Tax Evasion and Tax Avoidance 2018), <<https://www.europarl.europa.eu/cmsdata/150761/TAX3%20Study%20on%20cryptocurrencies%20and%20blockchain.pdf>> accessed 8 February 2021.

61 The topic will be elaborated on in the third subchapter "Comparative Legal Analysis of Selected Regulations Regarding the Token. Will the European Union Synthesize It?".

62 See: Omri Ross, Jihanes Rude Jensen and Truls Asheim, ‘Assets under Tokenization’ (2019) <<https://ssrn.com/abstract=3488344>> accessed 9 March 2021.

63 Alexis Collomb, Primavera De Filippi and Klara Sok, ‘Blockchain Technology and Financial Regulation: A Risk-Based Approach to the Regulation of ICOs’ (2019) 10 European Journal of Risk Regulation 263, 264 <doi:10.1017/err.2019.41> accessed 9 March 2021.

David Uzsoki, ‘Tokenization of Infrastructure: A blockchain-based solution to financing sustainable infrastructure, (International Institute for Sustainable Development 2019) 2 <doi:10.2307/resrep22004.3> accessed: 9 March 2021.

64 Szostek (n 31) 127.

65 Valentina Gatteschi, Fabrizio Lamberti and Claudio Demartini, ‘Technology of Smart Contracts’ in Larry DiMatteo, Michel Cannarsa, Cristina Poncibò (eds), *The Cambridge Handbook of Smart Contracts, Blockchain Technology and Digital Platforms* (CUP 2019) 45 <doi:10.1017/9781108592239.003> accessed 9 March 2021.

66 *ibid.*

4.2. Types of Tokens - the Basic Knowledge of Every Legal Engineer

In principle, tokens can represent any value or any right⁶⁷. However, because of their functions, both legislators and legal scholarship try to typologise them, as the application of certain legal provisions depends on their characteristics. The most popular typology is the following one⁶⁸:

- 1) *Exchange tokens* (known also as cryptocurrencies or payment tokens) – tokens used primarily as a means of payment used to buy and sell goods and services without intermediaries; an example of such tokens are *bitcoin* or *Ethereum* ⁶⁹;
- 2) *Utility tokens* – tokens that grant its holders access to a current or potential product or service, but do not grant them the same rights as those granted by specific investments. Examples of such tokens are *Golem* (GNT)⁷⁰, which allows to access specific computing power resources, or *Filecoin* (FIL)⁷¹, which enables to store information;
- 3) *Security tokens* (known also as „*asset tokens*” or „*investment tokens*”) – tokens with specific properties, like rights and obligations similar to stocks or financial instruments, with a largely similar function as stocks or bonds. According to *R. Houben* and *A. Snyers*⁷², an example of such a token is the "BNK token" by Bankera, which gives its holder the right to a weekly dividend of 50 Ethereum.

⁶⁷ Finck (n 47) 16.

⁶⁸ See: Financial Conduct Authority, 'Guidance on Cryptoassets Feedback and Final Guidance to CP 19/3' (2019) 4 <<https://www.fca.org.uk/publication/policy/ps19-22.pdf>> accessed 7 February 2021; FINMA, 'Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)' (2018) 3, <<https://www.finma.ch/en/-/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/fintech/wegleitung-ico.pdf?la=en>> accessed 7 February 2021; EBA, 'Report with advice for the European Commission on crypto-assets' (2019) 7. See also similar recital 10 of Commission, 'Proposal for a Regulation Of The European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937', (2020) COM/2020/593 *final*.

⁶⁹ Sometimes this type of tokens stands out as a separate category due to their popularity, simply calling them cryptocurrencies. See: Robby Houben and Alexander Snyers, 'Crypto-assets. Key developments, regulatory concerns and responses' (European Parliament's Committee on Economic and Monetary Affairs 2020), 18 <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/648779/IPOL_STU\(2020\)648779_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/648779/IPOL_STU(2020)648779_EN.pdf)> accessed 7 February 2021

⁷⁰ <<https://golem.network/>> accessed 7 February 2021.

⁷¹ <<https://www.filecoin.com/>> accessed 7 February 2021.

⁷² Houben and Snyers (n 60) 21.

4.3. *Comparative Legal Analysis of Selected Regulations Regarding the Token. Will the European Union Synthesise It?*

Regulations regarding tokens can be divided into two main types. The first one is the regulation of cryptocurrencies through money laundering legislation, and the second one is the regulation of payment services, either by creating new service laws or by issuing binding interpretations by the regulator. There is also a group of countries that regulate the issue of tokens and tokenisation in both of these regulatory areas. The EU (and thus its Member States)⁷³, Great Britain⁷⁴, Liechtenstein⁷⁵ and Switzerland⁷⁶ are all in the first group.

Among the EU Member States, Malta is worth paying particular attention to, as this state was a pioneer of crypto industry legislation on the European continent. The Maltese regulation comprises in three legal acts: *Virtual Financial Assets Bill* (VFA)⁷⁷, *Innovative Technology Arrangements and Services Bill* (ITASA)⁷⁸ and *Malta Digital Innovation Authority Bill* (MDIA)⁷⁹. They constitute legal framework for the functioning of digital economy based on *DLT* and *blockchain* and for activities involving tokens

73 This was done by 90. Directive 2018/843 of European Parliament and of the Council of 30 May 2018 amending Directive 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, and amending Directives 2009/138/EC and 2013/36/EU [2018] OJ L156/43, hereinafter referred to as AMLD5.

74 The Money Laundering and Terrorist Financing (Amendment) Regulations 2019, implementing AMLD5.

75 Act on Professional Due Diligence to Combat Money Laundering, Organized Crime, and Terrorist Financing (*Gesetz über berufliche Sorgfaltspflichten zur Bekämpfung von Geldwäscherei, organisierter Kriminalität und Terrorismusfinanzierung (Sorgfaltspflichtgesetz)*, Landesgesetzblatt Nummer (O.J. 2009, no 47 with amendments) <<https://www.gesetze.li/konso/pdf/2009047000?version=19>> accessed 7 February 2021, see unofficial English translation <https://www.regierung.li/media/medienarchiv/952_1_17_11_2017_en_636524807784985165.pdf?t=5> accessed 7 February 2021.

76 It is worth remembering, however, that in Switzerland such application of anti-money laundering provisions was not determined directly by the legislator, but by the Swiss financial market supervisory authority (i.e. *Swiss Financial Market Supervisory Authority* - FINMA). See. FINMA (n 68).

77 <<http://justiceservices.gov.mt/DownloadDocument.aspx?app=lp&itemid=29079&l=1>> accessed 7 February 2021.

78 <<http://justiceservices.gov.mt/DownloadDocument.aspx?app=lp&itemid=29078&l=1>> accessed 7 February 2021.

79 <<http://justiceservices.gov.mt/DownloadDocument.aspx?app=lp&itemid=29080&l=1>> accessed 7 February 2021.

and smart contracts. For example, Art. 2 of VFA defines the term "virtual tokens" as „a form of digital medium recordation that has no utility, value or application outside of the DLT platform on which it was issued and may only be redeemed for funds on such platform directly by the issuer of such DLT asset". Thus, the Maltese regulations can be assigned to both above-mentioned groups.

The United States of America is an unusual regulator, as due to the federal nature of the state, it has left the regulation of cryptocurrencies to individual States. Not all States have legally regulated the operation of the crypto industry. In some of them (e.g. in Florida⁸⁰) case-law, established by either judicial or regulatory authorities, has the key role. On the other hand, the provisions introduced in the State of New York deserve special attention. Model regulation based on the law of payment services has been introduced there, requiring from entities involved to obtain a special license⁸¹.

Similar solutions were adopted by, for example, Belarus, which decided to regulate the entire activity of cryptocurrencies and tokens, including their exchange, as a type of payment services⁸². However, the Belarusian regulation does not apply to the entire territory of the country, but only to residents of the Park of High Technologies. Obtaining such a status requires the undertaking to apply in advance for a registration in the Supervisory Board of the Park, in accordance with the Decree of the President of the Republic of Belarus of September 22, 2005 No. 12, constituting the Regulations of the Park of High Technologies⁸³. The second group

80 This concerns, in particular, the verdict in the *Florida v. Espinoza* case, which indicated the need to adapt the statutory regulations of the state of Florida in the field of payment services to new technologies. See. *Florida v. Espinoza*, Case No F14-2923 (Fla 11th Cir Ct) <https://www.morrisoncohen.com/siteFiles/files/2014_02_06%20-%20Florida%20v_%20Espinoza.pdf> accessed 7 February 2021; *Florida v. Espinoza*, Case No. 3D16-1860; Gabrielle Patrick and Anurag Bana, 'Report. Rule of Law Versus Rule of Code: A Blockchain-Driven Legal Word' (2017) International Bar Association Legal Policy & Research Unit 16.

81 See: Bitlicense (2020) 23 CRR-NY I 200, <[https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I7444ce80169611e594630000845b8d3e&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I7444ce80169611e594630000845b8d3e&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))> accessed 7 February 2021.

82 See: Decree of the President of the Republic of Belarus from 21.12.2017, No. 8 On Development of Digital Economy <<http://law.by/document/?guid=3871&p0=Pd1700008e>> accessed 7 February 2021.

83 In the amended version after entry into force of Decree of the President of the Republic of Belarus from 21.12.2017, No. 8 On Development of Digital Econo-

should also include Singapore⁸⁴ and Japan⁸⁵, as in both countries token trading was regulated by amendments to previously proclaimed acts on payment services.

It is also worth noticing that the research conducted recently by the EU⁸⁶ indicates that the development of the crypto industry has overtaken the EU legislator and it has become necessary to introduce a new law aimed at regulating cryptoassets, i.e. broadly understood cryptocurrencies and tokens⁸⁷. The solution to this problem will be Regulation of the European Parliament and of The Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937, which is currently a proposal. As Ursula von der Leyen, President of the European Commission pointed out, the purpose of the regulation is to create “a common approach with Member States on cryptocurrencies to ensure we understand how to make the most of the opportunities they create and address the new risks they may pose”⁸⁸. By the above-mentioned normative act, the European Commission is trying to regulate the crypto assets, including tokens, in a holistic manner, by following the legal scholarship and distinguishing three types of tokens: tokens associated with assets (which correspond to investment tokens), utility tokens and crypto-assets (exchangeable tokens)⁸⁹. This proposal should therefore be seen as a necessary step in the right direction.

my, <<http://law.by/document/?guid=3871&p0=Pd1700008e>> accessed 7 February 2021.

84 Singapore's Payment Services Bill No. 48/2018 <<https://sso.agc.gov.sg/Bills-Supp/48-2018/Published/20181119?DocDate=20181119#Sc1>> accessed 7 February 2021.

85 Japanese Act No. 59 of June 24, 2009 on Payment Services. See English translation: <<http://www.japaneselawtranslation.go.jp/law/detail/?id=3078&vm=02&re=02e&new=1>> accessed 7 February 2021.

86 The last and most up-to-date feature is the ‘Consultation Document on an EU framework for markets in crypto-assets’ presented by the European Commission. See: <https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/2019-crypto-assets-consultation-document_en.pdf> accessed 8 February 2021.

87 Houben and Snyers (n 60) 48.

88 Mission letter of President-elect Von der Leyen to Vice-President Dombrovskis (10 September 2019) <https://multimedia.europarl.europa.eu/documents/20143/0/mission-letter-valdis-dombrovskis-2019_en+%281%29.pdf/d3645133-8c2e-7fdd-4367-77059b892232?t=1569412036000&download=true> accessed 15 March 2021.

89 See recital 9 and Art. 2 of the discussed proposal. However, it would be suggested to change the nomenclature of the latter subgroup, as it coincides with the name of the entire group (this problem occurs at least in Polish, English, French and German versions).

4.4. What about Lawyers When the Code Becomes Law? Selected Legal Challenges of Tokenisation

So what a lawyer can do in the face of such tokenised future? The tokenisation itself, usually reduced to blockchain technology, can undoubtedly be called a technology that is autonomous in relation to the law, and certainly is not adapted to it⁹⁰. It is no coincidence that blockchain is usually referred to as a disruptive and revolutionary technology⁹¹. It creates new markets but it destroys current states, companies and networks at the same time⁹². However, this is a double-edged mismatch because the law is also not adjusted to the technology mentioned above. Moreover, the law is mismatched in a way in which it loses. On the line of mismatch between technology and law and in the new markets created the most tasks for lawyers open up.

Such a task would be, for example, finding of the applicable law to which the token will be subject given that there are no international standards on this matter⁹³. In most cases, due to the tokens trade in cyberspace, the norms of private international law will enter into the civil law

90 Matthias Lehmann, 'Who Owns Bitcoin? Private Law Facing the Blockchain' (2019) 21 Minnesota Journal of Law, Science & Technology 93, 107 <<https://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1474&context=mjlst>> accessed 15 March 2021.

91 See: Michael Nofer, Peter Gomber, Oliver Hinz and Dirk Schiereck, 'Blockchain' (2017) 59 Business & Information Systems Engineering 183 <doi 10.1007/s12599-017-0467-3> accessed 15 March 2021; Lawrence J Trautman, 'Is Disruptive Blockchain Technology the Future of Financial Services?' (2016) 69 The Consumer Finance Law Quarterly Report 232, 239 <<https://ssrn.com/abstract=2786186>> accessed 15 March 2021; Sinclair Davidson, Primavera De Filippi and Jason Potts, 'Disrupting Governance: The New Institutional Economics of Distributed Ledger Technology' (2016), 2-5, <<http://dx.doi.org/10.2139/ssrn.2811995>> accessed 9 March 2021.

92 We use this meaning after: Joseph. L Bower and Clayton M Christensen, 'Disruptive Technologies: Catching the Wave' (January-February 1995) Harvard Business Review 43 <<https://hbr.org/1995/01/disruptive-technologies-catching-the-wave>> accessed 2 February 2021.

93 Riccardo de Caria, 'A Digital Revolution in International Trade? The International Legal Framework for Blockchain Technologies, Virtual Currencies and Smart Contracts: Challenges and Opportunities' (Modernizing International Trade Law to Support Innovation and Sustainable Development Proceedings of the Congress of the United Nations Commission on International Trade Law, Vienna, July 2017) <<https://aperto.unito.it/retrieve/handle/2318/1632525/464608/R.%20de%20Caria%2c%20A%20Digital%20Revolution%20%282017%29.pdf>> accessed 2 February 2021.

relations of the parties. If the parties have not chosen the law applicable (e.g. in the case of contractual tokens trade), which happens in the vast majority of cases, then legal norms applicable to the habitual residence of the party obliged to the so-called characteristic performance will apply⁹⁴. However, it may not be possible to apply this standard to token trading due to the anonymity of such a blockchain transfer, in which neither party knows the other participant or its address⁹⁵. Perhaps the problem could be solved by the closest connection connecting factor, although it is neither the most reliable nor the objective one⁹⁶. In addition, the application of CISG cannot be ruled out for some transactions with the use of tokens if they constitute remuneration for the sale of real goods between entrepreneurs⁹⁷. Furthermore, determining the law applicable to the "ownership" of a token may be found similarly problematic⁹⁸.

As we have indicated earlier, problems requiring legal solutions will also arise due to the mismatch between the law and the characteristics of tokens and blockchain technology. The technical feasibility of the law applicable to tokens within the DLT is also becoming a serious issue. In some cases, especially those related with enforcement, the law will be ineffective, as token usually eludes it both in the legal sense and in the sense of technical feasibility. Not knowing the password (i.e. private key), it is impossible to get to the given tokens. For example, let us consider the situation of would-be millionaire James Howell who threw away his old hard drive on which he gathered 7,500 bitcoins (currently worth about GBP 210 million)

94 See. art. 4 (2) Regulation (EC) No 593/2008 of the European Parliament and of the Council of 17 June 2008 on the law applicable to contractual obligations (Rome I) [2008] O. J. L 177/6.

95 Lehmann (n 114) 15.

96 See: Florence Guillaume, 'Aspects of private international law related to blockchain transactions' in Daniel Kraus, Thierry Obrist and Olivier Hari (eds), *Blockchains, Smart Contracts, Decentralised Autonomous Organisations and the Law* (Edward Elgar 2019) 82, which indicates that in most cases due to the inability to use other connecting factors the *lex fori* principle will apply. See also: Szostek, (n 31) 68–80 as regards the indication of the copyright law *applicable to Bitcoin* blockchain copyright and *Bitcoin agreements*.

97 See: United Nations Commission on international trade law, 'United Nations Convention on Contracts for the International Sale of Goods' (1980) < https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-09951_e_ebook.pdf > accessed 2 February 2021. See also: Sebastian Omlor, 'The CISG and libra: monetary revolution for international commercial transactions?' (2020) 3(1) *Stanford Journal of Blockchain Law & Policy* 83–95.

98 Lehmann (n 90) 16–17.

and is looking for it in a landfill⁹⁹. The same goes for German prosecutor's office, which recently "confiscated" EUR 50 million worth of bitcoins¹⁰⁰. However, there was one problem. The former owner of these bitcoins, now convicted of fraud, does not intend to reveal his private key to the prosecutor. Therefore, the prosecutor's office has to rely on the grace and disfavour of the convict. As Chainalysis, a cryptocurrency data research firm, points out, about 20 % of bitcoins, worth a total of USD130 billion, appear to be lost forever due to the loss of private keys by their owners.

Courts will also have to deal with the above-mentioned technology in terms of the appropriate treatment of evidence presented in court proceedings on an undeniable medium such as *blockchain*¹⁰¹. Such evidence had already been submitted and processed by the Chinese Internet Court in June 2018 in the case *Hangzhou Huatai Media Culture Media Co., Ltd. v. Shenzhen Daotong Technology Development Co., Ltd.*¹⁰² This issue was directly regulated three months later in the provisions of the Supreme Court of the People's Republic of China concerning the hearing of cases by internet courts¹⁰³. However, the Chinese legislator was not the first to regulate this problem, because e.g. Vermont and Arizona were faster to introduce such rules in 2016 and 2017 respectively¹⁰⁴.

99 <<https://www.bbc.com/news/uk-wales-55658942>> accessed 9 February 2021.

100 <<https://www.reuters.com/article/us-crypto-currency-germany-password/police-seize-60-million-of-bitcoin-now-where-the-password-idINKBN2A511T>> accessed 9 February 2021.

101 See: Szostek (n 31) 97–108.

102 See: 'Hangzhou Huatai Media Culture Media Co., Ltd. v. Shenzhen Daotong Technology Development Co., Ltd. Case of Dispute over Right of Dissemination over Internet' (The Supreme People's Court of the People's Republic of China, 4 April 2019) <http://english.court.gov.cn/2019-12/04/content_37527759.htm> accessed 9 February 2021. See also: Raphael Prabucki, 'About Chinese Courts and Blockchain — A Simple Chain Foundation commentary' (Medium, 18 June 2020) <<https://medium.com/@prabucki.rafael/chinese-justice-and-blockchain-what-can-we-learn-ed4285e1a34d>> accessed 9 February 2021.

103 Vivien Chan and Anna Mae Koo, 'Blockchain Evidence in Internet Courts in China: The Fast Track for Evidence Collection for Online Disputes' (Lexology, 15 July 2020) <<https://www.lexology.com/library/detail.aspx?g=1631e87b-155a-40b4-a6aa-5260a2e4b9bb>> accessed 9 February 2021. See: Sylvia Polydor, 'Blockchain evidence in court proceedings in China a comparative study of admissible evidence in the digital age (as of June 4, 2019)' (2020) No. 3(1) Stanford Journal of Blockchain Law & Policy 96.

104 See more in the further chapter by Agnieszka Kubiak-Cyrul, Dariusz Szostek, 'Smart Contracts, Blockchain and Distributed Ledger Technology (DLT) in the Work of a Lawyer'.

Michelle Finck also points to another very interesting, revolutionary and at the same time threatening tokenisation feature, associated with utility tokens¹⁰⁵. Due to the ease and certainty of transferring ownership over the token in the blockchain chain, we risk a liquid and intermediary-less (sometimes a system fuse, such as notaries under real estate law) "transfer-ring" real estate ownership, intellectual property or any other property right across the whole world¹⁰⁶. The increasing popularity of this phenomenon will therefore most likely lead to a deepening gap between applicable laws and jurisdiction. Thus, we can encounter an increasing number of activities effective within the framework of a distributed register but invalid or ineffective in legal reality. This situation will not be beneficial for either party. This leads to the conclusion that tokens will have to be adjusted to the law, not the law to tokens.

5. Control of Codes and LegalTech

5.1. Introduction

Equally important is the issue of control over codes. Undoubtedly, taking smart contracts as an example, it would have to be said that any particular control is in contradiction not only with their nature but with the essence of DLT technology¹⁰⁷ as well, which should be deduced from the fact that this solution eliminates the need for a trusted third party (e.g. interference of a legally established public trust institution such as a notary, bank, etc.). The absence of intermediaries and the risk of contract default constitute the main advantages of smart contracts, but at the same time they are also their biggest disadvantages. Smart contracts operate as programming code, which means that they are automatically executable¹⁰⁸. As a result

105 Finck (n 47) 18.

106 Wright and De Filippi (n 4) 28.

107 As stated in the description of Solidity on GitHub: "Smart contracts are programs that are executed inside a peer-to-peer network *where nobody has special authority over the execution*, and thus they allow to implement tokens of value, ownership, voting, and other kinds of logic", <<https://github.com/ethereum/solidity>> accessed 6 February 2021).

108 However, when talking about contracts here, the vast majority of such contracts will be of an adhesion nature. For example, in a sales contract, the buyer, by sending the appropriate instruction, will accept the offer and enter into the contract, which will be self-executing. See D. Szostek, (n 5).

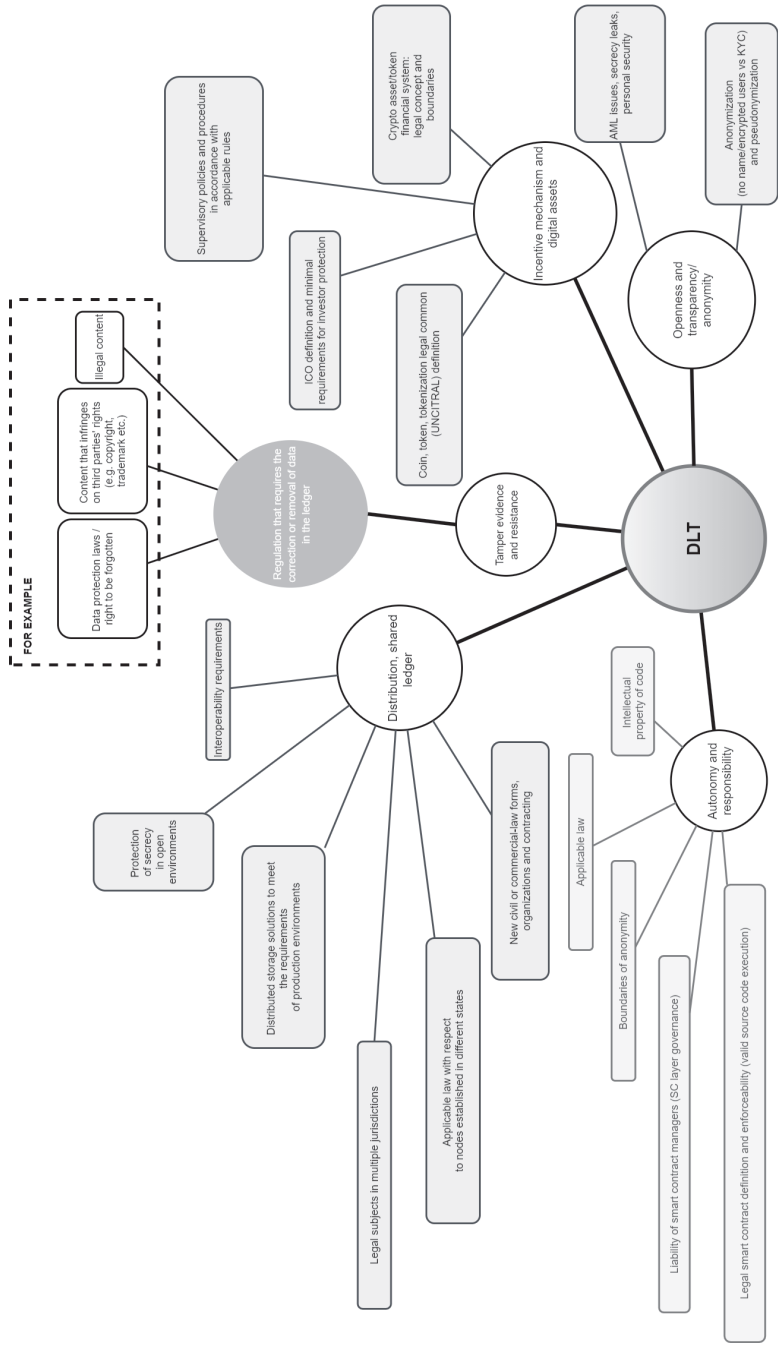
the parties to such transactions have to rely primarily on the developer of the code.

The question then arises whether something whose main feature is the limitation of control in the perspective of traditional law (territory, applicable law, court) should be controlled? According to current legislative trends in the EU, it cannot be considered sufficient to give complete freedom in this respect, relying on the parties' extensive contractual rights¹⁰⁹. In all likelihood, the Code does not exist in a legally irrelevant vacuum either. The ITU has provided a universal legal control key based on the possible control of codes in DLTs (Figure 4^{*}).

109 With regard to general code control, the above need assumes particular importance, inter alia, in the context of the European Commission's recent decision on its preliminary opinion on Amazon's restrictive practices, <https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2077> accessed 6 February 2021); Undoubtedly, the lack of appropriate interference by legislators with the increasing prevalence of artificial intelligence algorithms used to gain competitive advantage will lead to a gradual monopolisation of markets. For more on the potential for abuse of algorithms, see the report: Competition and Markets Authority (UK), 'Algorithms: How they can reduce competition and harm consumers' (Crown, 2021) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/954331/Algorithms_++.pdf> accessed 19 January 2021.

* Source: Own elaboration based on the International Telecommunication Union, Technical Report FG DLT D4.1 Distributed ledger technology regulatory framework, 2019.

Figure 4. Universal legal control key provided by the ITU



This issue is becoming more and more essential in LegalTech, which has implications for the security of legal transactions. In view of this, it would be more appropriate to ask: how should the technology and the codes be controlled? Should we require disclosure of the algorithms hidden in the codes of LegalTech systems? What new regulations should be adopted to ensure cyber security? Or should some of the existing regulations simply be extended? Undoubtedly, the elaboration of the above issues deserves a separate even more detailed study, but the purpose of this piece is to give them a general consideration and to highlight selected issues¹¹⁰.

Alison Hook presented her 2019 report on the use and regulation of LegalTech¹¹¹. The author identified four leading approaches that can be seen amongst current regulatory trends¹¹²:

- 1) Most countries adopt what has been termed a "wait and see" approach. The plethora of other regulatory obligations and the prioritisation of issues with limited resources means that the legal approach to LegalTech is not a leading theme in legislative work. All the more so, it does not receive much attention in the area of soft regulation either;
- 2) There are sometimes cases where lawyers are even prohibited from using such technologies, for example by restricting their access to the market for online legal services. There is a tendency to impose a kind of LegalTech prohibition¹¹³;
- 3) The third approach is based on an attempt to extend current regulations to cover the problem of control of the LegalTech sector. Moreover, some legal authorities have led to the acquisition of providers of such technologies or they have even been given the opportunity to influence

110 Particularly noteworthy in this regard is the expert opinion of: Mario Martini 'Fundamentals of a Regulatory System for Algorithm-based Processes' (2019) <https://www.vzbv.de/sites/default/files/downloads/2019/07/19/martini_regulatory_system_algorithm_based_processes.pdf> accessed 18 November 2020.

111 Alison Hook, 'The Use and Regulation of Technology in the Legal Sector beyond England and Wales. Research Paper for the Legal Services Board' (Hook Tangaza, 2019) <<https://www.legalservicesboard.org.uk/wp-content/uploads/2019/07/International-AH-Report-VfP-4-Jul-2019.pdf>><https://www.legalservicesboard.org.uk/wp-content/uploads/2019/07/International-AH-Report-VfP-4-Jul-2019.pdf>> accessed 16 March 2021.

112 *ibid* 8.

113 Already in 2010, the Taiwan Bar Association banned its members from participating in online legal services exchanges on the grounds that they violated the Bar Code of Ethics, under the pretext of the dangers of referral fees. For more examples see: *ibid* 34.

the development of such technologies to ensure their compliance with current regulations¹¹⁴;

- 4) Finally, there are several cases of jurisdictions that have made efforts and attempted to facilitate access to the legal sector by allowing IT players to enter it through the support of local government bodies and by opening a dialogue to coordinate cross-sectoral cooperation¹¹⁵.

However, it should be stressed that the right approach and the use of a key by the creators of a certain DLT, which would comply with a certain legal system, makes it possible to obtain a DLT in which each code would be somewhat controlled in such a perspective that it is the algorithmic code that creates the DLT data (that is, e.g., the way it is managed, the number of access layers) that would control the program code written in it¹¹⁶. This process, however, requires legal knowledge in order to relate the ITU key to the applicable laws in a certain system¹¹⁷.

5.2. Prior control

At present, however, there are no hard legal solutions apparent at the European level, hence - as it has been indicated above - the approach to the scope in discussion varies significantly from country to country. European regulations to date do not in any way harmonise the rules on the provision of legal services beyond what is applicable to all service providers, in particular as regards the automated processing and profiling of personal data under the GDPR¹¹⁸. Work on the first draft code regulations is still in progress.

114 A classic example of this is the *CloudLawyers* portal, an online marketplace for legal services created in partnership with *American Bar Association*, <<https://www.zeekbeek.com>> accessed 16 March 2021.

115 See *LegalFuel* <<https://www.legalfuel.com>> accessed 16 March 2021; *Future Law Innovation Programme* <<https://www.flip.org.sg>> accessed 16 March 2021; *Abogacía Española* <<https://www.abogacia.es/servicios>> accessed 16 March 2021.

116 Szostek (n 29) 15.

117 As K. Werbach notes - developers need to consider both codes and incorporate them - both programmatic and legal. See Kevin Werbach, 'Trust, But Verify: Why the Blockchain Needs the Law' (2019) 33/2 *Berkeley Technology Law Journal* 497.

118 See 131. Martin Ebers, 'Legal Tech and EU Consumer Law' in: Larry A. DiMatteo, André Janssen, Pietro Ortolani, André Janssen, Pietro Ortolani, Francisco de Elizalde, Francisco de Elizalde, Michel Cannarsa, Mateja Durovic (eds), *Lawyeering in the Digital Age* (Cambridge University Press 2021).

Current trends in the harmonisation of the market for algorithms in the EU are well illustrated by three reports which are European Parliament resolutions adopted on 20.10.2020 in the field of EU legislation on artificial intelligence on: a framework of ethical aspects of artificial intelligence, robotics and related technologies¹¹⁹; a civil liability regime for artificial intelligence¹²⁰ and intellectual property rights for the development of artificial intelligence technologies¹²¹. The parliamentarians agreed that, above all, AI regulations should be human-centred. The human being is put at the centre of any solution and the aim of regulation should be his or her safety¹²², achieved by ensuring transparency in the functioning of the algorithms, non-discriminatory operation¹²³, as well as the right of redress against their operators, not excluding privacy and data protection issues.

Prior control is certainly not just a manifestation of current AI trends. For example, for the purposes of the eIDAS Regulation¹²⁴, an obligation was established to audit the qualified services launched, covering both documentation and IT systems audit. This approach is particularly justified in view of the fact that these services are associated with a number of legal presumptions, e.g. as to the authenticity or integrity of data and service¹²⁵. However, state regulations of some countries are the most developed, and the following examples of such national regulations are the

119 <https://www.europarl.europa.eu/doceo/document/TA-9-2020-0275_EN.html> access 16 March 2021.

120 <https://www.europarl.europa.eu/doceo/document/TA-9-2020-0276_EN.html> access 16 March 2021.

121 <https://www.europarl.europa.eu/doceo/document/TA-9-2020-0277_EN.html> access 16 March 2021.

122 The proposed revision of the NIS Directive deserves additional attention as regards cyber security, <<https://ec.europa.eu/digital-single-market/en/news/proposal-directive-measures-high-common-level-cybersecurity-across-union>> access 16 March 2021; unfortunately, the LegalTech sector is not directly mentioned in the regulation, although Annex 1 includes cloud service providers among the entities belonging to the group of "essential entities".

123 For an extensive study of the problems of algorithmic discrimination in Europe, see the special report prepared for the European Commission – Janneke Gerards and Raphaële Xenidis, 'Algorithmic discrimination in Europe: Challenges and opportunities for gender equality and non-discrimination law' (European Commission 2020) <<https://op.europa.eu/en/publication-detail/-/publication/082f1db c-821d-11eb-9ac9-01aa75ed71a1>> access 16 March 2021;

124 Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC.

125 Dariusz Szostek, 'IBAC (IoT, Blockchain, AI i Cyberbezpieczeństwo) – samoregulacja kodów czy kontrola uprzednia?' in Kinga. Flaga-Gieruszyńska, Jacek

Maltese *Virtual Financial Assets Act*¹²⁶, *Malta Digital Innovation Authority Act*¹²⁷ i *Innovative Technology Arrangement and Services Act*¹²⁸. Within these arrangements, an appropriate *Malta Digital Innovation Authority* (MDIA)¹²⁹ licence is required to provide *Virtual Financial Assets*¹³⁰ services. It is worth noting that the mentioned legal act also introduces many requirements for further control, including with respect to whitepapers of Initial VFA Offerings¹³¹, which must contain, in particular, detailed descriptions of smart contracts¹³², oracles¹³³ or intellectual property rights related to the offer¹³⁴.

Gołaczyński and Dariusz Szostek (eds), *Sztuczna inteligencja, blockchain, cyberbezpieczeństwo oraz dane osobowe. Zagadnienia wybrane* (C. H. Beck 2019);

126 *Virtual Financial Assets Act* (VFA) <<https://legislation.mt/eli/cap/590/eng/pdf>> access 2 February 2021.

127 *Malta Digital Innovation Authority Act* (MDIA) <<https://legislation.mt/eli/cap/591/eng/pdf>> access 2 February 2021.

128 *Innovative Technology Arrangement and Services Act* (ITAS) <<https://legislation.mt/eli/cap/592/eng/pdf>> access 2 February 2021.

129 Part III and IV of VFA Act.

130 For the purposes of the VFA Act, VFA means any form of digital storage that is used as a digital medium of exchange, unit of account or store of value that is not simultaneously: (1) electronic money, (2) a financial instrument or (3) a virtual token.

131 This term covers in principle *Initial Coin Offering* (ICO), Investopedia, 'Initial Coin Offering' <<https://www.investopedia.com/terms/i/initial-coin-offering-ico.asp>> access 2 February 2021.

132 Including, but not limited to, adopted standards, core protocols, functionalities and associated operating costs, as well as any built-in constraints, if any, including investment and geographical.

133 Entities offering services of obtaining and verifying data described in smart contracts; see also Patrick Collins, 'What Is a Blockchain Oracle?' (Medium, 2 September 2020) <<https://medium.com/better-programming/what-is-a-blockchain-oracle-f5ccab8dbd72>> accessed 10 February 2021. Taking this opportunity, it is worth pointing out in this regard that the tendency to view the crypto-asset market as inherently independent seems to be completely unfounded, since, as in AI systems, the correctness of the operation of smart contracts depends on the quality of the data provided, which are in the possession of the aforementioned oracles. As a result, smart contracts are in principle entirely dependent on the providers of such services, which means that the postulate of no specific control is not applicable in practice.

134 Detailed regulations in this respect are contained in the First Schedule to VFA Act.

5.3. Follow-up actions

The control of algorithms is also directly affected by follow-up actions, including, in particular, the attribution of liability for AI. The European Parliament proposes a solution that will apply to physical and virtual AI activities that will cause material damage or serious non-material damage resulting in verifiable economic loss. Liability rules are differentiated according to the classification of AI technology as high-risk¹³⁵. Operators of AI systems that fall into this category should also be subject to compulsory third party liability insurance similar to that for drivers of passenger vehicles¹³⁶. However, it should be noted that the proposed solutions concern only artificial intelligence systems, so to the extent to which individual codes do not meet the conditions contained in the final regulation, liability for them will be shaped differently¹³⁷.

In terms of the development of smart contracts and their control, the most interesting trend is the implementation of dispute resolution mechanisms and protocols (following N. Szabo's terminology that a smart contract is a combination of protocols), of which Aragon Court (trade name, see Figure 5) is a working example. This program can be qualified as ADR in an adjunctive model but as a private initiative, i.e. aimed at resolving disputes which have arisen from smart contracts related to Aragon Network token transactions (ANT)¹³⁸. There are also first statements and opinions expressed in the international doctrine that the development of dispute resolution protocols for smart contracts is also a signal for changes in traditional courts and arbitration¹³⁹.

135 Paragraphs 14-22 of the European Parliament resolution of 20.10.2020 with recommendations to the Commission on a civil liability regime for artificial intelligence [2020/2014(INL)].

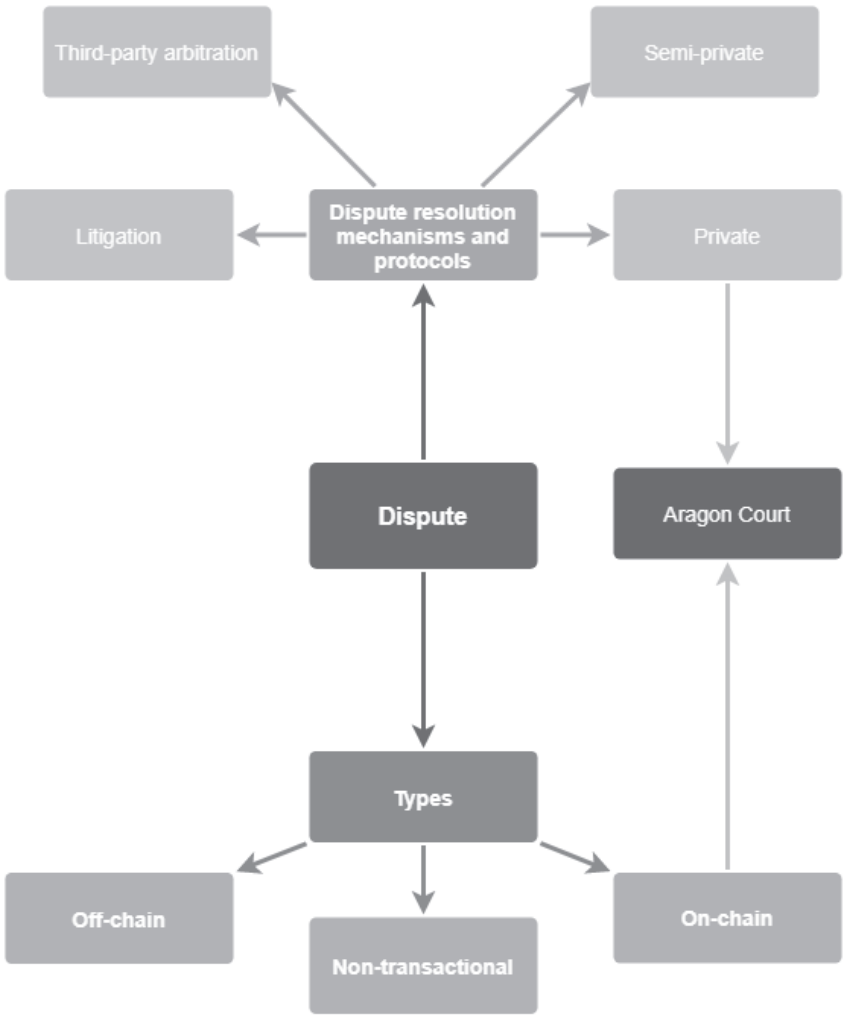
136 *ibid*, paragraphs 23–25.

137 European Parliament proposes definition of "artificial intelligence system" as "system that is either software-based or embedded in hardware devices, and that displays intelligent behaviour by, inter alia, collecting, processing, analysing, and interpreting its environment, and by taking action, with some degree of autonomy, to achieve specific goals".

138 World Economic Forum, 'Bridging the Governance Gap: Dispute resolution for blockchain-based transactions' (White Paper, December 2020) access 16 March 2021.

139 Bedrettin Gürçan, 'Jurisdiction on Blockchain' (2020) ICBEMM-ICISS 14.

Figure 5. The types of disputes possible for parties to smart contracts and the mechanisms and protocols for resolving them. The figure indicates the location of the Aragon Court dispute resolution protocol along with the type of disputes it allows to be resolved



Source: Own elaboration based on World Economic Forum, Bridging the Governance Gap: Dispute resolution for blockchain-based transactions, 2020, <https://www.weforum.org/whitepapers/bridging-the-governance-gap-dispute-resolution-for-blockchain-based-transactions>.

Private dispute resolution mechanisms and protocols are not an issue that characterises the codes in DLT. Aragon Court or Kleros¹⁴⁰ provides human participation in their operation at a reasonably advanced degree. The parties, i.e. humans, mark their objections to the transaction with evidence and also humans vote on the verdict (the verdict works on the principle: either side A or B is right). While the algorithm uses the laws of mathematics and programming code, the operation of the code is initiated by a human (a party to the dispute) and the decision is made by people, although it is also verified on the basis of game theory, i.e. the party that gets more votes wins the dispute. Codes on social platforms are not as transparent in their operation as private adjudication models¹⁴¹. In these, it is not easy to establish the role and involvement of the human in controlling the operation of the code (ADM). Furthermore, the basis of the decision is unknown¹⁴².

5.4. *Soft Law*

In the context of scrutiny, there is also a need to mention standards that aim to help, i.e. to indicate certain good practices. This is important to signal because EP Resolution 2020/2012 (INL), which appears in the context of artificial intelligence, robotics and related technologies, indicates that future EU law will focus on such a target as code developers, whose choices regarding development, deployment and use will determine not only the benefits but also the impact of codes on society (see Figure 6). This approach led EP Resolution 2020/2012 (INL) to point out in paragraph 11 that "(...) the development, deployment and use of artificial intelligence,

140 Kleros is similar project to Aragon Court, <kleros.io/> accessed 12 January 2021.

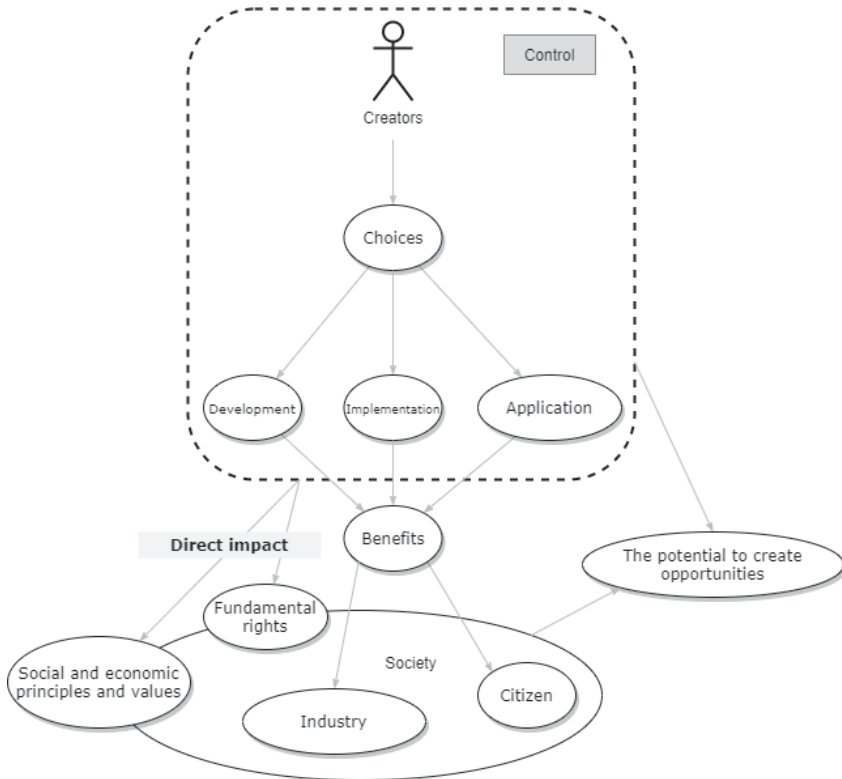
141 Mark R. Leiser, 'Private jurisprudence' and the right to be forgotten balancing test' (2020) 29 Computer Law & Security Review; See Przemysław Polański, 'Zwalczanie bezprawnych treści oraz zapewnienie retriewedności cyfrowej z pomocą algorytmów sztucznej inteligencji' in Luigi Lai and Marek Świerczyński (ed) *Prawo sztucznej inteligencji* (C. H. Beck 2020).

142 However, it is worth noting here the proposed regulation of the European Parliament and of the Council on a Single Market For Digital Services (Digital Services Act) and amending Directive 2000/31/EC [COM(2020) 825 final], which provides for a number of control mechanisms for online platforms, including those based on internal complaint handling systems (Article 17), out-of-court dispute resolution (Article 18) and instruments of enhanced supervision of very large online platforms (Article 50 et seq.). Also noteworthy is the need for very large online platforms to designate dedicated compliance officers (Article 32).

robotics and related high-risk technologies, including but not limited to human handling, shall always be ethically guided, and designed to respect and allow for human agency and democratic oversight, as well as allow the retrieval of human control when needed by implementing appropriate control measures". The term "democratic oversight" seems to refer to oversight arising from the specificity of the relationship between European law and technical standards, the preparation and dissemination of which are handled by standardisation organisations. They will also be expected to provide a framework of good practice for code developers. Compliance with technical standards will be ensured by the developers themselves. They will have to submit to certification by audit checks when required by law or when they consider it a necessary business action. A properly conducted audit will confirm implementation and operation according to good practice. This type of action is also in line with the technological neutrality of European regulations - it is the technical standards that will indicate current and essential directions for developers' solutions. This also supports the concept of self-regulation and use of DLTs proposed by D. Szostek. Another element of democratic oversight may be an administrative body that will license creators¹⁴³. Such democratic oversight represents, on the one hand, specific benefits for European society and, on the other hand, the certainty that the impact of creators and their codes on fundamental rights and social and economic principles and values will not remain outside oversight and control. In this way, the potential for opportunity creation can be achieved (Figure 6).

143 In the context of licensing, see also European Commission Communication *Open Source Software*: European Commission, 'OPEN SOURCE SOFTWARE STRATEGY 2020 – 2023 Think Open' (Communication to the Commission, 21 November 2020) <https://ec.europa.eu/info/sites/default/files/en_ec_open_source_strategy_2020-2023.pdf> accessed 12 January 2021.

Figure 6. Graphical representation of the significant element of control in terms of EP Resolution 2020/2012 (INL) and justification



Source: Own elaboration.

6. Summary

In terms of comparing smart contract codes with AI codes, it is essential to note that both codes implement ADM but differently. An automated decision realised by deep learning can be complex, not very transparent, and depends on the inputs on which such AI has trained. On the other hand, smart contracts offer code in a trackable form for a person with knowledge of a particular contractual programming language as well as they also by assumption offer easy accessibility to this code, and thus high transparency. Besides, their aim is not to eliminate but to reduce the

human factor, mainly the one who stands in the intermediary place and is not a party.

Furthermore, there is no legislation that directly addresses codes in a universal manner. What is regulated are entities that use codes to create programs or by using programs themselves, fall within a certain regulatory framework. However, it seems that the European Union has started to notice the problem of increased control of entities operating in cyberspace, which is confirmed by the work on regulations dedicated to digital services¹⁴⁴ and markets¹⁴⁵. The control solutions drafted for the purpose of the mentioned acts should be considered important to observe and worth considering also in the broader context indicated in this work. Unfortunately, a drawback of the proposed provisions is that their scope is still limited to basic platform services offered by access gatekeepers¹⁴⁶ or "to certain specific categories of intermediary service providers"¹⁴⁷. The lack of adequate general regulations raises many doubts, even with regard to the legal status of the codes themselves.

We must bear in mind that the success of tokens depends on their legal recognition so that they can be effective in the real world and, thus, on their compliance with applicable law. If not, cryptocurrencies will bring us none "technical revolution"¹⁴⁸. Will we live to see the "lex cryptographia"¹⁴⁹, a branch of law regulating tokens and their turnover? We are now witnessing the process of creating such a law. In the last few years, we have been flooded with token regulations, especially in countries or territories with high digital competences, PRC, US and the EU among them. In total, these cover over 2 billion entities. And this is no longer a trivial group. For lawyers the tomorrow has started today or, maybe, it started yesterday but no one noticed?

There is therefore no doubt that efforts need to be made to begin work on the issues identified. It is important, however, to approach the

144 Proposal for a Regulation of the European Parliament and of the Council on a Single Market For Digital Services (Digital Services Act) and amending Directive 2000/31/EC, COM(2020) 825 *final*.

145 Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), COM(2020) 842 *final*.

146 See Article 1(2) of the draft Digital Markets Act.

147 See Article 1(1)(b) of the draft Digital Services Act.

148 See: as to one of the first uses of the term: Don Tapscott and Alex Tapscott, *Blockchain revolution. How The Technology Behind Bitcoin Is Changing Money, Business, And The World* (Penguin Random House 2016).

149 See: Wright and De Filippi (n 4) 48–56.

control mechanisms carefully so as not to create a situation of overregulation of the market. Excessive legal restrictions may effectively block the development of new technologies and progress because of the high entry threshold for compliance with the standards in force. As a result, instead of ensuring security and transparency, mechanisms of control will become a monopolising instrument, as only technological giants will be able to afford to operate in such areas.

It should also be noted that algorithmisation appears not only on the ground of law from the perspective of legal practice but also from the impact of law on society. However, these are issues that fall under the broad term of cybernetics and the relationship of the citizen to the state apparatus. Although this apparatus also includes bodies both applying the law and overseeing compliance with the law, it is more about the algorithms that allow and regulate access to these bodies and allow the state to carry out its functions¹⁵⁰.

150 See Thomas D. Grant and Damon Wischik, *On the path to AI. Law's prophecies and the conceptual foundations of the machine learning age* (Palgrave Macmillan 2020). See Tom Barraclough, Hamish Fraser and Curtis Barnes, 'Legislation as a code for New Zealand: opportunities, risks, and recommendations' (2021) 3 NZLFRP 12-13.

Borderlands of the Law and Technology: from Digital Machines to LegalTech

Maria Dymitruk

1. Introduction

Since the creation of first computers¹ capable of automatically processing data due to software, i.e. due to inputting of a schedule of tasks to be performed into the memory of the machine, the borderlands of the law and technology has become an area of interest of many scholars, rekindling bold images of improving the work of lawyers and the functioning of the entire legal system. Inspired by the potential of “digital machines²”, lawyers quickly began to consider the possibility of applying technological achievements in the area of law. The first “wave” of technological development, which may be equated to LegalTech 1.0, crashed through the legal sector much later – principally in the 1980s and 1990s. During that period, the first commercial legal databases became popular (such as Westlaw or LexisNexis), accelerating the process of searching for information on the law and improving the day-to-day legal analysis by virtue of computer-assisted legal research (CALR). At the next stage of development, electronic databases publishing the contents of normative acts, case-law and the writings of the doctrine transferred to the online sphere, allowing for instant access to legal information that is updated in real-time. Each new “wave” of technological changes improved, and over time automated further components of the work of lawyers, leading to significant surge of interest in legal profession-related technologies among the practitioners (the so-called LegalTech boom) during the last few years. At first, LegalTech solutions served to improve and automate non-substantive activities

-
- 1 The first digital computers were created in the 1940s. One of the first of those was the ENIAC (Electronic Numerical Integrator and Computer), constructed in the USA in the mid-1940s.
 - 2 The term “computer” did not take hold all over the world at first. For instance, a computer was addressed in Poland with the monikers of a “digital machine”, a “cybernetic machine”, or a “mathematical machine”. It was not a coincidence that the first computer manufactured in Poland (1960s) was named “UMC” (“Uniwersalna Maszyna Cyfrowa”, Universal Digital Machine).

that were clerical or organisational (such as organising cases, managing electronic casefiles, invoicing, registration of working time, etc), in time allowing for support of substantive work of lawyers through automation of legal decisional processes.

Over the span of years, technological trends in the legal sector changed many times. Certain tendencies are, however, constant: lawyers that are also members of the academia are fascinated by technologies, capabilities and by dangers posed by the former for the law, and practitioners are continuously characterised by faint praise for (at times revolutionary) changes that are brought by technological development in the scope of their work. The description of transformations that the respective components of the legal landscape are undergoing in the broadly viewed area of IT is provided in many chapters of this monograph. The object of this chapter is not to reiterate them or to provide a synthesis thereof, but to present the development of academic research on the technological transitions in the law³. In that regard, one must stress that while the conservative approach of the majority of practitioners to new technologies induced the adoption of a slow schedule (belated when compared to other sectors of the economy) for adapting innovation in the area of law, the legal academia have always boldly looked into the future, often surpassing the actual capabilities of implementation in the field of IT and the law by decades.

For the purposes of avoiding any doubt, it must be emphasised at the very beginning that, from the academic point of view, there are many disciplines at the intersection of the law on one hand, and the mathematical sciences and informatics on the other: above all, legal informatics⁴,

-
- 3 This work makes no claim to be a definitive description for the stages of developing research on IT applications in the law. Its purpose is simply to indicate approaches to research in order to present the academic landscape that led to the creation of LegalTech, and the changes which that landscape underwent over the years, in an illustrative manner.
 - 4 It is not possible to create a single, uniformly accepted definition of legal informatics, and thus it is expedient to restrict the description of legal informatics to a term referring to the research on drafting and applying the law through the use of computers. For more on that subject see Abdul Paliwala (ed), *A history of legal informatics* (Series 9 LEFIS, Prensas de la Universidad de Zaragoza 2010) 1-287; Jacek Janowski, *Informatyka prawnicza* (C. H. Beck 2011) 2 – 14; Jacek Janowski, *Informatyka prawa. Zadania i znaczenie w związku z kształtowaniem się elektronicznego obrotu prawnego* (Wydawnictwo UMCS 2011) 328 – 340; Jacek Petzel, *Informatyka prawnicza. Zagadnienia teorii i praktyki* (LIBER 1999) 13 – 32.

but also legal cybernetics⁵ and jurimetrics⁶. The trends indicated above intertwine with one another, at times having inseparable fields of research. Nevertheless, they are joined primarily by the fact that all of them are theoretical and legal disciplines that fully draw from the achievements of science. Those disciplines are further linked to other fields of science on new technologies in the law (mainly doctrinal disciplines that are of interdisciplinary nature, aimed at researching the connection of substantive or procedural legal issues with the subject of technology), and often to the traditional areas of jurisprudence, such as the theory of law, legal logic, or philosophy of the law.

Somewhat in opposition to the theoretical deliberations on the influence of technology on the law, one could present LegalTech. This is because that is not a scientific discipline, but more of a field of business. While legal informatics and its cognate scientific disciplines address academic research and the creation of theoretical foundations for the purposes of future implementation, LegalTech should be viewed from the point of view of application. However, given that LegalTech is based on using contemporary IT in the area of law⁷, it could be assumed for the sake of simplicity that it constitutes an application of the achievements of legal informatics and related fields of study in legal practice. It constitutes a fragment of the economy, connecting the technological market with the market in legal services and with the broadly construed public legal space. It is therefore not surprising from the point of view of applicable terminology, that the use of “legal informatics” and cognate disciplines is preponderant in the academic literature, while the concept of LegalTech is used mainly by legal

5 The capability of applying cybernetics (the science of control and transmission of information connected thereto) in the area of law is subjected to analysis within the framework of that trend. Mario Giuseppe Losano is considered to be the creator of cybernetics. See Mario Giuseppe Losano, *Giuribernetica: Macchine e modelli cibernetici nel diritto* (Einaudi 1969), and Giuseppe Contissa, Francesco Godano and Giovanni Sartor, ‘Computation, Cybernetics and the Law at the Origins of Legal Informatics’ [in:] Simona Chiodo and Viola Schiaffonati (eds), *Italian Philosophy of Technology: Socio-Cultural, Legal, Scientific and Aesthetic Perspectives on Technology* (Vol. 35, Springer 2021) 91 – 110.

6 Jurimetrics is concerned with the application of quantitative methods (especially probability and statistics) to the law. Lee Loevinger is considered to be its creator. See Lee Loevinger, ‘Jurimetrics: The Next Step Forward’ (1949) 33, 5 Minn L Rev 455 – 493.

7 See more on that subject in the chapter “The Concept of Legal Technology (LegalTech). Legal engineering”, authored by Dariusz Szostek.

practitioners or by the representatives of the technology sector, who offer their products to lawyers or to public decision-makers.

It must be however stressed that the existence of the LegalTech sector which is directly linked to using IT solutions by lawyers (and, in technologically advanced instances of automation – also without the participation of lawyers, but for legal purposes) would not be possible if not for the prior theoretical and legal analysis of the possibilities of such application. Thus, it must be stated that the current popularity of practical IT applications in the field of law is the result of the earlier efforts of the members of the academia, who have already been exploring the issues created at the cusp of legal sciences and informatics for several decades. The aim of the present chapter is therefore to present the academic foundation, constituting a cornerstone of the current success of the LegalTech market, in two main areas: 1) legal information retrieval, legal IR, and 2) automation of legal decisional processes, including legal decision support systems (legal DSS), for they constitute the core of the LegalTech market in its current shape.

2. Searching for Information on the Law

Legal informatics, since time immemorial and by definition⁸, concerns itself with processing information on the law. A basic prerequisite for the system of law as such to function is its universality and the availability of information on the legal provisions in force, because those are the foundations of the legal assumption that awareness of the law is universal. Thus, it should come as no surprise that automatic search for (dispersed) legal information was, since the beginning, one of the main tasks the scholars addressing the potential of using technology in the law set for themselves. “Manual” search through huge (originally paper-based) databases was always a significant challenge in legal practice, being at the same time one of the key, but also one of the most time-consuming and labour-intensive tasks of a lawyer. Together with the development of the law, and with the occurrence of the phenomenon of regulatory inflation, that core of legal work became exceptionally onerous⁹. This problem was already addressed

⁸ For informatics is the science of processing information.

⁹ This problem became apparent earlier in the USA (compared to European countries). As early as in the early 1960s, there was a big discussion in the American legal community on the excessively swift growth rate of data with which a lawyer had had to familiarise him- or herself to carry out comprehensive legal analysis

in 1958 by Lucien Mehl, who in a paper titled “Automation in the Legal World: from the Machine Processing of Legal Information to the “Law Machine”¹⁰ pointed to the mechanisation of information retrieval as a remedy, positing that the purpose of that process would be the automatic discovery of relevant precedent (mainly in the scope of the common law systems), requisite article of a normative act (primarily in the scope of systems of continental law), or a fitting excerpt from the academic works.

1960s brought a much-appreciated initiative of John F. Harty of the University of Pittsburgh, who created the first automatic legal information retrieval system¹¹. The prosaic reason due to which that system was created had been the request of the Pennsylvania state authorities, wishing to minimise the financial strain and time considerations induced by the need to alter one phrase that the state administration was using, that is substituting the phrase “retarded child” with the more neutral phrase “exceptional child”¹². The system created by John Harty was capable of automatically finding legal enactments using certain phrases (here: primarily the terms “child” and “retarded”) which does not appear to be something exceptionally difficult today, but at that time constituted an undeniable breakthrough. That achievements later allowed for creation of the first commercial legal information retrieval systems, such as ASPEN and, later, LITE¹³. The second of the mentioned databases was, moreover, the biggest database of legislation and case-law in the USA in the 1970s¹⁴. It is specifically worth noting that, while lawyers were never viewed (and still are not viewed) as the “technological vanguard”, the first text information retrie-

(see William G. Harrington, ‘A Brief History of Computer-Assisted Legal Research’ (1984) 77, 3 Law. Libr. J. 543. In Europe, the phenomenon of “information crisis in the law” was belated for at least a decade (Petzel (n 4) 209). (see William G. Harrington, ‘A Brief History of Computer-Assisted Legal Research’ (1984) 77, 3 Law. Libr. J. 543. In Europe, the phenomenon of “information crisis in the law” was belated for at least a decade (Petzel (n 4) 209).

10 Lucien Mehl, *Automation in the legal world* (National Physical Laboratory 1958) 755.

11 Jon Bing, ‘Performance of Legal Text Retrieval Systems: The Curse of Boole’ (1987) 79 Law. Libr. J. 187.

12 Jon Bing, ‘Let there be LITE: a brief history of legal information retrieval’ (2010) 1 European Journal of Law and Technology.

13 LITE is the abbreviation of Legal Information Through Electronics.

14 For more on the subject of those systems, and on other examples of legal information retrieval systems, see Jacek Petzel, *Systemy wyszukiwania informacji prawnej* (Wolters Kluwer 2017) 372; Harrington (n 9) 543 – 556.

val systems were created due to their efforts¹⁵. However, this conclusion should not give one pause, for the law is an area profoundly based on text, and the need to use textual information while in legal practice at times far exceeds such a need within other areas of societal life. Thus, it should come as no surprise those were the lawyers who, as one of the first, actively participated in the work on the automation of information retrieval from text.

Ever more frequent commercial implementation successes in the scope of legal information retrieval in the law obviously were corresponding to the development of research in that field. From the simple search based on keyword and Boolean algebra, the research on IR in the law underwent a long process, and one that was also reinforced by the achievements in the field of research on the AI¹⁶. It needs to be pointed out that the producers of commercial legal information databases long refrained from transitioning to more advanced approaches to IR, which was met with criticism not only by the academia, but also by the very users of those systems,

15 Jon Bing rightfully highlights that issue, while at the same time pointing out that those early achievements contributed to (significantly later) success of Internet search engines. See Bing (n 187), quote: “*One may point out that though lawyers are not known for being technological avant-gardists, text retrieval was actually developed by lawyers and for lawyers, due to the need to consult the authentic text for legal interpretation. The search engines of the Internet today harvest what was sown by the early efforts of the legal community*”.

16 In that regard, an important role was played by *inter alia* research of Carole Hafner on the use of research approaches in the field of AI & Law to improve the quality of legal information retrieval (see Carole Hafner, ‘Representation of knowledge in a legal information retrieval system’ in: *Proceedings of the 3rd annual ACM conference on research and development in information retrieval* (1980) 139). During the later period, the works of Marie-Francine Moens were also important in the field (see e.g. Marie-Francine Moens, Caroline Uyttendaele and Jos Dumortier, ‘Abstracting of legal cases: The SALOMON experience’ (ICAAIL’97: Proceedings of the 6th international conference on Artificial Intelligence and Law, Melbourne, 30 June – 3 July 1997); Marie-Francine Moens, Caroline Uyttendaele, Jos Dumortier, ‘Information extraction from legal texts: the potential of discourse analysis’ (1999) 51 *International Journal of Human-Computer Studies* 1155), and so were those of Edwina Rissland and Jody Daniels (see Jody Daniels and Edwina Rissland ‘Integrating IR and CBR to locate relevant texts and passages’ (Database and Expert Systems Applications, 8th International Conference, Proceedings, DEXA’97, Toulouse, 1-2 September 1997); Jody Daniels, Edwina Rissland, ‘What you saw is what you want: Using cases to seed information retrieval’ in *International Conference on Case-Based Reasoning* (Springer, Berlin, Heidelberg 1997) 325).

which in a way forced the producers to make use of the achievements of the AI & Law trend in that regard¹⁷.

As of now, there are two main approaches to legal information retrieval to be discerned¹⁸: one based on manual knowledge engineering, and the other based on techniques of natural language processing (NLP)¹⁹. The first concept is based on inference, in turn based on cases (case-based reasoning, CBR) and on the existence of legal ontologies, by which one should understand formal structures of concepts and relations between them, intended to organise information on a given field of study²⁰. In this instance, retrieving information on the law is an attempt of translating how the lawyers classify their cases into the language understandable for a computer system²¹.

The second approach to managing automatic legal information retrieval is based on the techniques of natural language processing (automatic linguistic analysis). Through that approach, IR is founded on the assumption that there does not exist a single possible manner of organising knowledge on the law. Here, a computer system enables the user to input search queries in natural language (in a language that humans use for communication between them; non-formalised language). The guiding idea on which NLP systems are based is to enable interaction with computer systems that

17 Petzel (n 14) 269.

18 See Tamsin Maxwell and Burkhard Schafer, 'Concept and Context in Legal Information Retrieval' (Proceedings of the 2008 conference on Legal Knowledge and Information Systems: JURIX 2008: The Twenty-First Annual Conference, 8 July 2008) 63.

19 NLP is the domain of AI which handles automation of analysis, construction, translation and generation of natural language by a computer system.

20 The principal aim of legal ontologies is to formalise the knowledge on the law. To quote Adam Wyner: "*An ontology is an explicit, formal, and general specification of a conceptualisation of the objects and structural relations between those objects in a given domain. It defines a common vocabulary and organization of information which can be shared, tested, and modified by researchers.*" (see Adam Wyner, 'An ontology in OWL for legal case-based reasoning' (2008) 16 Artificial Intelligence and Law 362).

21 Maxwell and Schafer, '(n 193) 64. In that paper see more on the subject of disadvantages and advantages of the approach to IR which is based on the traditional knowledge engineering (specifically, as far as its disadvantages would be concerned, causing low efficacy of that strategy for practical legal applications, including its problems with efficiency and scalability).

is natural for a human²². The task for natural language processing models is then to identify and isolate rules of natural language, in such a manner that unstructured data would be converted in a form understandable for a computer system, which then retrieved a respective meaning therefrom²³. One could then place their greatest hopes for improving both academic and commercial legal information retrieval systems²⁴ in the development of NLP techniques²⁵.

3. *The Automation of Legal Decision-Making Processes*

The question regarding the construction of a machine capable of adjudicating legal cases was raised surprisingly early, for in 1948 already, by the founder of legal geometry, Lee Loevinger²⁶. Ten years later, Lucien Mahl, in the above cited publication: *Automation in the Legal World: from the Machine Processing of Legal Information to the "Law Machine"* of 1958, theorized not only about the possibility of automating the retrieval of legal information, but also on the automation of legal reasoning. He viewed the latter in two varieties: 1) a narrow one, involving the issuance of decisions within a very specific, specialised area of law, and 2) a wide one that assumed the existence of a "consultation machine" which would be capable of assisting a lawyer in problems originating from several areas of law²⁷. He saw this machine as a system based on classical logic, which corresponds to scientists' original ideas about the possible methods of automation of legal reasoning. He illustrated his theoretical assumptions

22 At the same time, it should be recalled that research and implementation in the field of techniques for processing natural language must, to a large extent, occur separately for every language, having in mind the specifics of a given language.

23 As one could easily guess, the main problem for researchers of NLP lies in the nature of human language and the ambiguity inscribed into it.

24 For more on the advantages of NLP for the legal field, see Haoxi Zhong, Chaojun Xiao, Cunchao Tu, Tianyang Zhang, Zhiyuan Liu and Maosong Sun, 'How Does NLP Benefit Legal System: A Summary of Legal Artificial Intelligence', (2020) arXiv:2004.12158 arXiv.org.

25 The LEMKIN project, which is aimed at creating an intelligent legal information system and is headed by Aleksander Smywiński-Pohl (<<https://lemkin.pl>>, accessed on 08.02.2021) remains an interesting Polish initiative in the area of using natural language processing techniques.

26 The original wording is "Why should not a machine be constructed to decide lawsuits?"; Lee Loevinger (n 6) 455.

27 Mehl (n 10) 768.

using the example of a machine operating within the area of tax law²⁸. Tax law - due to its specific, often binary nature - quickly became, moreover, one of the first branches of law on the basis of which actually functioning automation systems have been built. This happened almost twenty years later in 1977, when L. Thorne McCarty presented the TAXMAN system²⁹, he had developed. This system was concerned with modelling selected aspects of the conceptual structures found in the US legislation relating to the taxation of corporate transformation. The system was able to carry out simple legal reasoning and, based on the description of a case concerning company transformation, analyse the presented facts in terms of selected legal concepts (contained in the provisions of the Code and not resulting from the case-law)³⁰.

Obviously, academic debate on automation of legal reasoning was closely intertwined with the development of research on AI. The first important contribution in that field is the 1970s paper *"Some Speculation About Artificial Intelligence and Legal Reasoning"* by Bruce Buchanan and Thomas Headrick³¹, who may be said to be the founding fathers of the "AI & Law" approach³². While the deliberations on the possibility of using AI in order to automate legal decision-making processes were rather preliminary in nature during the 1970s, 1980s brought rapid development of research on AI & Law, resulting in the transition from purely theoretical deliberations to practical actions. For instance, Marek J. Sergot et al. used logic programming during that time to formalise the British Nationality Act

28 Ibid 771 – 776.

29 L. Thorne McCarty, 'Reflections on TAXMAN: an experiment in artificial intelligence and legal reasoning' (1977) 90, 5 Harv. L. Rev. 837.

30 That project was continued as TAXMAN II (see L. Thorne McCarty and Natesa Sridharan, 'The Representation of an Evolving System of Legal Concepts: II. Prototypes and Deformations' (Proceedings of the Seventh International Joint Conference on Artificial Intelligence: IJCAI-81, Vancouver, 24-28 August 1981) 246.

31 Bruce Buchanan and Thomas Headrick, 'Some Speculation About Artificial Intelligence and Legal Reasoning' (1970) 23, 1 Stan. L. Law Rev 40.

32 Bruce Buchanan was one of the creators of the DENDRAL expert system, created a year before that, automating the identification of molecular structure of unknown organic compounds on the basis of the electromagnetic spectrum. In a paper *"Some Speculation About Artificial Intelligence and Legal Reasoning"* the authors proposed using the DENDRAL's achievements in the legal field, i.e. creating an analogous program which would be able to identify a legal issue and create the potential ways to solve it.

1981³³. Despite the fact that the Act at issue exhibited typical legislative problems (lexical complexity, ambiguity, and references to hitherto introduced legislation), a major part of that Act was successfully translated into programming language named “Prolog”. 1987 turned out to be a breakthrough year for research on AI&Law³⁴, when the first international ICAIL academic conference (International Conference on Artificial Intelligence and Law) was held³⁵. That venue became the main forum for presenting and exchanging opinions in the field of scientific research on AI in law³⁶. Interestingly and since the very beginning, the conference served as a venue for demonstration of implementations in the field of automation of decision-making processes in the law, including legal reasoning support systems³⁷. For example, Richard Susskind and Phillip Caper presented the Latent Damage System, an expert system whose purpose was to support counsel in applying the UK’s Latent Damage Act 1986, during ICAIL’89³⁸. What is more, the system thus created was a commercial endeavour, becoming the first expert system in the world meant for lawyers (sold on floppy disks, together with a manual describing the workings of that system), and one which was equipped not only with knowledge on the Act itself and on precedents by British courts, but also with the general context of tort law, law of obligations, and on product liability rules.

The scientific approach to automation of decision-making in the scope of the law, and, by further extension, approach to implementation thereof, were developed in parallel to the general trends in the field of research

33 Marek J. Sergot, Fariba Sadri, Robert A. Kowalski, Frank Kriwaczek, Philip Hammond and Hary T. Cory, ‘The British Nationality Act as a logic program’ (1986) 29 Communications of the ACM 370.

34 Two very influential academic works (which were extended versions of doctoral dissertations) in the field of AI&Law were published in 1987: *An Artificial Intelligence Approach to Legal Reasoning* by Anne Gardner and *Expert Systems in Law* by Richard Susskind.

35 Previous meetings of researchers active in the field of AI&Law were singular in nature.

36 Other important fora for exchange of opinions were in time found in the annual JURIX conference, organised since 1988, and the *Artificial Intelligence and Law* scientific journal, published since 1992.

37 On the need of greater focus of research on AI & Law on practical applications of theoretical models, already in the 1990s, see Anja Oskamp, Maaïke Tragter and Cees Groendijk, ‘AI and Law: What about the Future?’ (1995) 3 *Artificial Intelligence and Law* 209.

38 Richard Susskind, ‘The Latent Damage System: a jurisprudential analysis’ (ICAIL ’89: Proceedings of the 2nd International Conference on Artificial Intelligence and Law, Vancouver 1989) 23.

on AI, going a long way from approaches of symbolic AI that were based on logic³⁹, which were in time dubbed “Good Old-Fashioned Artificial Intelligence”, or “GOF AI” and found their expression largely in expert legal systems, to advanced models within the trend of computational intelligence, including *inter alia* systems based on fuzzy logic⁴⁰, neural networks⁴¹, or evolutionary computation, which in practice resulted in, among other things, legal applications of efficient machine learning (ML) systems⁴². The last of those in particular turned out to be in great demand for implementation in the area of law, being the main animating force of the contemporary development of the LegalTech sector. The applications in the scope of legal analytics or predictive analytics based on ML solutions are most prevalent within that sector, both in regard to implementation in legal offices and to the broadly understood public sphere. However, those are to an extent burdened with the problem of the lack of explainability and with difficulties related to the quality of data used to train a ML system (including the issue of bias)⁴³. The above constitute key difficulties for responsible implementation of advanced systems automating legal decision-making processes in practice⁴⁴, and thus are subject to increased

39 For more on the subject of history of the development of that approach (together with the categorisation of rules-based and case-based reasoning systems, and valuable examples in the scope of CBR systems, such as HYPO and CATO), see the chapter “Computational Legal Problem Solving: What Can LegalTech Learn from the AI and Law Research, and Beyond” by Michał Araszkiewicz.

40 For instance, see Tecla Mazzaresse, ‘Fuzzy Logic and Judicial Decision-Making: A New Perspective on the Alleged Norm-Irrationalism’ (1993) 2 Proceedings of the Computer and Vagueness: Fuzzy Logic and Neural Nets. Informatica e diritto 13; Jacky Legrand, ‘Some guidelines for fuzzy sets application in legal reasoning’ (1999) 7 Artificial Intelligence and Law 235.

41 See e.g. Jürgen Hollatz, ‘*Analogy making in legal reasoning with neural networks and fuzzy logic*’ (1999) 7 Artificial Intelligence and Law 289; Lothar Philipps and Giovanni Sartor, ‘*Introduction: from legal theories to neural networks and fuzzy reasoning*’ (1999) 7 Artificial Intelligence and Law 115.

42 For more see JC JC Smith, ‘Machine Intelligence and Legal Reasoning’ (1998) 73 Chi.-Kent L. Rev. 277.

43 For more see the chapter “Computational Legal Problem Solving: What Can LegalTech Learn from the AI and Law Research, and Beyond” by Michał Araszkiewicz.

44 See in that regard (in particular for the automation of judicial proceedings) conference paper: Maria Dymitruk, ‘Need for explainable artificial intelligence in automated judicial proceedings’ (Doctoral Consortium at 17th International Conference on Artificial Intelligence and Law, Montreal 17 – 21 June 2019).

interest of academia active in the field of AI&Law⁴⁵. It is very likely that, again, it is going to be the academia that would find a solution to the growing pains of innovative implementations in the field of LegalTech, ensuring safer and more ethical framework for development of legal technologies.

4. Conclusions

To sum up, it is worthwhile to return to the first, purely theoretical deliberations on the possibility of automation within the law. Despite the passing of decades, those retain a certain modicum of relevance due to their universal nature. As Lucien Mehl wrote in 1958, “thus although the juridical machine is suited to conduct legal argument, it is incapable of evaluating facts. This task falls to man, because the factual world often defies pure (rational) analysis. Finally, although the machine may be able to suggest solutions to us, it cannot formulate precepts. Elaborating the principles of law is for man to undertake. A juridical machine can thus only be an aid to the jurist and not a substitute for him. We shall have no “electronic judges” in the world to come, any more than we shall have a machine to rule us”⁴⁶. Regardless of the fact that those words were expressed some 63 years ago, and the degree of generality of theses posited by them partially precludes fully agreeing to them, they are still relevant to a degree – pointing out key (extra-technological) challenges related to the development of legal informatics and the LegalTech sector. After all, Lucien Mehl rightly foresaw that automating systems within the law would better handle legal reasoning which would be an analysis of the sources of law (regardless of whether a precedent or a normative act would

45 On explainability, see Karl Branting and others ‘Semi-Supervised Methods for Explainable Legal Prediction’ (Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law (ICAIL '19), Montreal, 17 – 21 June 2019) 22; Jeroen Keppens, ‘Explainable Bayesian Network Query Results via Natural Language Generation Systems’ (Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law (ICAIL '19), Montreal, 17 – 21 June 2019) 42. On the problem of bias see Songül Tolan, Marius Miron, Emilia Gómez and Carlos Castillo, ‘Why Machine Learning May Lead to Unfairness: Evidence from Risk Assessment for Juvenile Justice in Catalonia’ (Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law (ICAIL '19), Montreal, 17 – 21 June 2019) 83.

46 Mehl (n 10) 778.

be such a source) instead of a reasoning related to facts of a case (including the reasoning completed by making a decision on evidence).

Despite the existence of many problems related to the intersection of the law and technology (which are partially still left unsolved despite increased effort of representatives from both the area of law and the sciences in the field of IT), the majority of the representatives of the LegalTech sector adamantly promote the broadest possible implementation, and acceleration of work on automation. This chapter might have been ended on a somewhat trivial note, to the effect that while academics gladly explore the ‘technological’ areas in the law, the legal market is characterised by a conservative approach to new technologies and sluggishness in implementing innovations in practice. Thus, intensifying work for the purpose of broadening the use of LegalTech solutions by lawyers remains essential. This thesis is true, yet it does not paint a full picture of results brought by the development of the LegalTech sector.

While there is no place here for carrying out full analysis of potentially dangerous outcomes related to the intersection of the law and technology, and in the scope of automation in particular, it is worth noting that there are extant dangers even within an ostensibly trivial area of LegalTech application, namely legal information retrieval (markedly less controversial than automation of decision-making processes), and such dangers are not trifling matters. To explain the thesis thus posited, one must point to the fact that the reason for the success of legal informatics, and the LegalTech sector as a result, is still found in the processing of information on the law. The examples of developing that processing of information set out in this chapter show the degree to which the capability of IT systems to form automatic conclusions from that processing is key. Unrestricted access to any legal information, dreamt of by scientists over a half of a century ago, appears to come into being as of now, often leading to the situation of the excessive influx of information. That in turn results in the vastness of information (e.g. the hitherto unpublished judicial decisions) being brought *en masse* to the legal information databases, risking the throttling of the area of law⁴⁷. This is not only relevant to the difficulties with “manual” analysis of excessive amount of data by a single lawyer, unable to review thousands of judicial decisions attributed to a given legal provision subject to analy-

47 This risk is pointed out by Tamsin Maxwell and Burkhard Schafer, ‘Concept and Context in Legal Information Retrieval’ (Proceedings of the 2008 conference on Legal Knowledge and Information Systems: JURIX 2008: The Twenty-First Annual Conference, 8 July 2008) 63.

sis. This problem is equally relevant while using solutions automating legal analysis. An explosion of electronic databases accessible online, filled with hundreds of thousands of judicial decisions, coupled with the capability of creating predictive models based on those decisions⁴⁸ may for example result in equalling the importance of a momentous judicial decision by a court of higher instance (which would shape the jurisprudence of lower instance courts in the future) with a single, poorly written, and not very well reasoned decision of a court at the lowest instance. That example rightly shows how many pitfalls (some of which not readily apparent) are borne out of even a prosaic use of technology in the field of law.

The efforts of the academia in braving the subsequent milestones (including every hardship and shortcoming) in the area of technology and the law must thus be viewed with full appreciation. Those efforts led us to a situation where we can observe and analyse the LegalTech market. It is also up to us to appropriately shape the development of that portion of the market, having in mind not automation at any cost, but the complementary effort of humans and technology in offering the highest possible quality of legal services, public legal services included⁴⁹.

48 Predictive analysis consists in automatic prediction of probability for certain events to occur in the future on the basis of historic data, e.g. predicting the outcome of judicial proceedings on the basis of data on existing case-law of the courts, and of the facts of the case the outcome of which is being predicted. Its current iteration is most often based on advanced models of machine learning.

49 In that scope see also Frank Pasquale, 'A Rule of Persons, Not Machines: The Limits of Legal Automation' (2019) 87, 1 *Geo. Wash. L. Rev.* 1.

Legal Tech - Bringing Law into the “Twentieth” Century

by *Tomasz Grzegory, Janos Puskas*

1. Introduction

Legal professionals are renowned for their affection for the past. One could say that dogmatism is in the DNA of the legal profession. We still heavily rely on paper documents, attorney’s letters delivered by registered mail, telephone calls and emails - all of which are 20th century inventions.

The global pandemic quickly levelled us up to video chats, online collaboration and cloud computing. Still, these are inventions from the past century, only, until now, largely disregarded by the legal industry.

However, the world outside is changing at an exponential rate. Innovation and disruption are the key leading drivers of human development. Technology is changing our everyday lives.

This applies to the legal profession as well. There are some exciting ideas to leverage technology and use it for the benefit of lawyers and their clients. Some of them are becoming working products, but innovations are yet to have a disruptive impact on everyday work.¹ Legal tech has a high potential when it comes to supporting law firms or legal departments in their processes and helping improve their effectiveness. However, the legal profession is still behind other businesses in the adoption of innovative technologies and the use of legal tech is not widespread in practice.² This is attributable only partially to the fact that statutory regulations do not keep up with the development of technology.

1 Helena Hallgarn, ‘Legal Tech: Moving from ideas to execution’ (2020) <<https://www.legalbusinessworld.com/post/legal-tech-moving-from-ideas-to-execution>> accessed 15 February 2021.

2 The Law Society of England and Wales, ‘Lawtech Adoption Research Report’ (2019) <<https://www.lawsociety.org.uk/topics/research/lawtech-adoption-report>> accessed 15 February 2021.

2. *"If Only I Had the Right Questions!" Where Are We and Where Do We Go in the Legal Tech?*

Lawyers face the challenges of transforming markets, data overload and ever-increasing complexity of information while meeting client's expectations and staying productive. In order to fulfil work objectives, it is already helpful to apply innovative changes and automate certain tasks. Introducing new technologies in daily practice becomes indispensable.

Most of the challenges stem from the ever-increasing and fast-changing regulatory environment. Over time, regulatory frameworks become more complex and detailed, with more and more new regulated areas. A perfect example of this are the recent (and future) regulations in the European Union affecting digital services, like GDPR and DSA. The expansion of consumer regulatory framework leads also to customer-facing companies receiving an increased number of complaints, which are more and more complex. According to Google's transparency report³, Google has received a total of 1 011 696 'right to be forgotten' removal requests (concerning 3 971 081 URLs) by individuals since January 2015.

In addition to European Union regulations, national content monitoring laws like the German NetzDG generate further legal obligations on tech organizations. Digital service providers regularly receive requests to remove content from their products by courts and government agencies around the world. According to Facebook's transparency reports, Facebook has performed 10 content removals by the request of the Hungarian government⁴ and 12 content removals by the request of the Polish government⁵ since 2017.

It is important to point out that the regulatory burden has increased across industries in the past decades. If we consider the EU level legislation together with the national level legislation regarding a specific case, it may be necessary to review thousands of pages of legal material in order to answer a legal question.

The increasing number of regulations generates both legal and operational tasks. These tasks can be performed either by humans or by applying

3 According to data published on 25 February 2021 <<https://transparencyreport.google.com/eu-privacy/overview?hl=en>> accessed 26 February 2021.

4 According to data published on 25 February 2021 <<https://transparency.facebook.com/content-restrictions/country/HU>> accessed 26 February 2021.

5 According to data published on 25 February 2021 <<https://transparency.facebook.com/content-restrictions/country/PL>> accessed 26 February 2021.

legal tech solutions. As we explain below, deploying legal tech solutions will be more efficient and cost-effective in the long run.

Certain legal tasks or procedures (e.g., due diligence, compliance investigations) require lawyers to review large amounts of data. As companies accumulate more and more data and work with digital tools, the number of documents to be reviewed is also constantly increasing.

3. What’s Hot in the Legal Tech?

The buzzwords of the early 21st century are among others: #bigdata, #blockchain, #machinelearning, #AI, #cybersecurity, #encryption, #collaboration, #cloudcomputing.

In our present review we group legal tech applications into two categories: the first contains generic software that is used by legal professionals to provide back-office support to teams of law firms’ employees (such as automated billing software, timesheet software, project management tools, communication tools, online security tools), the second contains software applications that are designed and tailor made with solely the legal industry in mind (e.g. tools for legal research, e-discovery, contract management, predictive analytics).

Both groups however have one common denominator. They are using already existing ideas and solutions that were repurposed to serve legal functions.

Within applied legal tech, some promising areas of development emerged:

- Text analysis: The automated process of sorting unstructured text data, making it easier to retrieve relevant information. A massive amount of paperwork can be generated when conducting various legally important processes (e.g., due diligence). Well-designed algorithms can analyze thousands of documents better and faster than the human workforce. Such tools search through an organization’s documents to automatically pick out legal concepts - which helps reduce risk and make the due diligence process a whole lot faster.⁶

6 Alejandro Esteve de Miguel Anglada, ‘AI and Machine Learning in Legal: Tools Every Lawyer Needs to Know (In a Nutshell)’ (2020) <<https://blog.biglelegal.com/en/ai-and-machine-learning-legal-tools-every-lawyer-needs-to-know>> accessed 22 February 2021.

- Text analysis software is widely used in knowledge-driven organizations to discover new information or help answer specific research questions from large collections of documents.⁷ First, text analysis gathers unstructured data from multiple text-based data sources. Then, it detects and removes anomalies by conducting pre-processing and cleansing operations and extracts all relevant information. After the extraction, the software converts the information into a structured form that can be further analyzed or presented directly.⁸
- Text analysis uses various methods to process texts, one of the most important is ‘*natural language processing*’.
- E.g., an advanced text analytics software⁹ combines text analytics with machine learning technology and natural language processing in order to automatically identify and structure all possibly relevant information from all types of text data. In addition, the software allows its users to customize the system’s capabilities and tailor the system to the user’s own operational specifications and requirements.
- Law firm practice and compliance management: There are Task/Matter Management software, through which certain business tasks can be subdivided and distributed among different corporate departments/lawyers, this makes whole projects more transparent. The participants of the project can collaborate effectively and comment on the current work progress. This category also includes applications for document storage and automated billing. The most advanced software is capable of performing all the relevant tasks on their own, automating all business and legal processes.¹⁰
- Most of these software enables to track performance on ongoing legal matters, reporting and invoicing on client projects, remotely manage legal cases, automatically log working hours and manage all email and communication and other documents.

7 Kevin D. Ashley, *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age* (Cambridge University Press 2017) 88.

8 Linguamatics, ‘What is Text Mining, Text Analytics and Natural Language Processing?’ <<https://www.linguamatics.com/what-text-mining-text-analytics-and-natural-language-processing/>> accessed 22 February 2021.

9 An example is Kira Systems <<https://kirasystems.com/>> accessed 20 February 2021.

10 Salvatore Caserta and Mikael Madsen, ‘The Legal Profession in the Era of Digital Capitalism: Disruption or New Dawn?’ (2019) 149 *iCourts Working Paper Series* 10.

- E.g., an advanced practice management software¹¹ offers customized solutions not only for law firms, but also specifically for in-house legal teams and business teams. The contract management solution with a contracts database can support the alignment between legal and business units and significantly increase the transparency of contracting processes. Legal information processed by the software (on scale) may serve as a relevant data asset supporting business decisions.
- Communication tools: COVID-19 accelerated the use of online collaboration tools, cloud computing technologies, online video conferencing platforms and much more. The pandemic has forced an acceleration of the digital transformation in all industries. This created an interesting loopback - businesses migrated online and the legal industry had to follow.

4. *‘All that Glitters Is Not Gold’*

Artificial intelligence (AI) has taken our world of expectations by storm. Nowadays, AI is often portrayed as a disruptive, almost magical technology that is going to entirely reform the legal profession as well.¹² It may even seem that AI could offer a solution to any problem concerning businesses or the legal profession. ‘AI’ is by far the most frequently used (and abused) buzzwords of the recent years. Even though it generates a constant buzz, the term ‘artificial intelligence’ can be a bit misleading when it comes to legal tech applications. In general, we can conclude that using the term ‘machine intelligence’ instead of ‘artificial intelligence’ is more accurate in the context of legal tech (please see detailed explanation of this distinction below, under the technology background).

Due to the current hype around AI, it may seem like every legal tech company is an AI solutions provider. The term ‘*AI washing*’ refers to the marketing practice based on inaccurate labeling of certain products or services to imply that they deliver AI, when in fact they might be nothing more than a simple automation, basic statistics or a new marketing spin

11 An example is InvestCEE <<https://investcee.hu/>> accessed 22 February 2021.

12 Andrew Ng, ‘What Artificial Intelligence Can and Can’t Do Right Now’ (2016) Harvard Business Review <<https://hbr.org/2016/11/what-artificial-intelligence-can-and-cant-do-right-now>> accessed 22 February 2021.

for an existing application.¹³ Automation is the result of a machine being told by a human precisely what to do, and then successfully doing it. This is a simple execution of a command that cannot qualify as an AI, since it is not trained to improve by itself over time. For example, digital signatures and excel formulas are automations that cannot be considered as AI solutions.

The phenomenon of “washing” isn’t new – we had experienced it with ‘green washing’ and ‘cloud washing’. Moreover, the tech industry has always been infatuated with buzzwords: before AI, ‘big data’, ‘cloud computing’, ‘web 2.0’ were trending.

The reality is that some “AI companies” don’t employ AI at all and only using the word to get funding or to generate attention and sales, leaving their customers dissatisfied by failing to live up to their own promises. AI washing risks turning artificial intelligence into nothing more than a broadly ignored marketing term by overinflating expectations¹⁴ and creating widespread misconceptions related to AI, including its powers and what it can and cannot do.¹⁵ At the end of the day, this commercial opportunism may lead people to lose trust in AI’s functionality and struggle to accept and adopt AI into their lives.

5. So, What Does ‘Artificial Intelligence’ Really Mean in the Legal Tech?

In addition to the AI-washing phenomenon, AI’s unclear definition¹⁶ certainly aids in the confusion and deception regarding its applications. AI is a broad, ‘umbrella’ term covering plenty of different technology solutions (from the state-of-the-art deep learning models to human coded rules), thus, it can be complicated to determine which tool should count as AI and which shouldn’t.

13 Stephanie Overby, ‘AI vs. automation: 6 ways to spot fake AI’ (2016) The Enterprisers Project <<https://enterpriseproject.com/article/2020/3/ai-vs-automation-6-ways-spot-fake-ai>> accessed 23 February 2021.

14 Kaveh Waddell, ‘The Dangers of “AI washing”’ (2019) <<https://www.axios.com/ai-washing-hidden-people-00ab65c0-ea2a-4034-bd82-4b747567cba7.html>> accessed 23 February 2021.

15 Dr Bimal Roy Bhanu, ‘AI-washing: is it Machine Learning ... or Worse?’ (2019) <<https://financialit.net/blog/artificial-intelligence/ai-washing-it-machine-learning-or-worse>> accessed 23 February 2021.

16 Michael Legg, Felicity Bell, ‘Artificial Intelligence and the Legal Profession: Becoming the AI-Enhanced Lawyer’ (2019) 38(2) University of Tasmania Law Review 38.

Researchers in the field of artificial intelligence largely agree that AI means computer science methods that allow machines to complete tasks normally viewed as requiring human intellect, in other words, the ability of computers to exhibit human-like cognitive abilities. So, AI mimics certain operations of the human mind. Also, there is a difference between Strong AI (or AGI) and Weak AI (or Narrow AI): Weak AI focuses on performing a specific task¹⁷, while Strong AI can perform a variety of functions, and over time, it might (or might not) develop a human-like consciousness instead of simulating it, like Weak AI does.¹⁸ AI currently used in legal technology have defined functions, so they are considered as Weak AI.

The terms “*machine learning*”, “*machine intelligence*” and “*artificial intelligence*” are often used interchangeably.¹⁹ Instead of these three terms being identical, machine learning and machine intelligence are subsets of AI.

In particular, machine intelligence (as a form of Weak AI) means that the machine is programmed with some (but not all) aspects of human intelligence, including problem solving, prioritization and learning. It enables a technology (a machine, an algorithm or a device) to interact with its environment intelligently, meaning that it can take actions to maximize its chance of successfully accomplishing its objectives.²⁰ It is the intersection of artificial intelligence and machine learning.

Machine intelligence is a more exact term for legal tech applications in general because it covers the full spectrum of functions (learning, problem solving, prioritization) that legal tech applications may offer at the moment, contrarily to ‘AI’ which is a broader and less accurate term. The functions of machine intelligence are still very far from what a Strong AI (i.e., a hypothetical machine that exhibits behavior at least as skillful and flexible as a human’s) could perform.

And machine learning (ML) is one specific element of machine intelligence that centers around data, in which the computer uses algorithms

17 The Law Society of England and Wales, ‘AI: Artificial intelligence and the Legal Profession’ (2018) <<https://www.lawsociety.org.uk/topics/research/ai-artificial-intelligence-and-the-legal-profession>> accessed 24 February 2021.

18 Marcelo Corrales, Mark Fenwick, Nikolaus Forgó, *Robotics, AI and the Future of Law*. (Springer 2018) 59.

19 Kate Prengel, ‘AI washing: Why Does it Matter?’ (2020) <<https://pivotalprediction.com/ai-washing-why-does-it-matter/>> accessed 24 February 2021.

20 Stephanie Enders, Cathy King, Spencer Murray, Anna Koop, ‘Machine Intelligence, Artificial Intelligence & Machine Learning’ (2016) <<https://www.amii.ca/latest-from-amii/machine-intelligence-artificial-intelligence-machine-learning/>> accessed 24 February 2021.

planted in the software to learn from data and improve automatically through experience. The aim of ML algorithms is to build a model based on sample data ("*training data*")²¹ that can make decisions or predictions about new, previously unseen sample data without being explicitly programmed to do so. ML is used in a wide variety of applications, e.g., such as e-mail filtering, image or speech recognition, automatic language translation, recommender systems and autonomous vehicles.

There is a difference also between 'supervised', 'unsupervised' and 'reinforcement' learning. Supervised learning means that the algorithm is trained with labeled data, i.e., the algorithm is using some data that is already tagged with the correct answer (output variables are given besides input variables).²² Unsupervised learning means that no labels are given to the learning algorithm, the algorithm needs to find a structure in its input on its own. Reinforcement learning means that the algorithm interacts with a dynamic environment in which it must perform a certain goal (like driving a vehicle) while constantly receiving feedback.²³

Machine learning is based around '*pattern recognition*'. This means that the algorithms can learn to recognize certain patterns based on a set of previously observed data. Once the algorithm is trained to identify a pattern, it uses that as a basis of comparison for all new data.²⁴ Pattern recognition can also detect anomalies, for example, it can point out to lawyers the areas that tend to be overlooked in legal documents, as well as highlighting missing pages, incorrect or strange words and extra clauses - among other things - so lawyers know exactly where to look while double-checking contracts. Face recognition and visual search are among the top uses for pattern recognition, where the algorithm describes pictures so they can become searchable.²⁵ The ultimate aim of pattern recognition technology is to simplify and connect analytics' or search results.

21 Lauri Donahue, 'A Primer on Using Artificial Intelligence in the Legal Profession' (2018) Jolt Digest <<https://jolt.law.harvard.edu/digest/a-primer-on-using-artificial-intelligence-in-the-legal-profession>> accessed 24 February 2021.

22 Harry Surden, 'Machine Learning and Law' (2014) 89(1) Washington Law Review 103.

23 Exigent-Group, 'Why Machine Learning is Key to Legal Transformation' (2020) <<https://www.exigent-group.com/blog/why-machine-learning-is-key-to-legal-transformation/>> accessed 24 February 2021.

24 Zee Gimon, 'What Is Pattern Recognition in Machine Learning' (2019) <<https://huspi.com/blog-open/pattern-recognition-in-machine-learning>> accessed 25 February 2021.

25 Yulia Gavrilova, 'Pattern Recognition and Machine Learning' (2020) <<https://serokell.io/blog/pattern-recognition>> accessed 25 February 2021.

Since ML algorithms are based on the training data, machine learning becomes more effective as the size of the training dataset grows. ‘*Big data*’ is a term that refers to the large volume of data, and it is also a collective name for methods of processing data that is so large, fast or complex that it would be difficult or impossible to process using traditional methods.²⁶ The ML process can be improved by feeding big data to the algorithm, because the more training data is shared with the algorithm, the more accurate the results will be.²⁷ If big data is involved, pattern recognition may identify hidden patterns and analytics even solely based on indirect data that we would never be able to find using a traditional rule-based search.

6. *Do Machines Understand Us?*

We’ve mentioned natural language processing (NLP) as the main method applied by text analysis that helps in structuring text-based data. NLP is a subfield of machine intelligence and linguistics concerned with the interaction between algorithms and human language. NLP helps the algorithm read and derive meaning from text (or another input such as speech – like Siri, Alexa and Google’s voice search) by simulating the human ability to understand a certain language, such as English.²⁸ It works by learning human language, using context and prior queries and results to predict what attorneys may need in their searches. For example, NLP is applied by search engine autofill, spell checkers, speech recognition with voice assistants and chatbots. There are several areas of legal activity where NLP might play a significant role²⁹:

- Legal research: NLP can translate plain English search terms into legal search. When searching case-law, the algorithm continues to learn ba-

26 Patanjali Kashyap, *Machine Learning for Decision Makers* (Apress 2017) 12.

27 Hans Weber, *Big Data and Artificial Intelligence: Complete Guide to Data Science, AI, Big Data and Machine Learning* (2020) 100.

28 Benjamin Alarie, Anthony Niblett, Albert Yoon, ‘How Artificial Intelligence Will Affect the Practice of Law’ (2018) 68 (supp.1) *University of Toronto Law Journal* 106.

29 Robert Dale, ‘Law and Word Order: NLP in Legal Tech’ (2018) <<https://towardsdatascience.com/law-and-word-order-nlp-in-legal-tech-bd14257ebd06>> accessed 24 February 2021.

sed on what cases are clicked on and viewed. Moreover, it can reveal where specific phrases appear in a lengthy document.³⁰

- Case predictions: NLP can provide predictive models to help better understand how a given judge or court may rule. This can help attorneys better tailor their arguments to support or combat the prediction. Based on the predictions, lawyers could structure their argument around what the judge will find most persuasive.³¹
- Electronic discovery: Determining the relevance of documents to an information request.
- Contract review: Checking that a contract is complete and avoids risk.³²
- Document automation: Creating routine legal documents.
- Legal writing: Drafting legal advice (e.g., using question-and-answer dialogs to provide tailored advice), e-mails, court notes and case notes.

7. *E-discovery - Where Work Became Technology Assisted*

Organizations usually face the discovery process in complex business disputes, litigations or regulatory investigations. Discovery is an initial process where relevant information and records, along with all other evidence related to a case, are sought.³³

With the development of computer technologies, most information that is produced, distributed, and stored by businesses now exists in electronic form. E-discovery (the short form of the term “electronic discovery”) encompasses what most often is referred to as electronically stored information, or ESI. The purpose of e-discovery is to locate, secure and preserve ESI

30 Alison Wilkinson, ‘How Natural Language Processing Can Improve Legal Search Results’ (2020) <<https://kirasystems.com/learn/how-natural-language-processing-improving-can-improve-legal-search-results/>> accessed 24 February 2021.

31 Daniel Martin Katz, ‘Quantitative Legal Prediction – or – How I Learned to Stop Worrying and Start Preparing for the Data Driven Future of the Legal Services Industry’ (2013) 62 *Emory Law Journal* 936.

32 Mark Sears, ‘AI Challenges and Why Legal Is A Great Place to Kick-Start Great NLP’ (2019) <<https://www.forbes.com/sites/marksears1/2019/05/14/ai-challenges-and-why-legal-is-a-great-place-to-kick-start-great-nlp/?sh=79ec487f4408>> accessed 24 February 2021.

33 Burke Ward, Janice Sipior, Jamie Hopkins, Carolyn Purwin, Linda Volonino, ‘Electronic Discovery: Rules for a Digital Age’ (2012) 18(150) *Boston University Journal of Science and Technology Law*.

to be used as evidence as part of a legal case.³⁴ Data of all types can serve as evidence, e.g., database files, docs, e-mails, videos, images, instant messaging chats, voicemails, calendar files, spreadsheets, web sites, computer programs, animations, GPS and location data, IoT devices, mobile data, social media posts, audio files and even malware such as viruses, trojans and spyware. ESI is layered and often contains metadata such as timestamps, author and recipient information, and file properties. Metadata can be essential³⁵ when deciding on legal matters since it may contain the date and time a document was written as well.

Besides litigations and regulatory investigations, e-discovery software can be deployed also for early case assessment, internal investigations, and public records requests.³⁶

E-discovery can be very complex and multi-layered depending on the current organization and the legal case i.e., how data is stored and how complex the data is.³⁷ E-discovery is more than one single task, it is rather a series of diligent steps and actions that together, as a consistent process, help build solid evidence for a legal case.³⁸

E-discovery usually runs from the time a lawsuit is foreseeable to the time the digital evidence is presented in the litigation. The Electronic Discovery Reference Model (EDRM)³⁹ is a ubiquitous and widely referenced standard that represents a conceptual view of the stages involved in the e-discovery process⁴⁰:

1. *Information governance*: It serves as a foundation for the e-discovery process and refers to the set of policies implemented to manage a company's data.
2. *Identification*: It is a phase when potentially responsive documents are identified. There are various methods to identify sources of potentially

34 Kimberly Williams, John M. Facciola, Peter McCann, Vincent M. Catanzaro, *The Legal Technology Guidebook* (Springer 2017) 44.

35 Philip J. Favro, 'A New Frontier in Electronic Discovery: Preserving and Obtaining Metadata' (2007) 13 (1) B.U.J. Sci. & Tech.

36 Logikcull, 'The Ultimate Guide to eDiscovery' <<https://www.logikcull.com/guide>> accessed 25 February 2021.

37 'The Basics of e-discovery' <<https://www.exterro.com/basics-of-e-discovery>> accessed 25 February 2021.

38 'What is e-discovery?' <<https://www.barracuda.com/glossary/e-discovery>> accessed 25 February 2021.

39 The EDRM model is available at: <<https://edrm.net/resources/frameworks-and-standards/edrm-model/>> accessed 25 February 2021.

40 'The Basics of e-discovery. Chapter 1: Process' <<https://www.exterro.com/basics-of-e-discovery/e-discovery-process>> accessed 25 February 2021.

relevant ESI, e.g., interviewing key participants and reviewing case facts.

3. *Preservation*: After relevant ESI is identified, it needs to be protected from spoliation (any destruction or alteration of evidence). The most common way to preserve ESI is through a legal hold process. A duty to preserve information begins upon reasonable anticipation of litigation. According to *Zubulake v. UBS Warburg*⁴¹ failure to issue a written legal hold notice whenever litigation is reasonably anticipated will be deemed grossly negligent.
4. *Collection*: It means the transfer of the relevant ESI from a company to their legal counsel. Some companies that deal with frequent litigation have software in place to quickly place legal holds when an event (such as legal notice) is triggered and begin the collection process immediately. The collection method must ensure that the contents and metadata are not altered as a result of the process.
5. *Processing*: It means the reduction the volume of ESI and converting it, if necessary, to forms more suitable for attorney review.
6. *Review*: It means the evaluation of ESI for relevance and attorney-client privilege (which is exempt from e-discovery). Considering exponentially growing data volumes, manual review became impractical. There are artificial intelligence (AI) tools that can distinguish between relevant, non-relevant and privileged documents, thus, making the review process more viable and efficient.
7. *Analysis*: Evaluating ESI for content and context, including key patterns, topics, people and discussion.
8. *Production*: ESI determined to be relevant must be produced for use of potential evidence in appropriate forms and using appropriate delivery mechanisms. ESI can be produced either as native files or in a petrified format (such as PDF).
9. *Presentation*: Displaying ESI before audiences (trials, hearings, etc.).

As mentioned above, legal teams can apply AI tools in order to save time and money on the review process and expedite e-discovery by prioritizing documents and reducing the number of documents required for manual review. These tools typically use predictive coding which leverages machine learning to surface likely relevant documents based on prior review decisions. Predictive coding goes by various names, including "*technology assisted review*" (TAR) and "*computer aided review*" (CAR). In order for

41 *Zubulake v. UBS Warburg LLC* - 220 F.R.D. 212 (S.D.N.Y. 2003)

the predictive algorithm to work properly, it needs to be ‘trained’ first. This means that reviewers pull a representative cross-section of documents (‘seed set’)⁴² from the pool of ESI that need to be reviewed. Reviewers code each document in the seed set as relevant or not relevant and input those results into the predictive coding software. By these inputs, the software generates an internal algorithm for predicting the responsiveness of future ESI.⁴³ As the review goes on, machine learning enables the software to continually learn from reviewer decisions and make more accurate results in significantly less time than human reviewers.⁴⁴ Of course, if the seed set is coded incorrectly then the algorithm will multiply those errors across the entire document set, thus, it will lead to a ‘garbage in, garbage out’ situation.

US and UK courts have already adopted decisions on predictive coding. *Monique Da Silva Moore, et al. v. Publicis Groupe & MSL Group*⁴⁵, a decision from the United States District Court for the Southern District of New York, is the first decision that explicitly recognized the use of predictive coding technology as an appropriate method to satisfy a producing party’s review obligation. The court held that the use of predictive coding technology “*is an acceptable way to search for relevant [electronically stored information] in appropriate cases*” and also that “*it is not a case of machine replacing humans: it is the process used and the interaction of man and machine that the courts need to examine*”. The court highlighted that the use of predictive coding is acceptable where it is applied in a manner that produces reliable and proportional results. In this case, the judge based his ultimate approval of its use on five factors: “(1) *the parties’ agreement*, (2) *the vast amount of ESI to be reviewed (over three million documents)*, (3) *the superiority of computer-assisted review to the available alternatives (i.e., linear manual review or keyword searches)*, (4) *the need for cost effectiveness and proportionality [...]*, and (5) *the transparent process proposed by [the Defendants]*.”

Regarding proportionality, the judge stated that:

“In order to determine proportionality, it is necessary to have more information than the parties (or the Court) now have, including how many relevant documents will be produced and at what cost [...] In the final sample of documents

42 Gideon Christian, ‘Predictive Coding: Adopting and Adapting Artificial Intelligence (AI) In Civil Litigation’ (2019) 97 The Canadian Bar Review 490.

43 Dana A. Remus, ‘The Uncertain Promise of Predictive Coding’ (2014) 99 Iowa Law Review 1072.

44 Aaron Goodman, ‘Predictive Coding: A Better Way to Deal with Electronically Stored Information’ (2016) 43(1) Litigation 23.

45 *Da Silva Moore v. Publicis Groupe* - 287 F.R.D. 182 (S.D.N.Y. 2012)

deemed irrelevant, are any relevant documents found that are “hot,” “smoking gun” documents (i.e., highly relevant)? Or are the only relevant documents more of the same thing? One hot document may require the software to be re-trained (or some other search method employed), while several documents that really do not add anything to the case might not matter. These types of questions are better decided “down the road,” when real information is available to the parties and the Court.”

Da Silva Moore also set out guidelines for the appropriate use of predictive coding. First, parties intending to use this technology must choose a reliable e-discovery vendor and software, as well as design an “*appropriate process*” that includes “*appropriate quality control testing*”. Furthermore, in accordance with the decisions, the parties should consider the following steps⁴⁶:

- Allow the requesting party to view ESI that were used to train and additional ESI that were used to stabilize the predictive analytics system (marked both as responsive and non-responsive).
- Do not limit the number of iterative reviews used to ‘train’ the system up front, but rather assess whether the system has stabilized before stopping the iterative reviews.
- Do not adhere to an arbitrary number of ESI that will be produced without reference to the statistical results.
- Bring the vendor experts to the court hearing to respond to the judge’s questions.

The first English decision on the use of predictive coding software was made in the *Pyrrho Investments Ltd & ors v MWB Property Ltd & ors case*⁴⁷, where the High Court of Justice held that predictive coding is permitted and could amount to a reasonable search. In this case the judge stated that what fundamentally matters in the disclosure process is the scope and quality of the search, rather than the listing and production for inspection of the relevant documents, which were found during the process. The judge listed ten factors that favored the use of predictive coding in the case⁴⁸, including, for instance, the fact that experience with predictive

46 Special Counsel, ‘What Predictive Coding Court Rulings Can Teach Us’, blog.specialcounsel.com (3 November 2016); <<https://blog.specialcounsel.com/ediscovery/what-predictive-coding-court-rulings-can-teach-us/>> accessed 26 February 2021.

47 *Pyrrho Investments Limited v MWB Property Limited* [2016] EWHC 256 (Ch).

48 Oliver Browne and Hayley Pizzey ‘Pyrrho Investments Ltd v MWB Property Ltd: A Landmark Decision on Predictive Coding in e-Discovery’ (Latham.London, 15

coding in other jurisdictions has shown that the software can be useful in appropriate cases; the number of electronic documents in the case (amounting to over 3 million); the circumstance that the parties agreed on the use of the software and how to use it; the use of a computer to apply the approach of a senior lawyer towards the initial sample; and the conclusion that there is no evidence that predictive coding leads to less accurate disclosure compared to manual review and there is some evidence that it is more accurate than manual review.

Later, in *Triumph Controls UK Ltd & anr v Primus International Holding Co & ors*⁴⁹, the High Court of Justice held that a party should not act unilaterally to use CAR in the disclosure process as there is a risk that the “*unilateral decision will be carefully scrutinized by the court at a later date, and a different course may be ordered.*” Also, when a party has acted unilaterally, that party should provide the other party with details about how the algorithm was set up and how it was operated. That had not happened in this case, which the judge found to be “*unsatisfactory*”. The court referred to *Pyrrho Investments Ltd.* where the court stated that the “*best practice would be for a single, senior lawyer who has mastered the issues in the case to consider the whole [teaching] sample*”. With respect to that, *Triumph Controls UK Ltd* held that CAR technology must be ‘taught’ properly, and the best practice involves a senior lawyer oversight. The court also ordered a manual review of 25 % (equal to 55 000 disputed documents) considering this a proportionate amount under the circumstances.

Based on the relevant case law, there is no doubt that the use of predictive coding will increase in the future as a global trend. However, there are several barriers that have kept predictive coding from being widely adopted in the legal industry.

Firstly, because predictive coding relies on highly complex algorithms based on advance data science and statistical sampling, it is often seen as a ‘black box’. Although humans train the algorithm, the internal processes are mostly opaque, causing the machine decision-making to be non-transparent.⁵⁰ The technology is understood by only a limited number of experts – and few of them are lawyers.

July 2016) <<https://www.latham.london/2016/07/pyrrho-investments-ltd-v-mwb-property-ltd-a-landmark-decision-on-predictive-coding-in-e-discovery/>> accessed 26 February 2021.

49 *Triumph Controls UK Ltd & anr v Primus International Holding Co & ors* [2019] EWHC 565 (TCC).

50 Michael Weather, ‘Predictive coding: the current landscape’ *disputeresolution blog.practacallaw.com/* (Thomson Reuters 21 July 2016) <<http://disputeresolut>

Secondly, predictive coding is yet slow and expensive to implement. It may be beneficial as a long-term investment; but it may also be difficult to finance the technology. It takes significant manual-review time to train machine learning how to categorize ESI effectively.⁵¹ As mentioned earlier, if the setup is faulty, the algorithm will produce poor results. Therefore, the setup needs senior attorneys with plenty of experience who are knowledgeable about the facts of the case; often, a more senior attorney whose time is even more expensive.

Thirdly, predictive coding only understands logic and cannot make nuanced content distinctions, for instance, whether a document contains privileged information. Moreover, lengthy documents often include a multitude of topics, which may adversely affect their classification by the predictive algorithm. If a long document contains one short (although relevant) reference, the algorithm may leave this document out of consideration due to the relative noise of the other content in the source.⁵²

Lastly, although most courts (at least in the US and in the UK) accept a predictive coding workflow, there is still some legal risk depending on the procedures employed and the results obtained. Especially if there is no agreement between the parties regarding the details of how predictive coding will be used in the case. It is sure that not all legal cases are appropriate for predictive coding.

8. *OK Google, Negotiate! When Do Lawyers Become Obsolete?*

Recent technology trends have led some lawyers to raise that their jobs may be under threat by legal tech innovations.⁵³ But can we really expect that lawyers will eventually be replaced by technology? We believe that technology complements the work of lawyers, rather than replacing it, thus, we see that legal tech offers more benefits than threats to legal

ionblog.practicallaw.com/predictive-coding-the-current-landscape/> accessed 26 February 2021.

51 Thomson Reuters Legal, 'How to make the e-discovery process more efficient with predictive coding?' <<https://legal.thomsonreuters.com/en/insights/articles/how-predictive-coding-makes-e-discovery-more-efficient>> accessed 26 February 2021.

52 PRISM Litigation Technology, 'Predictive Coding: The Good, the Bad, and the Ugly' (Prism Blog, 7 August 2019) <<https://prismlit.com/predictive-coding/>> accessed 26 February 2021;

53 Richard Susskind, Daniel Susskind, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford University Press 2015) 71.

jobs. It is very likely that legal tech tools will drastically change the way lawyers provide services for their clients. Technology can free lawyers from administrative and routine tasks, which will result in a decrease in their overall workload and more time for higher-value work. So, using technology will be a competitive advantage by increasing productivity and reducing human work hours. Therefore, even if technology won't replace lawyers, lawyers who use technology could replace those lawyers who don't.⁵⁴

At the same time, human lawyers will always be needed for more critical, complex tasks with higher-level cognitive demands, like advising clients, formulating arguments, negotiating and representing in court. It could be argued that the consultative nature of legal work where human to human relationships matter, makes it immune to full automation.

For that reason, technology is not yet an imminent threat to legal jobs. Right now, legal tech tools could only decrease the work hours spent on more routine-oriented tasks, like contract review or document management; allowing lawyers to focus on tasks that truly add value.

However, most legal tech innovations are still in their early days, so we should not underestimate the power of technology. The legal profession is sure to change a lot in the near future.

Every business will be disrupted someday, and digital literacy will be a necessity for any of them to survive. We live in rapidly changing times, and now, we are also facing a period of fundamental and irreversible transformation in the world of law and technology.⁵⁵ In order to successfully cope with new challenges in the legal industry, lawyers and legal teams need to be open-minded to innovations, dismiss outdated practices and quickly adapt themselves to the fast-changing business environment by exploiting new tools and products. This means, in particular, that lawyers need to develop new competencies such as software skills, as well as understanding other disciplines of business including technology, analytics and data science. Lawyers will have to cooperate more and more with professionals from different fields to solve legal problems.

The need for disruption may not only stem from the changes inside the legal services industry, but also directly from clients' digital expectations. This includes the most trivial requests such as using videoconference applications or cloud collaboration tools as well as providing complex docu-

54 Omni Legal, 'Artificial Intelligence Won't Replace Lawyers—It Will Free Them' (Law Technology Today 27 February 2018).

55 Richard Susskind, *Tomorrow's Lawyers. An Introduction to Your Future* (Oxford University Press 2nd edn, 2017).

ment automation solutions. For law firms to meet these expectations, they need to be prepared to digitize their services by creating and implementing digital transformation strategies.

Digital transformation is a thing of the present and will be a thing of the future. Undoubtedly, legal professionals must follow suit to stay afloat. Advising without understanding clients' business is impossible. Moreover, one of the law industry's success factors called *knowledge asymmetry*, is fading away. Mostly thanks to the Internet proliferation and democratization of knowledge that it brings. Content digitization, search engines, remote learning make access to knowledge easier than ever before.

The change of the law firm leaders will be a key to their success in the near future. The legal industry must open both to innovation AND disruption. Technology is changing business across the board and the pandemic is fueling that process. In 2021 we can expect even more online chatting, greater collaboration in the cloud, more emails and more data to process in general. Legal innovators out there should focus on developing more advanced NLP solutions, privacy preserving technologies for data security and improving remote work modes.

SECTION TWO.

Towards Algorithmic Legal Reasoning and Law-Making

Computational Legal Problem Solving. What can Legal Tech Learn from AI and Law Research, and Beyond?¹

Michał Araszkiewicz

1. Introduction

LegalTech is one of the most rapidly growing branches of information technology.² It has become commonplace that advanced solutions, including natural language processing (NLP) algorithms based on machine learning (ML), may significantly increase the speed and accuracy of many juridical tasks performance. The digital transformation of international law firms and legal departments in corporations widely considers the application of tools used with problems that precede actual juridical work (paralegal tasks such as the retrieval of documents, systematization of information, and checking the formal structure of documents). It also concerns solutions that may support the assessment of similarities between legal cases, generate arguments from knowledge bases, or evaluate the relative strength of competing arguments (the tasks of lawyers). Nevertheless, computational tools to support the performance of lawyers' tasks on an effective level are difficult to develop.

There are many sources of this difficulty. Perhaps the most general observation in this connection is that many problems solved by lawyers are not well-defined. In the theory of problem solving, a problem is well defined if it has a clearly specified initial state and goal state (solution) as well as a set of operators that may be used in the transition from the initial state to the goal state.³ Among the most important specific

1 The article was financed by the National Centre for Sciences as part of research project agreement UMO-2018/29/B/HS5/01433.

2 See Richard Susskind, *Tomorrow's Lawyers. An Introduction to Your Future* (Oxford University Press 2nd edn, 2017); Markus Hartung, Micha-Manuel Bues, Gernot Halbleib, *Legal Tech: How Technology Is Changing the Legal World* (C. H. Beck 2018); Jens Wagner, *Legal Tech und Legal Robots. Der Wandel im Rechtswesen durch neue Technologien und Künstliche Intelligenz* (Springer 2020).

3 Kevin Dunbar, 'Problem Solving' in William Bechtel and George Graham (eds), *A Companion to Cognitive Science* (Blackwell Publishers 1999) 293–294 and a classical monograph by Allen Newell and Herbert A. Simon, *Human Problem Sol-*

issues, the following may be noted. First, it is difficult to determine the set of sources from which relevant information should be retrieved. Certain categories of sources are hardly debatable (such as statutes or, in Anglo-American legal culture, binding precedents). However, it is often unclear to what extent other sources, such as soft law or legislative materials, should be considered. Second, even if the set of relevant sources has been determined, it may be a very complex task to decide what is the structure and content of elements derived therefrom, and, in particular, how potential incompatibilities between these elements should be solved.⁴ Third, in legal reasoning, we often must decide not only based on uncertain or contradictory information, but also incomplete information. In particular, reasoning with and about evidence often involves balancing probabilities or the resolution of problems through the application of rules concerning burden of proof.⁵ As far as questions of law are concerned, the phenomenon of incompleteness is captured by the concept of legal gaps.⁶ Fourth, a major part of legal sources is expressed in natural language. Therefore, legal texts are encumbered by such well-researched phenomena as syntactic and semantic ambiguity, vagueness, context sensitivity, and open texture. Some of these phenomena are not necessarily problematic (for instance, vagueness may be effectively used in drafting legal provisions that require flexibility). In general, though, they all contribute to increased complexity.⁷ Fifth, legal reasoning often involves differences of opinion and depends on value judgments. Therefore, legal reasoning cannot be adequately reduced to a logical operation. Its adequate representation requires modeling argumentation and arguments, particularly arguments concerning values, goals, and preferences.⁸ Both the linguistic features

ving, (Prentice Hall 1972). See also Colin Lynch, Kevin D. Ashley, Niels Pinkwart, Vincent Alven, 'Concepts, Structure and Goals: Redefining Ill-Definedness' (2009) 19 *International Journal of Artificial Intelligence in Education* 253–266.

4 cf. Carlos E. Alchourrón and Eugenio Bulygin, *Normative Systems* (Springer-Verlag 1971); Robert Alexy, *A Theory of Constitutional Rights*, transl. J. Rivers (Oxford University Press 2002); Manuel Atienza and Juan Ruiz-Manero, *A Theory of Legal Sentences* (Springer 1998).

5 See, for instance, in the context of US law: Jack Weinstein, Norman Abrams, Scott Brewer and Daniel Medwed, *Evidence* (Foundation Press 2017).

6 See, for instance Marijan Pavčnik, 'Why Discuss Gaps in the Law?' (1996) 9/1 *Ratio Juris* 72–84.

7 Timothy Endicott, *Vagueness in Law* (Oxford University Press 2000).

8 The theories of legal argumentation are presented in Eveline Feteris's *Fundamentals of Legal Argumentation. A Survey of Theories on the Justification of Judicial Decisions* (Springer 2017) and in Giorgio Bongiovanni, Gerald Postema, Antonino Rotolo,

of legal text and the general context of the legal system contribute to the complexity of legal understanding, which is why legal interpretation remains the most-investigated issue in legal theory. Sixth, humans perform legal reasoning; it obviously has (neuro)psychological grounds. The minds of lawyers are human. Therefore, they operate based on fallible heuristics and are subject to biases, decisions are made on emotional grounds and rationalized *post hoc*, etc. These and other problems are investigated under the heading of the relatively recently emerged research area law and cognitive sciences.⁹ Nonetheless, apparently, in legal practice, the only intersubjective sphere subject to evaluation is the reasoning expressed in language (in documents such as judicial opinions or lawsuits) and having a claim to rationality. It is difficult to define the rationality criteria for legal reasoning, particularly if it is our aim to develop a realistic, not idealized, model.¹⁰ Even if we assume the rationality of lawyers (as human reasoners) is limited and bounded, the relationships between the psychological (factual) and the rational in legal reasoning remain complex and not entirely clear.

Having said this, it should be noted that, irrespective of these complexities, lawyers perform their tasks on a daily basis, and often their performance is evaluated as proper or even excellent. In other words, legal experts know when a legal task is performed well, even if it is sometimes difficult to agree on the criteria of evaluation or to reveal the implicit assumptions that provide the background for the reasoning explicitly given. Decades of developing legal theory have provided imperfect, yet informative, conceptual schemes and tools that enable us to, first, analyze the phenomena contributing to the complexity of legal reasoning and, second, to reduce this complexity or help resolve problems under assumed criteria. In particular, theories of legal interpretation and legal argumentation contributed importantly to the understanding of the rational aspects of the legal decision-making process. The problems of the relationship between the intuitive and deliberative, the persuasive and the reasonable, and the

Giovanni Sartor, Chiara Valentini and Douglas Walton (eds.), *Handbook of Legal Reasoning and Argumentation* (Springer 2018).

9 For a recent contribution to the understanding of the relationship between law and cognitive science, see Jaap Hage, Bartosz Brożek and Nicole Vincent (eds.), *Law and Mind. A Survey of Law and the Cognitive Sciences* (Cambridge University Press 2021).

10 A normative model of (rational) legal reasoning is presented, for instance, in Bartosz Brożek, *Rationality and Discourse. Towards a Normative Model of Applying Law* (Wolters Kluwer 2007).

extralegal and legal features in legal decision making are the subject of vivid debates.

The question, hence, appears whether legal problems may be modeled in a manner that would justify the thesis that they are well-defined problems. A significant part of the work toward this purpose has been made in legal theory, and since the 1970s, such attempts have also been made in the broad research area called artificial intelligence and law (AI and law).¹¹ Basically, research in AI and law consists of the use of artificial intelligence (AI) tools to build models of legal reasoning and other systems that may support the performance of juridical tasks. To characterize this area of research more accurately, we must address the scope and nature of general AI research. For obvious reasons, we cannot enter into the complex philosophical debate concerning the notion of AI. For the purposes of this paper, it is sufficient to recall the recent definition provided by one of the most prominent researchers in the field, according to whom AI pursues the goal of creating intelligent machines. A machine may be considered intelligent if it “chooses the actions that are expected to achieve its objectives, given what is perceived.”¹² The objectives are, of course, not a machine’s own, but objectives specified by the developer or reconstructed by the machine based on initial specifications. In other words, an intelligent machine should act under the principles of instrumental rationality regarding a certain set of objectives. A machine may be developed to simulate a human’s thinking or behavior or to surpass human capabilities and performance to realize said objectives.¹³

There are two broad and internally differentiated streams of research in AI: symbolic AI and computational intelligence. Although the division between these streams is not rigid, and the classification of some system types into the categories is subject to debate, they may be juxtaposed, in a model account, in the following manner:¹⁴

In symbolic AI, the model of an intelligent system is typically represented explicitly. The data used by the model have a symbolic character;

11 For a history of this scientific movement, see Trevor Bench-Capon and others ‘A History of AI and Law in 50 Papers: 25 Years of the International Conference on AI and Law’ (2012) 20 *Artificial Intelligence and Law* 215–319.

12 Stuart J. Russell, “Artificial Intelligence. A Binary Approach,” in S. Matthew Liao (ed), *Ethics of Artificial Intelligence* (Oxford University Press 2020) 327.

13 Stuart Russell and Peter Norvig, *Artificial Intelligence. A Modern Approach*, (3rd ed. Pearson 2016) 2.

14 Cf. M. Flasiński, *Introduction to Artificial Intelligence* (Springer International Publishing 2016) 15 and 23.

they are expressed in each formal language, such as the language of logic, graphs, or set theory. The operations performed by the system consist of formal operations on sets of symbols; for instance, they may have the character of deductive operations. Exemplary approaches represented in this stream are logic-based systems, rule-based systems, case-based reasoning systems, argumentation systems, and systems based on the Semantic Web architecture.

In computational intelligence, the model of an intelligent system (and the knowledge used therein) typically has implicit character. The basic type of data used by the system is numeric data. The operations performed by the system have a primarily mathematical character. The types of systems developed in this field are very diverse. For instance, we may mention support vector machines, neural networks, and evolutionary algorithms. However, the model characteristics of these models are generally applicable to all of them. In some cases, computational intelligence systems have a distributed character in that meaning cannot be ascribed to the elements of the system, but is, rather, inferred from the operations of the total system or a reasonable part thereof.

A common feature of computational intelligence mechanisms is that they can learn. The field of computational intelligence should not be identified with machine learning (ML), because there are also symbolic learning models, and not all computational intelligence models have this feature. However, most successfully applied ML systems are based on computational intelligence.¹⁵ ML is one of the most rapidly developing fields of computer science. We distinguish three main categories of ML: supervised, unsupervised, and reinforcement learning (There are also intermediary categories and finer-grained distinctions.) Generally speaking, the idea of ML is that an algorithm gradually corrects its performance to achieve the expected or desired result.

During the first decades of research on AI (1950s–1980s), the symbolic approach was dominant. This led to the development of tools and approaches applicable to many areas. In the 1970s, the concept of expert systems, that is, the systems that simulate the reasoning of domain experts, rose to prominence. Frequently, expert systems are based on rules (understood here as conditional clauses of the form “IF condition THEN

15 See Ethem Alpaydin, *Machine Learning. The New AI* (The MIT Press 2016); Miroslav Kubat, *An Introduction to Machine Learning* (Springer International Publishing 2017).

action”).¹⁶ Such systems may perform both forward-chaining reasoning (inferring conclusions from a given set of facts that may make the rules fire) and backward-chaining reasoning (verification of hypotheses posed by the user regarding the system’s knowledge). The development of case-based reasoning systems¹⁷ and defeasible logics was initiated in the 1980s.¹⁸ Subsequently, the development of argumentation systems from the 1990s on¹⁹ led to the further progress of symbolic AI. Yet another direction of development was the models of structured knowledge: In this approach, engineers intended to represent knowledge not only on the level of logical formulae, but also to consider the internal structure of concepts and connections between them.²⁰ As is known, this approach was extended and elaborated in the Semantic Web—a collection of standards enabling the presentation of semantic knowledge in machine-readable form.²¹

Symbolic AI systems, despite the many differences between them, share certain strong and weak features. Their important advantage is their high degree of understandability for the user. In principle, symbolic AI systems may present an *explanation* of the reasoning process, both regarding the general model and particular reasoning. Moreover, the reasoning they perform, based on deductive or quasi-deductive reasoning patterns, is very reliable, although, of course, the generated conclusions concern the adopted set of premises, which may be erroneous or doubtful. Conversely, symbolic AI systems may only perform based on the knowledge stored in their knowledge base or explicitly provided by the user. The knowledge

16 A very influential position on this subject is that of Bruce Buchanan, Edward H. Shortliffe, *Rule-based Expert Systems. The MYCIN Experiments of the Stanford Heuristic Programming Project* (Reading 1984).

17 For more recent elaborations of this topic, see David B. Leake, ‘Case-Based Reasoning,’ in William Bechtel and George Graham (ed), *A Companion to Cognitive Science* (Blackwell Publishers 1999) 465–476; Michael M. Richter, Rosina O. Weber, *Case-Based Reasoning. A Textbook* (Springer-Verlag 2013).

18 Ray Reiter, ‘A Logic for Default Reasoning,’ (1980) 13 *Artificial Intelligence* 81–132; John L. Pollock, ‘Defeasible Reasoning’ (1987), 11 *Cognitive Science* 481–518.

19 Phan Minh Dung, ‘On the Acceptability of Arguments and Its Fundamental Role in Nonmonotonic Reasoning, Logic Programming and n-person Games’ (1995) 77(2) *Artificial intelligence* 321–357.

20 Allan M. Collins and Ross M. Quillian, ‘Retrieval Time from Semantic Memory’ (1969) 8(2) *Journal of Verbal Learning & Verbal Behavior*, 240–247; Marvin Minsky, ‘A Framework for Representing Knowledge’ in Patrick H. Winston (ed) *Psychology of Computer Vision* (MIT Press 1975).

21 Liyang Liu, *Introduction to the Semantic Web and Semantic Web Services* (Chapman and Hall/CRC 2019).

base itself must be formalized, validated, and maintained, which are time-consuming and costly processes. Symbolic systems' capacity to learn and adjust their behavior to new situations is very limited. Moreover, it became apparent decades ago that, to perform in a satisfactory manner, many types of symbolic AI systems must be equipped with and process common-sense knowledge. However, the amount of common-sense knowledge required to attain the desired performance results of the systems is immensely great.²² Problems regarding the preparation of relevant knowledge bases for symbolic AI systems are discussed under the heading of the *knowledge acquisition bottleneck*. These disadvantages have caused the limited applicability of symbolic AI systems, which typically solve problems in narrow, well-defined domains.

The main advantages of computational intelligence systems come from their ability to learn based on (numeric) data. The emergence of Internet technologies in the 1990s led to the creation of big data sets, which enabled the spectacular development of ML techniques and tools. Nowadays, applications based on computational intelligence are naturally called *AI* because of their capacity to adapt to the context and changing circumstances, their relative autonomy and the degree of unpredictability following from it, and their high-level performance of tasks in numerous areas including scientific discovery, finances, insurance, transportation, military applications, medicine, automated translation, or the ability to conduct a natural conversation, where the latter areas exemplify the successful application of natural language processing (NLP) technologies.²³ The success of these systems follows from many factors, including their overall performance level (high speed and accuracy) and the possibility of the ongoing development of the systems throughout the learning process. Moreover, appropriately trained ML systems generally do not require the preparation of the data they operate on; some may perform well based on raw data. The ubiquitous character of solutions based on ML models has led to questions concerning the ethical and legal consequences of

22 The most famous project developing the fullest possible base of commonsense knowledge is CYC, initiated in 1984. At first, it was assumed the task would be completed by the 1990s. As of now, the CYC database contains 25 million assertions and is still growing. See <<https://cyc.com/>> access 8 May 2021.

23 On the topic of NLP, see Nitin Indurkha, Fred J. Damerau, *Handbook of Natural Language Processing* (Chapman & Hall/CRC 2010). The applications and models of ML systems are discussed in a non-technical manner by Pedro Domingos, *The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World* (Brilliance Audio 2017).

their operation.²⁴ Accordingly, one of the most debated issues here is the relatively low level of these systems' explainability.²⁵ Although engineers understand principles concerning the operations of the models, in many cases, it is practically impossible to state why, in a concrete situation, the algorithm generated a given result. Moreover, if the system is used in the context of decision-making support, even obtaining a detailed explanation of the algorithm's operation cannot count as adequate justification for the decision because of its distinct nature—computational intelligence performs tasks through arithmetic operations, not symbolic reasoning. The use of ML systems also generates the risk of algorithmic bias affecting the results.²⁶

Having briefly characterized the main approaches in the field of AI research, let us discuss the most important achievements of AI and law research, beginning with symbolic models of legal reasoning and continuing with a comment on ML applications and concepts combining the two approaches. In the final part of the chapter, we will discuss the basic conclusions that follow from these analyses for the LegalTech industry.

2. Modeling Legal Reasoning and Argumentation

How are legal conclusions generated and justified based on available knowledge in a computational system? As discussed above, an answer to this question requires a more precise definition of the problem being solved. The history of AI and law represents the evolution of perspectives concerning the nature of the problem solved regarding the generation and justification of legal conclusions. In many important respects, this evolution mirrors the development of the theories of legal reasoning elaborated

24 These issues have recently been discussed, *inter alia*, in a contributed volume: Maria-Jesús González-Espejo and Juan Pavón (eds), *An Introductory Guide to Artificial Intelligence for Legal Professionals*, (Kluwer Law International 2020).

25 The notion of explainability and related concepts are discussed thoroughly in Alejandro Barredo Arrieta, Natalia Díaz-Rodríguez, Javier Del Ser, Adrien Bennetot, Siham Tabik, Alberto Barbado, Salvador García, Sergio Gil-Lopez, Daniel Molina, Richard Benjamins, Raja Chatila and Francisco Herrera, 'Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI' (2020) 58 *Information Fusion* 82-115.

26 Philipp Hacker, 'Towards a Flexible Framework for Algorithmic Fairness', in: Ralf H. Reussner, Anne Koziol, Robert Heinrich (eds.) *50. Jahrestagung der Gesellschaft für Informatik, INFORMATIK 2020 – Back to the Future* (Karlsruhe 2020) 99-108.

in legal theory. Nevertheless, it should be emphasized that the influence of legal-theoretical work on AI and law has been rather limited.²⁷

Considering the ordering based on historical precedence and the increasing complexity of the proposed models, the initial approach taken in AI and law concerned the representation of legal reasoning in rule-based systems. This view is generally based on the syllogistic model of the application of law and has been present in various legal expert systems and in models of statutory legal reasoning. The structure of legal knowledge is represented as a set of rules understood as conditional expressions of the form “IF ... THEN ...” or similar. The model of reasoning has often been implemented as a logic program. Therefore, the solution to a legal problem is defined as creating logical proof from a set of premises to a conclusion or verifying whether a conclusion is provable based on the premises.

The interface of a rule-based legal expert system typically enables the user to enter information as answers to the questions asked by the program: yes/no questions or questions about numeric information, such as the date of a certain event or some person’s age. Based on information provided (called *facts*), the program inferred conclusions. If a given conclusion was not provable based on available information, the program could infer a negative answer if it used the “negation as failure” solution. Importantly,

27 Sometimes even more far-reaching claims are made, for instance Thomas F. Gordon in the presentation made at the ICAIL 2007 conference remarks that “legal philosophy failed to provide the necessary theoretical foundation for our field” (referring to the AI and Law research), Thomas F. Gordon, ‘20 Years of ICAIL – Reflections on the field of AI and Law’, 2007, <http://www.tfgordon.de/publications/> (access 10 May 2021). The causes of this limited flow of information between legal theory and AI and Law research require thorough, systematic investigation. However, there are also examples of fruitful adoption of legal-theoretical frameworks in formal and computational models, as in Jaap Hage, ‘Formalizing legal coherence’ in Ronald Prescott Loui (ed) *Proceedings of the Eighth International Conference on Artificial Intelligence and Law*, ICAIL 2001 (ACM 2001) 22-31; Kevin D. Ashley, ‘An AI model of case-based legal argument from a jurisprudential viewpoint’ (2002) 10 *Artificial Intelligence and Law* 163-218; Giovanni Sartor, ‘Doing justice to rights and values: teleological reasoning and proportionality’ (2010) 18(2) *Artificial Intelligence and Law* 175-215 or John Henderson and Trevor Bench-Capon, ‘Describing the Development of Case Law’ in Floris Bex (ed) *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law*, ICAIL 2019 (ACM 2019) 32-41.

systems of this type were often accompanied by an explanatory module that presented the reasoning for the program step by step.²⁸

The main disadvantages of classical rule-based models of legal reasoning are as follows. They do not capture the dialectic features of legal reasoning, which often involves comparing arguments and balancing interests. Their linear account of reasoning cannot represent these aspects. Moreover, they require that the facts of cases introduced by the user be expressed in terms already used in the rules base stored by the system. This is an unrealistic feature of these models, because in real-life situations, legal cases typically are not directly describable in the highly general language of legal rules. Therefore, rule-based legal expert systems require the user to decide whether a particular legal category applies to a given case—where not only an unqualified user but also a professional lawyer may have doubts. This is particularly visible concerning the applicability of vague or open-textured legal concepts. The meaning of such concepts is typically subject to evolution in case law.

The rule-based approach to the modeling of legal reasoning was contested in the 1980s by the proponents of another approach: case-based reasoning models. In Anglo-American legal culture, the essence of legal reasoning seems to be captured in reasoning about the applicability of precedent cases to current factual situations and in arguing about the similarities and dissimilarities of cases. Nowadays, case-based reasoning is one of the most important areas in domains of AI research.²⁹ The paradigm of case-based reasoning modeling in AI and law was created in connection with the development of the HYPO system by Kevin D. Ashley and Edwina Rissland.³⁰ The program uses the knowledge base of cases

28 The classical contributions representing this approach are Donald A. Waterman and Mark A. Peterson, 'Models of Legal Decision Making: Research Design and Methods', (Rand Corporation, The Institute for Civil Justice 1981) and Sergot (n 208) 370–386.

29 Richter, Weber, (n 17).

30 The most complete presentation of HYPO is to be found in the monograph Kevin D. Ashley, *Modeling Legal Argument. Reasoning with Cases and Hypotheticals* (MIT Press 1990). Other accounts of case-based reasoning are also present in the literature, as in the model based on the notion of prototype and its deformations, see L. Thorne McCarty, 'An Implementation of *Eisner v. Macomber*' in L. Thorne McCarty (ed) *Proceedings of the Fifth International Conference on Artificial Intelligence and Law, ICAIL'95* (ACM 1995) 276–286, or in the model based on the so-called exemplar-based explanations, see L. Karl Branting, 'Building explanations from rules and structured cases' (1991) 34(6) *International Journal of Man-Machine Studies* 797–837.

(in the domain of trade secret law) indexed by dimensions—knowledge representation tools representing a scale from the most pro-plaintiff to the most pro-defendant point. Dimensions represent ordered sets of general aspects of the case, and they form the foundation of the construction of arguments based on similarities and dissimilarities between the case at bar and the quoted cases. Notably, instead of suggesting one possible answer, HYPO generated a three-ply argument naturally representing the exchange of positions in the litigation process: the first ply by the plaintiff, a reply by the defendant, and a rebuttal by the plaintiff. HYPO generated arguments based on similar cases and distinguishing arguments, as well as arguments based on counterexamples. It also pointed out the hypothetical variations of the analyzed cases to show how the argumentation for each side could be strengthened.

Numerous computational models of legal reasoning were based on the basic ideas expressed in the HYPO model or developed in directions.³¹ A particularly influential approach was proposed in CATO—a program developed to support legal education.³² In CATO, the cases were characterized by binary factors as opposed to scalable dimensions. A factor may be either present or absent in the description of the case, and if it is present, it always favors a decision for the same side (defendant or plaintiff). CATO ordered factors into a hierarchy, going from base-level factors to abstract factors, connected by positive or negative links of strength. It generated argument structures like HYPO. However, it was based on a more extensive case set, yet it still comprised the same domain of law (trade secrets law).

Other developmental directions of the computational models of legal reasoning were as follows. Rule-based and case-based reasoning were combined in hybrid systems, where case law served as the basis for establishing semantics of rules' conditions.³³ The factor-based approach was soon supplemented by teleological considerations and led to the development of the systems, which represent not only arguments about similarities or

31 Recently, the evolution of this paradigm was summarized in Trevor Bench-Capon, 'HYPO'S legacy: introduction to the virtual special issue' (2017), 25(2) *Artificial Intelligence and Law* 205-250.

32 Vincent Aleven, *Teaching Case-Based Argumentation Through A Model and Examples*, (University of Pittsburgh 1997) <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.47.3347&rep=rep1&type=pdf>> access 10 May 2021.

33 Edwina L. Rissland, David B. Skalak, 'CABARET: Rule Interpretation in a Hybrid Architecture' (1991) 34(6) *International Journal of Man-Machine Studies* 839-887.

dissimilarities between cases, but also legal values and goals.³⁴ The factor-based approach was combined with the research on nonmonotonic logic, which led to the concept of representing legal cases as rules that connect a collection of factors (representing legally relevant information about the case's circumstances) and the case's outcome.³⁵ This latter approach has become particularly influential and led to the formalization of the models of case-based reasoning.³⁶ However, it is debated whether it represents the specific features of analogical reasoning that should be distinguished from typical rule-based reasoning.³⁷

In summing up the above considerations, it should be observed that in the dimensions- and factor-based systems of legal reasoning the task of finding and justifying a solution to a case is defined as selecting the outcome which has the strongest support with regard to the existing case base. The case-based reasoning systems does not have to yield an unequivocal answer – some of them provide a set of arguments pro and contra without determining the final solution.

The direction of research that considered types of legal arguments led to the generalized view consisting of the representation of legal reasoning as argumentation. Even though theories of legal argumentation have been discussed in the legal literature since the 1950s,³⁸ this approach to the computational modeling of legal reasoning has become dominant in the 1990s in connection with the emergence of a new paradigm for representing ar-

34 This discussion was initiated in AI and Law by Donald H. Berman and Carole D. Hafner in the paper titled 'Representing Teleological Structure in Case-based Legal Reasoning: The Missing Link' in Anja Oskamp and Kevin Ashley (eds), *Proceedings of the Fourth International Conference on Artificial Intelligence and Law, ICAIL '93*, (ACM 1993) 50-59.

35 Henry Prakken, Giovanni Sartor, 'Modelling Reasoning with Precedents in a Formal Dialogue Game' (1998) 6(2-4) *Artificial Intelligence and Law* 231-287.

36 For instance, John F. Horty, 'Reasoning with dimension and magnitudes' (2019) *Artificial Intelligence and Law* 27(3), 309-345 and Henry Prakken, 'Comparing Alternative Factor- and Precedent-Based Accounts of Precedential Constraint', in: Michał Araszkiewicz, Víctor Rodríguez-Doncel (eds.): *Legal Knowledge and Information Systems - JURIX 2019: The Thirty-second Annual Conference*, *Frontiers in Artificial Intelligence and Applications* 322, (IOS Press 2019), 73-82.

37 Katie Atkinson and Trevor Bench-Capon, 'Reasoning with Legal Cases: Analogy or Rule Application?', in: Floris Bex (ed) *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law, ICAIL 2019* (ACM 2019), 12-21.

38 Stephen Toulmin, *The Uses of Argument*, Cambridge University Press 2003 (1st ed. 1958); Chaim Perelman, Lucie Olbrechts-Tyteca, *The New Rhetoric. A Treatise on Argumentation*, (University of Notre Dame Press 1971) (originally published in French in 1958).

gumentation in formal systems, namely, argumentation frameworks.³⁹ We distinguish between abstract and structured argumentation frameworks. In abstract argumentation frameworks, the notions of argument and attack between arguments remain undefined, but they are sufficient to define the criteria for argument acceptability (so-called semantics), which generate extensions, intuitively, sets of arguments that can be rationally accepted together. Structured argumentation frameworks enable the presentation of relationships between premises and conclusions of arguments, as well as types of attacks on arguments: undermining attacks directed against arguments' premises, rebuttal attacks that question conclusions, and undercutting attacks that aim at weakening the relationship between the premises and the conclusion.⁴⁰ The computational models of argumentation as abstract structures enabling the representation of any type of argument have become extremely influential in AI and law.⁴¹ Certain aspects of legal argumentation have received their computational representation (not necessarily based on the concept of argumentation frameworks), such as reasoning with standards of proof in the Carneades system,⁴² balancing reasons in reason-based logic,⁴³ or, more recently, reasoning with burden of persuasion in a model based on ASPIC+.⁴⁴

To some extent, another approach was developed. As noted, legal reasoning may be represented not as a "battle of arguments" but rather as

39 Dung (n 244). See the general elaboration of the topic of formal and computational argumentation in Iyad Rawhan, Guillermo R. Simari (eds.), *Argumentation in Artificial Intelligence*, (Springer 2009) and in Pietro Baroni, Dov Gabbay, Xavier Parent, Leon van der Torre (eds.) *Handbook of Formal Argumentation*, (College Publications 2018).

40 See Henry Prakken, 'An abstract framework for argumentation with structured arguments' (2010) *Argument and Computation* 1(2), 93-124.

41 The influence of Dungian argumentation frameworks on the AI and Law research is discussed by Trevor Bench-Capon, 'Before and after Dung: Argumentation in AI and Law', *Argument and Computation* 11(1-2), 221-238.

42 Thomas F. Gordon, Henry Prakken, Douglas Walton, 'The Carneades model of argument and burden of proof' (2007) *Artificial Intelligence* 171(10-15), 875-896.

43 Jaap C. Hage, *Reasoning with Rules. An Essay in Legal Reasoning and its Underlying Logic*, (Springer 1997).

44 Roberta Calegari and Giovanni Sartor, 'A Model for the Burden of Persuasion in Argumentation', in: Serena Villata, Jakub Harašta and Petr Kremen (eds) *Legal Knowledge and Information Systems - JURIX 2020: The Thirty-third Annual Conference*, *Frontiers in Artificial Intelligence and Applications* 334, (IOS Press 2020), 13-22; an introduction to the ASPIC+ system: Sanjay Modgil, Henry Prakken, *The ASPIC+ framework for structured argumentation: a tutorial*, (2014) *Argument and Computation* 5(1), 31-62.

an endeavor to construct the most coherent set of elements (theory) that explains the solution of the case.⁴⁵ Models of legal reasoning based on the notion of coherence were developed earlier in legal theory,⁴⁶ and they influenced the coherentist approach in AI and law to a limited extent. In the computational modeling of legal reasoning, coherence-based models have been most intensively investigated in the context of case-based reasoning systems, combining reasoning based on rules, factors, and values, and introducing the external criteria enabling the comparison of theories.⁴⁷ The coherence-based approach has also been successfully combined with the argument-based approach in a hybrid theory of reasoning with evidence.⁴⁸

Much attention has also been devoted to the problems of legal knowledge representation. As is known, logical formalisms, such as first-order logic or deontic logic, have limited expressive power, and they cannot account for the complex structure of legal concepts. In this connection, the ideas elaborated in the general research on AI in structured knowledge modeling have been applied widely in the fields of AI and law.⁴⁹ For instance, a frame-based approach to knowledge, representing entities as sets of slots that give information on the values of the parameters of this object, has been applied to the representation of legislation.⁵⁰ The development of Semantic Web technology has had a definitive impact on the representation of knowledge in the fields of AI and law.⁵¹ For the sake of recall, the

45 See L. Thorne McCarty, 'Some Arguments About Legal Arguments', in John Zelezniak, Daniel Hunter, L. Karl Branting (eds.): *Proceedings of the Sixth International Conference on Artificial Intelligence and Law, ICAIL '97*, (ACM 1997), 215-224.

46 For instance Aleksander Peczenik, *On Law and Reason*, (Springer 2008).

47 See Trevor Bench-Capon, Giovanni Sartor, 'A model of legal reasoning with cases incorporating theories and values', *Artificial Intelligence* 150(102), 97-143. An alternative approach based on constraint satisfaction conception of coherence as outlined by Paul Thagard, *Coherence in Thought and Action*, (The MIT Press 2000), was applied to the field of legal reasoning in Michał Araszkiewicz, 'Limits of Constraint Satisfaction Theory of Coherence as a Theory of (Legal) Reasoning' in Michał Araszkiewicz and Jaromír Šavelka (eds) *Coherence. Insights from Philosophy, Jurisprudence and Artificial Intelligence* (Springer 2013), 217-241.

48 Floris Bex, *Arguments, Stories and Criminal Evidence. A Formal Hybrid Theory*, (Springer 2011).

49 See Erich Schweighofer, *Legal Knowledge Representation*, (Kluwer Law International 1999).

50 See Robert van Kralingen, *Frame-based Conceptual Models of Statute Law*, (Kluwer Law International 1995).

51 See for instance Pompeu Casanovas, Monica Palmirani, Silvio Peroni, Tom van Engers and Fabio Vitali 'Special Issue on the Semantic Web for the Legal Domain

Semantic Web is a multi-layered system of information that aims at facilitating the processing of information by machines. An important part of this framework is provided by ontologies—formal and computational representations of the relationships between concepts, and reasoners—computer programs that perform inferences based on information stored in an ontology.⁵² Numerous legal ontologies have been developed since the 1990s, including sophisticated ontologies of causal links⁵³ or systems representing types of legal provisions and deontic modalities.⁵⁴ The research on legal ontologies has important connections with legal-theoretical research on legal concepts.⁵⁵

In recent years, much attention has been devoted to a more natural representation of legal arguments in computational systems. Doug Walton's philosophical conception of argumentation schemes has been applied in numerous domains of AI and law research, most recently in connection with interpretive argumentation.⁵⁶ The topic of legal interpretation has

Guest Editors' Editorial: The Next Step' (2016) *Semantic Web Journal* <<http://www.semantic-web-journal.net/content/special-issue-semantic-web-legal-domain-guest-editors%E2%80%9999-editorial-next-step>> access: 16 August 2021.

- 52 Nuria Casellas, *Legal Ontology Engineering, Methodologies, Modelling Trends, and the Ontology of Professional Judicial Knowledge*, (Springer 2011); Giovanni Sartor, Pompeu Casanovas, Maria Angela Biasiotti, Meritxell Fernández-Barrera (eds.), *Approaches to Legal Ontologies. Theories, Domains, Methodologies*, (Springer 2011); Johannes Scharf, *Künstliche Intelligenz und Recht. Von den Wissensrepräsentation zur automatisierten Entscheidungsfindung*, (Weblaw 2015).
- 53 Jos Lehmann and Aldo Gangemi, 'An ontology of physical causation as a basis for assessing causation in fact and attributing legal responsibility' (2007) 15(3) *Artificial Intelligence and Law*, 301-321.
- 54 For instance Enrico Francesconi, 'A description logic framework for advanced accessing and reasoning over normative provision' (2014) *Artificial Intelligence and Law* 22(3), 291-311.
- 55 Giovanni Sartor, 'Legal concepts as inferential nodes and ontological categories' (2009) *Artificial Intelligence and Law* 17(3), 217-251.
- 56 The most comprehensive presentation of the argumentation schemes theory is Douglas Walton, Chris Reed and Fabrizio Macagno, *Argumentation Schemes*, (Cambridge University Press 2008). The application of this theory to interpretive argumentation in law may be found in the recent monograph by Douglas Walton, Giovanni Sartor and Fabrizio Macagno, *Statutory Interpretation: Pragmatics and argumentation*, (Cambridge University Press 2020). The influence of Douglas Walton's theories on AI and Law has recently been discussed in Katie Atkinson, Trevor Bench-Capon, Floris Bex, Thomas F. Gordon, Henry Prakken, Giovanni Sartor, Bart Verheij, 'In memoriam Douglas N. Walton: the influence of Doug Walton on AI and law' (2020) *Artificial Intelligence and Law* 28(3), 281-326 and in Katie Atkinson and Trevor Bench-Capon, *Argumentation Schemes in AI and Law* (in press 2021).

become one of the most intensively debated issues in AI and law, including the strategies of agents performing the interpretation, the types of conflicts between interpretive statements, and the formal representation of interpretive disagreement in argumentation frameworks.⁵⁷ Generally speaking, the representation of legal reasoning in argumentation systems assumes that the correct solution is the one determined by the adopted argument acceptance criteria.

The outline of approaches present in computational models of legal reasoning (including the models of argumentation) indicates the increasing complexity of the developed approaches, as well as increasing awareness of the complexities of legal reasoning in AI and law research, even though it must be stressed again that the flow of information between this field of research and legal theory remains rather limited. There is also a visible tension between the direction focused on more informal, natural, descriptively adequate modeling (for instance, based on argumentation schemes) and strictly formal, computationally oriented modeling (as in abstract argumentation frameworks). Moreover, there is an apparent tendency to develop general, formal models as opposed to domain-dependent models that rely primarily on juridical knowledge. The fundamental question, then, emerges: Should computational models of legal reasoning simulate the bounded rationality of legal decision makers and arguers? Alternatively, should it represent legal reasoning as it would be performed by an idealized, rational entity? This problem also has a bearing on the modeling of legal prediction tasks, as discussed in what follows.

57 See for instance Michał Araszkiewicz, 'Towards Systematic Research on Statutory Interpretation in AI and Law', in: Kevin D. Ashley (ed.) *Legal Knowledge and Information Systems - JURIX 2013: The Twenty-Sixth Annual Conference*. Frontiers in Artificial Intelligence and Applications 259, (IOS Press 2013), 15-24; Tomasz Żurek and Michał Araszkiewicz, 'Modeling teleological interpretation' in Enrico Francesconi and Bart Verheij (eds), *International Conference on Artificial Intelligence and Law, ICAIL '13*, (ACM 2013), 160-168; Michał Araszkiewicz and Tomasz Żurek, 'Interpreting Agents' in Floris Bex and Serena Villata (eds), *Legal Knowledge and Information Systems - JURIX 2016: The Twenty-Ninth Annual Conference*. Frontiers in Artificial Intelligence and Applications 294 (IOS Press 2016) 13-22; Martín O. Moguillansky, Antonino Rotolo, Guillermo Ricardo Simari, 'Hypotheses and their dynamics in legal argumentation' (2019) *Expert Systems and Applications* 129, 37-55. General models of formal argumentation which share basic ideas of the argumentation schemes theory may be found in Bart Verheij, 'DefLog: on the Logical Interpretation of Prima Facie Justified Assumptions', (2003) 13 (3) *Journal of Logic and Computation* 319-34 and in Bart Verheij 'Artificial Argument Assistants for Defeasible Argumentation', (2003) 150 (1-2) *Artificial Intelligence* 291-324.

Notwithstanding all the important differences between the presented approaches, they all share a feature: to operate, they need a formalized knowledge base to be prepared, validated, and maintained. These processes are costly and time consuming, and they require a degree of debatable, sometimes arbitrary, decisions concerning the formalization of knowledge elements. Important choices have also been made respecting the selection of inference mechanisms performed by a system. They cannot generalize the available knowledge or analyze data that is not represented in each formal language. Therefore, the scope of their application is severely limited. What is more, as with any symbolic AI system, they may require the use of commonsense knowledge, which is the problem discussed above in the context of general AI. The advantage of systems of this type is that they can provide the reasons for the generation of a conclusion in a manner that is, in principle, understandable for a user. These reasons may have different structures, considering the diverse architectures of the systems. For instance, in classical rule-based systems, the reasons will be presented as premises of logical inference; in case-based reasoning systems, as dimension- or factor-based similarities or dissimilarities providing a basis for arguments; and in coherence-based systems, as the degrees of coherence of theories supporting given conclusions. In recent literature, it has been claimed that these systems basically generate explanations of legal decisions.⁵⁸ More strictly speaking, they generate justificatory reasoning (argumentation) in the first place, although many also can explain why and how such and such justificatory reasoning was generated. Despite these advantages, symbolic AI systems are not widespread in practice due to their low scalability, lack of possibility of analyzing source documents, and very limited adaptive capability. It should also be emphasized that, from the perspective of legal theory and doctrine, the computational models of legal reasoning may be assessed as too simplified on the conceptual level.

3. Computational Intelligence for Legal Tasks: How to Combine it with Symbolic Legal Reasoning Models

Although computational intelligence models, including neural networks, have been investigated in connection with solving legal problems since

58 See Katie Atkinson, Trevor Bench-Capon and Danushka Bollegala, 'Explanation in AI and law: Past, present and future' (2020) *Artificial Intelligence* 289: 103387.

the 1980s,⁵⁹ it was the unprecedented development of ML technology in the 21st century that established this approach as a dominant stream in AI and law. Nowadays, a significant part of research in AI and law focuses on developing systems aiming at the prediction of judicial decisions, classification of elements of legal texts, extraction of information from datasets, e-discovery, or enhancing the performance of retrieval systems. A substantial part of this research is based on NLP technology. The advances of this approach have been enabled by large datasets of legal documents available online.

The function of ML models is to identify a pattern in the dataset, considering the patterns of data already identified.⁶⁰ The general methodology for developing ML models in the field of law may be characterized as follows, taking the supervised learning approach as an example. The first step consists of the identification and gathering of a set of raw data (for instance, textual documents, such as judicial decisions). The next steps concern the preparation of the dataset, which encompasses normalization, tokenization, and annotation.⁶¹ *Normalization* consists of converting all words to lower case and eliminating variations, such as conjugation. *Tokenization* involves the elimination of punctuation or hyphens and results in the treatment of certain words or sets of neighboring words as tokens (n-grams). *Annotation* consists of adding information to the source by labeling the parts thereof. These labels may indicate the grammatical function of expressions, disambiguate them, or indicate the nature of semantic or other information carried by them (for instance, if the aim of the model is to extract the argument elements from a judicial opinion, the annotation categories may be the premises of arguments, their conclusions, and the names, or types, of arguments employed by judges). Annotation may be applied to levels of granularity; it may relate to the whole document, to parts thereof, or to phrases or words. Both the elaboration of the annotation scheme and the very process of annotation require the adoption of certain principles and the resolution of differences of opinion. In many cases, annotators eventually make decisions; the scope of convergence between them is measured under the heading of interannotator agreement.

59 See Richard K. Belew, 'A connectionist approach to conceptual information retrieval' (Proceedings of the First International Conference on Artificial Intelligence and Law, ICAIL '87, Boston, 27-29 May 1987) 116-126.

60 See Kevin D. Ashley, *Artificial Intelligence and Legal Analytics. New Tools for Legal Practice in the Digital Age* (Cambridge University Press 2017) 234.

61 Ashley (n 60) 236.

Once the source text is properly prepared, it is represented as a mathematical structure (for instance, a vector space) in a model. Then the model is subject to the process of training until it produces the results that satisfy the assumed criteria. Typical legal problems resolved by ML systems are classification (assigning a label to the new data) or prediction of an event or behavior (which may also be seen as a type of classification).⁶² For instance, in information retrieval, the task may be to retrieve defined relevant information (e.g., cases decided in favor of the plaintiff). In semantic classification systems, the result may consist of classifying objects (for instance, legal provisions). ML systems may also be used for exploratory purposes, for instance, to detect repeatable patterns of data not identified yet, which may indicate non-accidental regularities not identified previously (for instance, fraud or tax evasion). The performance of an ML model is assessed against a set of standard criteria such as precision (the ratio of the amount of true positive results to the sum of true positive and false positive results), recall (the ratio of the amount of true positive results to the sum of true positive and false negative results), traditional F-measure (harmonic mean of precision and recall), and other criteria.

Computational intelligence systems may generate erroneous results by nature, especially if the target dataset differs in certain respects from the training set. Conversely, increasingly often, the performance of ML tools for certain tasks is comparable to, or even exceeds, the level of human lawyers regarding accuracy. In particular, one may enumerate the experiment concerning reviewing contracts,⁶³ applications of the question answering system to provide legal texts relevant for legal queries,⁶⁴ pre-

62 It should be stressed that both classification and prediction tasks may also be performed by symbolic models, in particular by case-based reasoning systems and argumentation systems. See, for instance, Kevin D. Ashley and Stefanie Brün- inghaus 'Automatically Classifying Case Texts and Predicting Outcomes' (2009) 17(2) *Artificial Intelligence and Law*: 125–65 and the dissertation of Matthias Grabmair, *Modeling Purposive Legal Argumentation and Case Outcome Prediction Using Argument Schemes in the Value Judgment Formalism* (University of Pittsburgh 2016) <<http://d-scholarship.pitt.edu/27608/>>, accessed 17 August 2021. Nonetheless, in practical applications, the computational intelligence approach is prevalent, because of the possibilities concerning application of the model to the new datasets expressed in natural language.

63 See <<https://www.lawgeex.com/>> accessed 10 May 2021.

64 See <<https://www.rossintelligence.com>> accessed 10 May 2021.

dictions of European Court of Human Rights decisions,⁶⁵ or recent predictions concerning domain dispute decisions in the legal framework of WIPO.⁶⁶ The abovementioned systems are targeted to perform strictly defined tasks typically restricted to particular domains, but the constant evolution of the ML and NLP technologies creates possibilities for generalizations. In particular, the results obtained in the initial stage of the Lex Rosetta project show that similar, promising results may be obtained in the performance of tasks concerning the segmentation of judicial opinion issues in jurisdictions and drafted in languages.⁶⁷

However, the efficient operation of computational intelligence ML systems in the performance of legal classification and prediction tasks does not mean that their results are readily applicable to solving such legal problems as justifying an opinion, establishing the relative weight of arguments, or explaining why a situation should be regarded as an instance of an abstract concept. Even if the results generated by the numerical model are likely to be evaluated as correct by most professional lawyers, this does not mean that they were obtained along the same line of reasoning that a human lawyer or an idealized Hercules judge would present. The contrary is the case, as the operation of such systems is typically based on dozens, hundreds, or thousands of features captured by a numeric model. Nowadays, one of the most intensively debated topics in AI is its explainability: the possibility of presenting the mechanism of algorithm operations in a manner understandable to humans.⁶⁸ As we have noticed above, the symbolic AI models of legal reasoning realize this postulate to a high degree. This does not hold, however, for computational intelligence systems, the level of explainability of which varies across models and is the lowest regarding multi-layered artificial neural networks. The relatively low level of their explainability means that it is difficult, in some cases practically impossible, to answer why the system generated a given result.

65 Nikolaos Aletras, Dimitrios Tsarapatsanis, Daniel Preotiuc-Pietro, Vasileios Lampsos, 'Predicting judicial decisions of the European Court of Human Rights: a Natural Language Processing perspective' (2016) 2 *Perrj Computer Science*, e93.

66 L. Karl Branting, Craig Pfeifer, Bradford Brown, Lisa Ferro, John Aberdeen, Brandy Weiss, Mark Pfaff, Bill Liao, 'Scalable and explainable legal prediction' (2020) *Artificial Intelligence and Law*, <<https://doi.org/10.1007/s10506-020-09273-1>> accessed 10 May 2021.

67 Jaromír Šavelka, Hannes Westermann and others, 'Lex Rosetta: Transfer of Predictive Models across Languages, Jurisdictions and Legal Domains' (ICAIL 2021: Proceedings of the Eighteenth International Conference on Artificial Intelligence and Law, São Paulo, 21-25 June 2021) 129-138.

68 See Arrieta and others (n 25).

The problem of the explainability of ML systems gives rise not only to epistemic problems but also to ethical and legal ones. If a system is used as an element of the decision-making process, we should be able to provide transparent reasons for the adoption of such a decision. The lack of such transparency and accountability may lead to (the risk of) legal liability.

These problems led to the emergence of a subdomain of XAI (explainable artificial intelligence) research, namely, the concept of XAILA (explainable artificial intelligence and law).⁶⁹ One of the main ideas discussed in this field is to bridge the gap between data-driven numerical ML systems on the one hand and the knowledge-based, symbolic AI systems on the other, and possibly to combine them in hybrid systems.⁷⁰ Such systems should aim to balance the performance of computational intelligence systems with the relatively high level of explainability of symbolic models of legal reasoning. One of the approaches represented in this field is to enhance the explainability of ML models by training them based on the data annotated with categories characteristic of the knowledge elements employed in the computational models of legal reasoning, such as legal norms, concepts, premises of arguments, inference links, etc. Such systems could explain their classifications and predictions through the recourse of the features specified in the annotation, which correspond to the intelligible elements of legal reasoning.⁷¹ The concept of combining the ML approach and the symbolic models of reasoning approach has been elaborated at a deep level in the conception of cognitive computing legal apps (CCLA) advocated by Kevin D. Ashley.⁷² The CCLA consists of forming legal hypotheses (such as a given set of circumstances that should or can lead to a given result) and then testing them in the environment encompassing the ML model, the computational model of legal reasoning, and the human. According to this approach, legal datasets should be annotated with schemes determined by the structure of computational models of legal reasoning. Therefore, they could serve as the source of premises for the latter models, which would then perform highly reliable reasoning based on valid or at least well-defined inference patterns. It is emphasized that the presence of a human in the loop is essential here, particularly because the set of premises retrieved by the ML models may be imperfect

69 A series of workshops attached to the JURIX International Conference on Legal Knowledge and Information Systems, in 2018, 2019, and 2020. See <<https://www.geist.re/xaila:start>> accessed 10 May 2021.

70 See Atkinson, Bench-Capon, Bollegala, (n 58).

71 See L. Karl Branting and others (n 66).

72 See the extensive elaboration of the idea of CCLA in Ashley (n 285) 350-391.

for various reasons. The reasoning performed by computational models of reasoning may also require verification. The availability of the CCLA could substantially enhance the performance of legal practitioners through the facilitation of data analysis (via the ML component) and ensuring correct reasoning (via the computational model of reasoning). Nonetheless, the tension between the limited rationality of human reasoners and the tendency of computational models of reasoning to rationalize them has its bearing on the ML-based prediction of legal decisions and the CCLA concept. Should we predict an imperfectly reasoned (even erroneous) human decision or the decision of an entity exceeding humans, regarding intellectual capabilities? Moreover, can such capabilities of the human mind as reasonable judgment be well defined in the sense of problem-solving theory?

These questions lead us to the problem of the fundamental dichotomy of ML models on the one hand and the models representing symbolic reasoning and justification on the other. The essence of ML models is that they represent the structure of existing data. Nevertheless, the substantial feature of legal reasoning is its normativity, understood here as the possibility of subjecting any legal claim to critical scrutiny. Irrespective of the existing practice (documented by the available sources), lawyers have the vocation to challenge it by asking whether this practice should be continued. In fact, arguments based on established practices or customs are only one type of argument among many used in legal discourse, and there is an ineliminable tension in legal reasoning between the value of stability and certainty, on the one hand, and flexibility and evolution, on the other hand. These dynamic tendencies may also be recorded in the available data. However, lawyers may also critically assess the character of these dynamics. In addition, in the Anglo-American legal culture where the evolution of case law is constrained by the *stare decisis* principle, lawyers may add dynamics to the evolution of the legal domain through creative distinguishing argumentation or, in certain situations, through arguing for overruling of earlier precedents. In statutory interpretation, this tension is captured by the potential conflict between linguistic arguments and purposive (teleological) arguments. The data-oriented nature of computational intelligence systems causes their inability to capture this normative, or open, character of legal argumentation. As this is a natural feature of these systems, it should not serve as the basis for their critique; it is simply not fit for the purpose of modeling normative aspects of legal argumentation. Contrarily, symbolic AI models of legal reasoning may present a line of argument similar or indirectly translatable to the line of reasoning that could be presented by lawyers in natural language, including the mechan-

isms of the construction of new arguments from the database. Of course, the relevant information must already be stored in the database, and the patterns of inference must be captured by the mechanisms implemented in the program. The limited or lack of ability of symbolic AI systems to generalize beyond available knowledge should not be the basis of critique of these systems. They are simply not fit for this purpose. However, they are designed to represent reliable, valid reasoning from a well-structured set of premises.

Therefore, the CCLA concept aims to draw benefits from the strong sides of both components (ML models and symbolic AI reasoning systems) and simultaneously relate the training process of the former to the elements considered relevant for the latter. Considering the radically different character of both components, the conception is a far-reaching attempt to align their operation. The presence of a human on the loop is an indispensable element of this conception because it is necessary to critically evaluate the input to the reasoning system provided by an ML model and to investigate whether the reasoning performed by the computational, symbolic system does not lead to oversimplifications. The output generated by the CCLA, concerning, for instance, predictions of outcomes, assessments of the strength of arguments, or indications of the relevant existing case law may and should be evaluated by human lawyers who may continue the iterative process by modifying questions posed to the system or proposed hypotheses submitted for verification. Undoubtedly, the development of any CCLA is a complex task, beginning with the preparation of an annotation scheme based on elements relevant to symbolic models of legal reasoning.

Another approach to the design of hybrid applications combining symbolic reasoning and ML-based task solutions can be outlined as follows. Generally, for any legal problem, possible answers may be deliberated, and justifications supporting these answers may be constructed. These alternative justifications could be generated automatically from the database encompassing both general jurisprudential knowledge (types of legal norms and legal concepts, interpretive canons, patterns of inference, catalogues of legally relevant values) and domain-specific knowledge. Then, the alternatives could be tested regarding their resistance to attacking arguments. Such a testing process may, in principle, be realized by the reinforcement learning algorithm, where agents compete to produce the best possible justification of a given legal solution. Then, this solution may be compared to the solution predicted by an ML mechanism trained on textual data. This type of application would also require humans on the loop to critically evaluate the generated justifications. It would also require the develop-

ment of a cross-domain corpus of legal knowledge, a task that was initiated decades ago but still requires extensive international and interdisciplinary collaboration.⁷³

4. Conclusions

The LegalTech community should become aware of the achievements of AI and law research, including the identified limitations of approaches and the obstacles hindering the wider practical application of some prototypical systems. This direction of information flow should enable LegalTech to avoid reinventing the wheel and to increase awareness of the complexities related to legal knowledge representation, legal reasoning, and models of classification and prediction. Neither is it the case that the symbolic AI tools at our disposal match the complexity of actual legal justificatory reasoning; nor does it hold that the application of ML tools, including NLP, can always lead to reliable, replicable, practically useful, and theoretically well-founded results. Yet, the legacy of almost five decades of AI and law research provides a firm foundation for the development of new types of legal applications, including the CCLA briefly commented on above. If LegalTech embraces this legacy, it may avoid entering dead ends, concerning, for instance, knowledge acquisition bottlenecks, computational tractability problems, or undue simplifications in both knowledge engineering and developing data mining models. The complexity of legal reasoning has not been completely accounted for in AI and law research. While the theoretical foundations thereof need continuous development, LegalTech should at least become aware of the problems that already have a computational implementation, such as procedural aspects of argumentation, reasoning with burdens and standards of proof, aspects of case-based reasoning, or theory construction based on the notion of coherence.

Problems related to AI's understandability, explainability, transparency, and eventually trustworthiness pose particularly pressing problems, as apparently a major part of LegalTech solutions are based—for reasons of performance level and scalability—on ML models. The developers and users

73 In this chapter we focus on AI applications in connection with judicial decision-making and legal argument. One of the fields of AI application in the context of law, which we have not discussed here, but which is definitively worth mentioning, also due to its interdisciplinary character, is the support of dispute resolution. See John Zeleznikow, 'Using Artificial Intelligence to provide Intelligent Dispute Resolution Support' (2021) 30 *Group Decision and Negotiation* 789–812.

of these systems should become aware of the state of debate concerning explainable AI and law and the conceptions concerning the relationship between the explanation of the algorithms' operations and the justificatory argumentation representing the reasons for accepting a given conclusion. This debate is far from concluded, and its practical importance is enhanced by the regulatory actions undertaken by EU authorities and related debates concerning the ethics of AI use and operations.⁷⁴ The LegalTech community should also recognize problems concerning the normative and open character of legal argumentation, which remains in tension with the data-driven approach characteristic to ML models. In this connection, it is worth analyzing for LegalTech developers where and how the role of the human reasoner is placed in the new conceptions advanced in AI and law, such as the idea of the CCLA.

The above comments are not intended to imply the informational flow between AI and law and LegalTech should be unidirectional. The contrary is the case: The practical approach of the latter may provide very valuable empirical input for the former, especially on the level of identifying the actual needs of legal practice and the processes of evaluating prototypical solutions. The LegalTech sector provides a platform for large-scale experiments of the tools and solutions that may be elaborated on the basis of or already available in the results of AI and law research. Moreover, the availability of large datasets in settings relevant to LegalTech enables the development of more realistic and generalized models, both in the field of modeling legal reasoning and computational intelligence for legal classification and prediction.

I am convinced that the actual progress of LegalTech research and applications toward enhancing the performance of actual legal problem solving involves the adoption of a more comprehensive, interdisciplinary approach. As noted, although part of AI and law research is grounded in legal-theoretical work on legal reasoning, a much more intensive, bidirectional flow of information is needed between these two fields. If such communication is absent, research on AI and law focuses on the formal

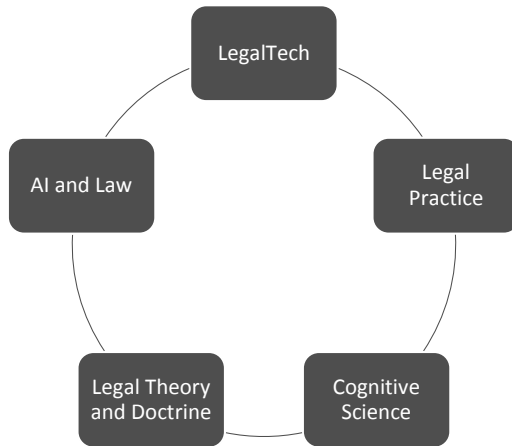
74 See for instance the Proposal for a Regulation laying down harmonised rules on artificial intelligence (Artificial Intelligence Act), <<https://ec.europa.eu/newsroom/dae/items/709090>> access 10 May 2021 and the earlier documents: Ethics Guidelines for Trustworthy Artificial Intelligence, <<https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai>> access 10 May 2021 and Framework of ethical aspects of artificial intelligence, robotics and related technologies, <https://www.europarl.europa.eu/doceo/document/TA-9-2020-0275_EN.html> access 16 March 2021.

and computational aspects of the developed models, leaving the specificity of legal reasoning and, generally, the performance of legal tasks in the margin. This results in the development of (overly) idealized models or in the decreased understandability of models for the lawyers. A more intensive flow of information is needed both on the level of general jurisprudence (theories of legal validity, interpretation, applications of law, etc.) as well as on the level of doctrines related to domains of law. Conversely, legal theory should become more aware of the nuanced character of AI and law research, which should not be inadequately equaled with a revival of “mechanistic jurisprudence.”

However, to contribute to the more realistic computational models of legal reasoning, legal theory should become more integrated with the interdisciplinary field of studies on mind and cognition, that is, cognitive science.⁷⁵ The research area referred to as *cognitive science and the law* has attained important status in the legal–philosophical landscape, analyzing, for instance, the role of heuristics and biases in legal reasoning. Nevertheless, a significant part of the work still needs to be done, especially in the sphere of theorizing about legal reasoning in terms of mental representations and the operations performed on them. Such research may lead to a better understanding of legal concept acquisition and formation, the actual patterns of legal rule-based and case-based reasoning, as well as the relationship between the intuitive, fast system of the mind and the slow, deliberative system. The theoretical and empirical results in this field could provide feedback to both legal theory and AI and law to finally inform LegalTech about the structure of the models effectively supporting or simulating legal thinking.

75 This direction has been already elaborated in Giovanni Sartor, *Legal Reasoning*, (Springer 2005), however it definitively needs further, interdisciplinary investigations.

Figure 1. Model of information flows between the “nearest neighbor” areas.



The figure presented above indicates the “nearest neighbor” relationships between the indicated areas; it is presumed here that the bidirectional flow of information is perhaps the most natural between these pairs due to the overlap of conceptual schemes or shared aims. However, the direct flow of information is possible between each pair of these fields. The main subject of this paper is the possible influence of AI and law on LegalTech. Nonetheless, as noted, the opposing direction of impact is also possible and potentially fruitful. LegalTech is most naturally oriented toward providing results for legal practice. Cognitive science has occupied an important position as a subfield of contemporary legal theory, and as an empirically oriented research area, it also concerns realities of legal practice, especially through psychological investigations. AI and law research has been partially rooted in the contributions of legal theory (and domain doctrines), but as discussed, this mutual link should be strengthened to benefit the quality of LegalTech applications, and for the sake of development of AI and Law solutions which would serve the society best.⁷⁶

76 See Bart Verheij, ‘Artificial intelligence as law. Presidential address to the seventeenth international conference on artificial intelligence and law’ (2020) 28 Artificial Intelligence and Law 181-206.

Computer Aided Legislation

Wojciech Cyrul

1. Introduction

The effective creation and accessing of legal texts in electronic format require the development and implementation of dedicated IT tools. These tools not only make possible the publication and accessing of the official texts of legal acts on the web, but also open up entirely new possibilities for the management of legislative processes and the information processed in them. The digitization of legal acts and other normative texts is also stimulating the development of public and private electronic legal information systems and highlights the importance of new technologies in the creation, accessing, retrieval and visualization of legal information.

The new possibilities offered by technological innovation in law-making have not only given rise to the phenomenon of e-legislation, but also laid the foundations for a new technical paradigm of thinking about the law - "Law as code"¹. The widespread use of IT tools in the creation and accessing of law also means that more and more initiatives are being launched that highlight the new potential of the electronic text format in these areas. Examples include the automated consolidation of the texts of legal acts², the automated translation of regulations³, and the development of systems that allow for the automation of legal information retrieval⁴,

-
- 1 Samer Hassan and Primavera De Filippi, 'The Expansion of Algorithmic Governance: From Code is Law to Law is Code' (2017) 17 *Field Actions Science Reports*.
 - 2 Spinosa P. L., Giardiello G., Cherubini M., Marchi S., Venturi G., Montemagni S., 'NLP-based metadata extraction for legal text consolidation' (Proceedings of the 12th International Conference on Artificial Intelligence and Law, ACM, Barcelona 2009); Monica Palmirani, 'Legislative Change Management with Akoma-Ntoso' in G. Sartor and others (eds), *Legislative XML for the Semantic Web. Principles, Models, Standards for Document Management* (Springer 2011).
 - 3 Atefeh Farzindar and Guy Lapalme, 'Machine Translation of Legal Information and Its Evaluation' in Nathalie Japkowicz and Yong Gao (eds) *Advances in Artificial Intelligence* (Springer 2009).
 - 4 Jacek Petzel, *Systemy wyszukiwania informacji prawnej* (Wolters Kluwer 2017).

the automation of legal references⁵ as well as new computer-aided methods for connecting and visualizing dispersed legal information⁶.

Understanding the evolution of law-making and law-sharing processes brought about by information technology (IT) requires interdisciplinary research. The use of IT in the processes of creating and accessing the law has led to multifaceted changes in the traditional practices of preparing, writing, storing and accessing legal texts, as well as in their retrieval, reading, interpretation and application. These changes require users to acquire and develop new skills as well as understand how new technologies work, including in particular in the ways in which they affect or can influence perceptions, assessments, preferences, choices, decisions and behaviours. Thus, the primary issue we are facing now is not so much the limits of the application of information technology in legislative practice, but rather the consequences of the implementation of new information tools in the creation and accessing of the law. Since a comprehensive analysis of such a wide-ranging problem goes far beyond the scope of this text, and the analysis below will focus solely on the role that IT plays in contemporary processes involving the drafting of legal texts in electronic format, the technical conditions regulating the computerization and algorithmization of legal texts as well as their on-line publication. It is on this basis that the concept of machine consumable legislation will be presented, assuming the incorporation of legal rules into the architecture of electronic systems with the aim of automating the activities described in the regulations⁷.

5 Franciszek Studnicki, Andrzej Łachwa, Jarosław Fall and Ewa Stabrawa, *Odesłania w tekstach prawnych. Ku metodom ich zautomatyzowanej interpretacji* (ZNUJ1990); Emil de Maat, Radboud Winkels and Tom van Engers, 'Automated Detection of Reference Structures in Law' in Tom M. van Engers (ed) *Legal Knowledge and Information Systems* (IOS Press 2006).

6 See also Wojciech Cyrul and Tomasz Pelech – Pilichowski 'Legislating in Hypertext', (2020) 118 OSAP 27; Janusz Opila. and Tomasz Pelech-Pilichowski, 'Visual Analysis of Similarity and Relationships Between Legal Texts' (43rd International Convention on Information, Communication and Electronic Technology -MIPRO, 2020).

7 See also Matthew Waddington, 'Machine-consumable legislation: A legislative drafter's perspective – human v artificial intelligence' (2019) 2 The Loophole - Journal of Commonwealth Assoc of Legislative Counsel.

2. The Role of Technology in the Drafting and Accessing of Legal Texts

Although the first attempts to use computer systems when amending the law date back to the mid-twentieth century, information technology was initially limited to the task of remedying the legislative crisis caused by the steady increase in legal texts, such as acts and case law, that was beginning to overwhelm many Western countries. Since both an efficient state administration and economic growth depend on fast, cheap, easy and safe access to applicable laws, it is not surprising that despite initial teething problems, private and public systems of legal information began to emerge from the end of the 1960s onwards. The first public solutions of this type were two American systems – LITE (Legal Information Thru Electronics) and JURIS launched in 1972. The first European system of this type was the CREDOC (Center de documentation juridique), which was launched in September 1969 and made legal information available to every Belgian lawyer in all areas of law. Other initiatives from this period include the German JURIS system, ITALGIURE-FIND in Italy and Legifrance in France, which replaced the CENIJ (Center de recherches et développement en informatique juridique) service first launched in 1970. Providing access to legal information was also the motive behind the development of legal information systems in Poland. Work on the country's Central Register of Normative Acts (CRAN) began as early as 1974, and this system later provided the basis for the Internet System of Legal Acts, now available on the website of the Chancellery of the Sejm of the Republic of Poland.

To make printed legal texts available in electronic legal information systems, they first had to be scanned using OCR (Optical Character Recognition) technology. However, with the popularization of personal computers and the development of various computer applications, including word processors, electronic databases and related search systems, draft texts of legal acts begin to be prepared in electronic format.

The role of information technology in the creation and sharing of law was further enhanced with the advent of the Internet for general use. Thanks to the development and general availability of WWW architecture, users of computers operating in graphic mode (X-Windows, Apple McIntosh, MS Windows) gained simple access to all published web resources. What is more, thanks to the launch of search engines, they also acquired the ability to search web resources effectively without the need for advanced IT knowledge. This way, space was created for the development of public and commercial legal information services. However, it is important to bear in mind that even in the 1990s and at the beginning of the 21st century, the texts of legal acts were published in HTML as files in

PDF or in other formats that only allowed them to be downloaded or viewed on the web. Only later were the texts of legal acts published in formats specially designed for legal documents, enabling not only advanced searches for such texts, but also the automation of their management and amendment. At the same time, from the very outset the specifications of digital formats were either tools developed by commercial companies or were created by public entities for their own needs, or were developed as an open standard, as was the case with Akoma Ntoso or LegalDocML.

The application of IT in the creation and accession of law has required the implementation of new solutions to ensure data security, both in terms of safeguarding the integrity of already published texts of legal acts as well as the texts of legal acts currently being drafted in the legislative process. Technical solutions are also largely entrusted with the task of ensuring the authenticity and accessibility of the texts of legal acts on the web. In particular, they are responsible for guaranteeing the integrity of legal texts, both at the database level and in their presentation, both at the legislative stage and when laws are published. IT solutions prevent, inter alia, alterations being made to the content of a document by unauthorized persons, errors occurring in the dating or versioning of individual documents, unauthorized changes to their format, inconsistencies between a presented and stored text, changes in semantic relations and changes in the syntax of the source file.⁸

When discussing the role of technology in the creation and accessing of the law, it is also important to note that ensuring data security required the use of different technical solutions in situations where the text of a legal act was made available in the form of a coherent, non-editable file in .Pdf format, available only for reading or download, and other solutions when the content of a legal act was generated on the basis of data selection and aggregation. In the first case, authenticity and security is ensured, on the one hand, by using the appropriate file format and software necessary to read it, and, on the other, by signing the document with a qualified electronic signature. In the latter case, providing data security is a much more complicated issue and depends to a large extent on the hardware and software infrastructure used. In both cases, however, the technological conditions for ensuring data transmission security must be taken into account. This requires not only the use of effective cryptographic solutions

8 Wojciech Cyruł, Jerzy Duda, Janusz Opila and Tomasz Pelech- Pilichowski, *Informatyzacja tekstu prawa. Perspektywy zastosowania języków znacznikowych*, (Wolters Kluwer 2014).

and key certification, but also the application of elementary security conditions for safe transmission, such as the use of packet filtration systems, intrusion detection systems and secure communication between resources, for example via dispersed database servers⁹.

3. Computerization of the Texts of Legal Acts

From the perspective of the legislative process, WWW architecture has contributed to a paradigm shift in the way law is published and accessed on a level similar to the digitization of legal information. The use of the Internet in the law-making process has resulted not only in the proliferation and diversification of our sources of knowledge of law on an unprecedented scale, but it has elevated the role of private and public legal information systems, such as ISAP, LEX and Legalis. Moreover, a number of tools have also been specially devised to support the work of legislators and facilitate the publication of legal texts on the Internet. Besides the above-mentioned editors legal acts, such as the Polish EDAP and EAP Legislator, the Italian xmLeges¹⁰, the Dutch MetaVex¹¹, or the American LegisPro, modern e-legislation systems, have also been developed which include not only editors supporting the preparation of the text of a legal act as well as services responsible for the electronic promulgation of approved legal acts, but also comprehensive systems managing all information flow (workflow) in the legislative process. One model example of such a solution is E-Recht, which was developed in Austria¹².

Any analysis of the ongoing computerization of the law-making process must take into account the importance of public on-line consultation systems in draft legal acts. Such solutions have been successfully launched,

⁹ *ibid* 147.

¹⁰ Tommaso Agnoloni, Enrico Francesconi, Pierluigi Spinosa, 'xmLegesEditor: an OpenSource Visual XML Editor for supporting Legal National Standards' in *Proceedings of the V Legislative XML Workshop* (European Press Academic Publishing 2007).

¹¹ Saskia van de Ven, Rinke Hoekstra, Radboud Winkels, Emile de Maat, and Ádám Kollár, 'MetaVex: Regulation Drafting meets the Semantic Web', in Pompeu Casanovas and others (eds) *Computable Models of the Law* (Springer 2008).

¹² For more on this topic, see Brigitte Barotanyi, 'E-Recht: Law Making in a Contemporary Way' (2007) 1 Masaryk University Journal of Law and Technology 355.

for example, in Greece, Lithuania, Luxembourg, Portugal and Hungary ¹³. This shows that IT not only helps enhance the rationality and effectiveness of legal regulations, but also enables the creation of platforms promoting political debate and public consultations when issuing opinions on draft legal acts. Unfortunately, a planned Polish version of this type of system, initiated in 2012 by the now defunct Ministry of Economy, is currently not being supported by the Ministry of Development, Labour and Technology.

Despite the widespread use of IT in both the creation and application of the law, there is still insufficient knowledge among users with regard to how much the development, accessing and retrieval of reliable and relevant legal information depends on the application of specific standards for encoding and decoding information in a way that enables such information to be processed by machines. Failure to apply such standards may not only prevent access to information, but also affect its authenticity or integrity. Technical standards determine, among other things, the capability and methods of combining different information, as well as the ways used to describe the structure, content and displaying of individual documents. That is why it is so important that the standards used to create and access legal information are not only of a high quality but are also open in the broad sense of the term. This means, among other things, that they should be publicly accessible and understandable, as well as ensure the development and adaptation of such information to future needs. Moreover, their use should not be restricted by intellectual property rights ¹⁴.

The establishment of uniform technical standards has resulted in the progressive standardization of the formats used for electronic documents containing legal information. This, in turn, has enabled in practice the automation of certain activities in the legislative process, e.g., automatic standardization of the texts of legal acts¹⁵. Thanks to these developments, it has also been possible to implement projects in the field of law based

13 High Level Group of Independent Stakeholders on Administrative Burdens, *Europe can do better. Report on the best practice for implementing EU legislation in Member States in the least burdensome way* (European Commission, 15 November 2011).

14 See. Fabio Vitali, 'A Standard-Based Approach for the Management for Legislative Documents' in Giovanni Sartor and others, (eds) *Legislative XML for the Semantic Web. Principles, Models, Standards for Document* (Springer 2011).

15 See also Wojciech Cyrul, 'Tekst jednolity aktu normatywnego w formacie elektronicznym. W kierunku automatyzacji procesu ujednolicania tekstów prawnych' in Marzena Laskowska (ed) *Znaczenie wyroków Trybunału Konstytucyjnego dla tekstu jednolitego ustawy* (Wydawnictwo Sejmowe 2017).

on the idea of the semantic web. The latter term is usually understood as a heteronomous set of numerous formal statements about the content of the web and the world expressed in XML-based syntax and written using an ontology in a machine-readable format¹⁶.

The development of legislative systems based on the semantic web has been paralleled by attempts to promote the idea that legal information made available on the web should be processed not only at the level of individual characters in a text, but also after taking into account the structure of legal texts and the concepts contained therein.¹⁷ In other words, the purpose of the semantic web is to enable machines to process information contained in the texts of legal acts not only at the structural level, but also semantically, while maintaining determinism of action.¹⁸ Moreover, this concept is based on the assumption that any device or tool should be able to access the network, and, more importantly, that the quality of the solutions used should inspire users' trust. This means that these solutions should be safe and predictable in operation and should protect the privacy of the individuals who use them. Such an effect is possible thanks to the development and implementation of appropriate technological standards. Some of these already exist, while others are still in the preparatory or introductory stage. The first category includes, in particular, standards enabling the uniform representation of any graphic symbol based on alphanumeric codes, standards that ensure the unambiguous identification of objects available on the web, and standards that enable document structuring. Examples of the former include in particular: ASCII ISO / IEC 646, ISO 8859, EBCDIC, Windows-1250 and Unicode. Examples of the second are URI (*Uniform Resource Identifier*), URL (*Uniform Resource Locator*) and IRI (*Internationalized Resource Identifier*), URN:Lex (*Uniform*

16 Joost Breuker, Pompeu Casanovas, Michel C.A. Klein, Enrico Francesconi, *'The Flood, the Channels and the Dykes: Managing Legal Information in a Globalized and Digital World'* in Joost Breuker, Pompeu Casanovas, Michel C.A. Klein, Enrico Francesconi (eds), *Law, Ontologies and the Semantic Web. Channeling the Legal Information Flood* (Amsterdam 2009).

17 This is possible thanks to the use of markup languages such as XML, OWL or RDF. The XML language or its variants allows machines to recognize individual elements of a text's structure, and thus, for example, distinguish between a title and a paragraph or article, and languages such as OWL and RDF allow a machine to analyse a text in terms of its conceptual structure, and thus support or monitor the correctness of a user's actions.

18 The latter requirement significantly limits the use of fuzzy algorithms in the field of law, and it also imposes significant restrictions on systems using Artificial Intelligence (AI) or Machine Learning (ML) in this area.

Resource Name:Lex), *ECLI (European Case Law Identifier)* as well as *ELI (European Legislation Identifier)*.) Examples of standards make it possible to present the formal structure of legal texts in a way that allows for their automatic processing by machines, taking into account the meaning of statements about specific objects and their features, in particular XML, RDF, OWL, or standards specially designed for legal documents, such as, e.g., FORMEX, MetaLex, Akoma Ntoso, and LegalDocML. Standards ensuring the confidentiality, authenticity, integrity and certainty of information have also been developed and introduced. On the other hand, work is still underway on creating adequate legal ontologies, such as the LKIF, which would make it possible to provide a description of legal concepts and the relationships between them in a way that would allow machines to make complex inferences, take evidence and conduct conceptual analyses.

Bearing the above in mind, however, it should be remembered that the use of new IT tools to develop, process and publish legal texts in electronic form makes possible the automation not only of specific legislative activities, but also activities related to the provision, retrieval and application of legal information. At the same time, while the scope and possibilities of automation in this area were originally directly connected with the development of Knowledge Representation Languages (KRL) and efforts to find a way of representing legal information that is machine applicable, at the present time the majority of research has rejected this paradigm and focused instead on attempts to use Big Data and Machine Learning technologies for the purposes of creating and applying the law¹⁹. Although the new approach has great potential, it is worth recalling that it was KRLs, such as Lisp²⁰, Smalltalk²¹, and above all Prolog²², that paved the way for legal knowledge to be represented in a form that allows machines to take into account the content of legal provisions. What is more, it is their limited usefulness in this area that was one of the factors behind the search for, and development of, new methods and architectures for inference systems capable of taking into account the semantic dimension of legal texts, such

19 Zódi Zsolt. 'Law and Legal Science in the Age of Big Data' (2017) 3 Intersections. EEJSP 69; Harry Surden, 'Machine Learning and Law' (2014) 89 Washington Law Review 87.

20 Jacek Martinek, *Lisp – opis, realizacja i zastosowania* (Wydawnictwa Naukowo-Techniczne 1980).

21 Johannes Brauer, *Programming Smalltalk – Object-Oriented from the Beginning*, (Springer Vieweg 2015).

22 Robert A. Kowalski, 'Legislation as Logic Programs' in Zenon Bankowski and others (eds.), *Informatics and the Foundations of Legal Reasoning* (Springer 1995).

as, for example, case-based reasoning, agent systems or network services. (SOA). The limitations of universal languages also meant that efforts were made to find alternative ways of writing legal knowledge. These steps, in turn, resulted in the development of dedicated solutions, such as the above-mentioned LKIF (Legal Knowledge Interchange Format), based on the OWL2 language and Argumentation Context Systems)²³.

4. Machine Consumable Legislation

The idea of machine consumable legislation (MCL) is closely connected with the issue of using IT to increase legal certainty and effectiveness. Simply put, it comes down to the task of "incorporating" legal rules in digital reality. As a consequence, this strategy involves creating action space for individuals in such a way as to prevent behaviour inconsistent with certain rules. For obvious reasons, a similar approach is now quite common in business processes, where both the number, type, time and effects of activities performed by individuals can be strictly determined, controlled and supervised by a functioning information system. We can thus risk arguing that the above-presented approach is essentially based on the creative combination and transfer to the public sphere of two relatively well-known technical solutions, i.e., systems with progressive rules and markup languages that allow machines to recognize the structure and content of electronic documents. In the case of MCL, we are dealing not so much with new technology as with a new approach to creating and accessing law. It assumes the parallel preparation of draft texts of legal acts in natural language and software, which will operate in accordance with the provisions contained within them, which will be written in computer languages²⁴. This approach thus postulates exploiting the enormous potential of publishing and accessing legislation in a contemporary electronic format, especially given the fact that nowadays legal acts are not only prepared with the use of text editors and saved in formats that allow them to be accessed online, but also as they are available in machine-readable formats.

23 Rinke Hoekstra, Joost Breuker, Marcello Di Bello, Alexander Boer 'LKIF Core: Principled Ontology Development for the Legal Domain' (2009) 188 *Frontiers in Artificial Intelligence and Applications* 21.

24 cf Waddington (n 8) 23 ff.

In contrast to the semantic web, the MCL concept is not limited to the task of drafting legal texts in a machine-readable way, but also involves state authorities creating and sharing legally functioning software. The main purpose of such a solution is neither to enable users to find relevant legal information more easily, nor to automate the process of standardising the texts of legal acts, but rather to provide addressees of the law with software that will legally determine the consequences arising from specific circumstances specified in the law.

Despite appearances, the idea itself is not that revolutionary. In practice, public authorities currently use software for their internal needs, automating certain processes in accordance with legal requirements. Programmes of this type are used nowadays, for example, to calculate tax liabilities or pension rights²⁵. The novelty of the discussed approach lies solely in the fact that the coded version of the law would be created by state authorities or at their request in parallel with the drafting of the text of a new legal act, and it would be publicly available to all interested entities, and not only to state offices and departments²⁶.

There is no doubt that this approach has many advantages. Certainly, creating and ensuring access to a coded version of a legal act along with the text of the legal act will reduce the risk of errors that may arise in its absence, when the coming into force of a new law will require computer program developers to adapt to its requirements. Moreover, the availability of such a version would also make it possible to effectively test various solutions considered during the legislative process and to automatically check the consistency and completeness of a legal text. However, it remains an open question as to how and with what tools the coding process itself should function. Another important issue is to determine both the legal consequences of using such tools and their legal status. And although advocates of this approach also see it as an opportunity to introduce more "digitally friendly" legislation, it should not be forgotten that the broader application of this concept may require adapting the language of the law to the needs of computer systems. Moreover, given the political conditions shaping legislative processes, the expenditure incurred in creating coded versions of the texts of legal acts and the specific status of the law, there is little reason to believe that the above-discussed approach will become popular in the near future.

25 Giovanni Sartor, 'Legislative Information and the Web', in Giovanni Sartor and others (eds) *Legislative XML for the Semantic Web* (Springer 2011).

26 Cf Waddington (n 8) 26.

Conclusions

The above reflections lead to the conclusion that changes in the traditional paradigm of creating and publishing the law have been accompanied by the increasing role of IT in the legislative process. The fact that most countries now produce and make accessible legal texts in electronic format is due to the fact that common national and international technical standards have been developed and implemented to make this possible. It is also important to aware that the quality and efficacy of creating and making accessible legal texts in an electronic format directly depends on the availability of appropriate tools supporting the work of legislators. Nowadays, it is difficult to imagine a modern legislative process without the existence of specially designed text editors for legal acts, converters, name servers, validators, e-legislation platforms, electronic consultation systems and many other tools facilitating the general management and publication of electronic documents.

The increasingly vital role that IT plays in the creation and application of the law is also a consequence of the common belief that it is an effective means of counteracting the crisis brought on by the spiralling number of legal texts. As a result, computerization is one of the main strategies for rationalizing and optimizing the legislative process. Contrary to, for example, deregulation, computerization cannot halt the phenomenon of legal inflation. On the contrary, it can be reasonably argued that it will further accelerate the accumulation of legal provisions. This is due to at least two factors. First of all, the growing importance and universality of IT has resulted in a need to regulate the principles of their creation and application. Secondly, this trend is altering the preferences of users who increasingly expect access to detailed, precisely formulated rules that ensure satisfactory regulation of strictly defined situations. Bearing in mind the fact that IT tools enable the fulfilment of these expectations, and at the same time allow lawmakers control over a constantly growing body of legal information, it should be assumed that their role in the legislative process will continue to expand. Although this fact may be a justified cause of alarm, it is important to recall that the IT tools currently available make possible the creation of platforms for promoting political debate and more productive public consultations when issuing opinions on draft legal acts. Moreover, electronic systems improve access to legal information, while at the same time guaranteeing its integrity and security. They also enhance the transparency, effectiveness and responsiveness of legislative processes, ensuring that a legal system can adapt rapidly and in a controlled fashion to changing social and economic conditions. In other words, in modern-

day countries IT has emerged as an important element in mechanisms safeguarding quality and legal certainty in practice.

Two Sides of the Same Coin. Possible Interactions Between Text-written Law and Computer Code in the Near Future

Patryk Ciurak

1. Introduction

Even though it is already the third decade of the 21st century, digitalization has touched and transformed almost every part of our lives, and the Internet has become the equivalent of mankind's nervous system, the law has not changed its form. The words that form sentences written in a specific legal language still regulate the life and functioning of societies, and their interpretation allows different meanings to be attributed to seemingly identical expressions. Alongside this established order, which is based on the human understanding of justice, a completely different, parallel reality has grown up, where the prevailing language is computer code. With increasing computerization, the code has come to describe various aspects of human activity, regulating them more efficiently than the law due to its unambiguous expressions and speed at which it is executed. However, the same features pose a problem when reality changes. This is when the law prevails (if it has been well designed), providing sufficiently flexible and interpretable rules of conduct. According to M. Hildebrandt, this is the main advantage that law (written in natural language) has over regulations written in computer code.¹

The consequence of the dualism described above is the existence of countless computer systems regulating our reality and influencing our

1 'The rule of law, understood as an institution ensuring that nobody is above the law, while offering sufficient foreseeability as well as contestability, requires legal norms that build on the open texture of natural language, avoiding both the over- and under-inclusiveness of disambiguated computer code. For now, that means we should foster the adaptive nature of text-driven law before exchanging it for the code-driven nature of computational law. It also means that we should welcome computational technologies that contribute to challenging legalism, authoritarian rule by law and arbitrary rule by those in power.' Mireille Hildebrandt, 'The adaptive nature of text-driven law' (2021) 1(1) *Journal of Cross-Disciplinary Research in Computational Law* <<https://journalcrcl.org/crcl/article/view/2>> accessed 26 April 2021.

lives. Their creation was made possible, among others, by the translation of law into computer code. However, the rules of translation are not formalized anywhere, and it is not the legislator who decides on the final implementation of the law, but the programmers responsible for developing the code. Because of differences in design, systems are often incompatible with each other, even though they operate under the same law. Their maintenance also generates significant costs as there is no single source of truth that would provide an official version of code representing the current law. A possible solution to this problem may be the application of artificial intelligence that could apply the text-written law. However, whether one is thinking about contract analysis, similarity searches, or predictive analytics outcomes, at the heart of all these problems (and a few more) is the fact that computers do not understand the law written by humans and for humans to be interpreted and applied. To achieve a real fusion of the two realities - legal and IT - the law should evolve into two forms existing in parallel: rules written in natural language and computer code.

When we refer to the law in the form of computer code this can be attributed both to *machine-readable* legislation as well as legislation that is *de facto* a computer program ready to be executed and thus to produce legal or factual effects - *machine-consumable* legislation.² Both forms are already widely used, although only in the case of machine-readable legislation is this evident: various normative acts are being promulgated in form of .xml or .pdf files or presented in legal databases. Machine-consumable legislation, on the other hand, is a mapping of the applicable law in the code of the aforementioned applications and systems used to support the processes of law enforcement, e.g. by public administration. Importantly, while the promulgation of a normative act in electronic form may be the result of an official legal procedure (as it is in Poland)³ machine-con-

2 Accident Compensation Better Rules Discovery Team, 'Exploring Machine Consumable Accident Compensation Legislation. Lessons for a structural rewrite of the AC Act and opportunities to make it machine consumable' (The Service Innovation Lab, 1 July 2019) 18 <https://serviceinnovationlab.github.io/assets/Exploring_Machine_Consumable_Code_With_ACC.pdf> accessed 30 January 2021 ; James Mohun and Alex Roberts, 'Cracking the code. Rulemaking for humans and machines' (2020) 40 OECD Working Papers on Public Governance 5 <<https://doi.org/10.1787/3afe6ba5-en>> accessed 5 February 2021.

3 The obligation to promulgate a legal act in electronic form established in Article 2a of the Act of 20 July 2000 on the promulgation of normative acts and certain other legal acts (Journal of Laws of The Republic of Poland of 2019, item 1461).

sumable legislation is, in general, created by private entities without any general rules regulating the process of law-making.

In the following paper, the law existing simultaneously in the form of text and computer code will be referred to as Rules as Code (hereinafter RaC)⁴. Following the systematic proposed by M. W. Wong, RaC referred to in this paper will correspond to solutions placed at level 3 or level 5⁵ which makes them similar (to a certain degree) to the concept of a smart contract.⁶ Furthermore, the possibility of immediate execution from the moment the RaC is created has to be considered as a constitutive feature, which is another point in common with the smart contract. Human intervention should be limited only to the introduction of certain values (if they cannot be obtained from other sources) or the final approval of the proposed ruling.

The aim of the paper is to consider the possible mutual influence that code and legal text may have in the near future. Without a doubt, the development and execution of code will be influenced by the rules of working with legal text, while the process of drafting the law in natural language can be improved by the application of selected code development practices. This paper explores the possibility to automate certain phases of legal interpretation with computer code as well as adopting software testing practices to ensure the quality of legal drafting. The final effect

4 The term Rules as Code has also been adopted in papers: Meng Weng Wong, 'Rules as code – Seven levels of digitisation.' (Research Collection School Of Law, April 2020) <https://ink.library.smu.edu.sg/sol_research/3093/> accessed 17 April 2021 and Mohun and Roberts (n 2).

5 In his paper *Rules as code - Seven levels of digitisation*, M.W. Wong discusses the levels of representation of law by code. Level 3 solutions consist of three layers: rules - natural language sentences, translation of rules into a form understandable by IT systems, and a rule engine which task is to perform the above. The solutions allow (supposedly) users without programming knowledge to edit the rules, while not forcing changes to the code on the engine side. Level 5 involves parallel creation of provisions in the form of natural language and code. However, the natural language text is created from the code (rather than the other way around, as might be expected) and, depending on the sophistication of the system, may require tweaking by the legislator. It should be emphasised that the code version of legislation can be considered as an authentic text on a par with the natural language version or can even fully replace it. *ibid*.

6 A detailed description of the smart contract is provided by Dariusz Szostek, *Blockchain and the Law* (1 ed., Nomos 2019) 110-35.

should present the same meaning whether it comes to text-written law or code, which is referred to as isomorphism.⁷

2. *Interpretation of Law and Interpretation of Code*

Ensuring isomorphism seems to be the biggest challenge standing in the way of widespread use of RaC. Text and code must present the same information, while the way they are decoded is significantly different. Pointing out the most obvious differences (and at the same time simplifying somewhat): a legal text is subject to interpretation, while a code is (in general) unambiguous. Interpretation of a text should aim at realizing a notion of justice that is difficult to define precisely, whereas a code aims at realizing some specific goal. The code is just executed, taking inputs, transforming them, and generating outputs without referring to external axiology (moral or other). Legal language deliberately uses vague or discretionary terms, primarily to ensure an appropriate level of flexibility in the law. Meanwhile, the code should be unambiguous (as mentioned above), functioning within a certain well-defined framework. Finally, the interpretation of the text and the application of the norms are separated by a certain time interval (more or less), while the code is executed and has legal effects in principle immediately; there is no so-called hermeneutic gap, which allows for the assessment of the adequacy of the norms and the possible suspending of their implementation.⁸

Is it therefore possible for the law to function in the form of a code? The analysis of the problem may begin with considering what kind of regulations may take the form of a computer code? J. Mohun and A. Roberts⁹ point to prescriptive rules, which are mostly unambiguous and thus do not require much interpretation. Moreover, they should be used frequently and by a large number of entities, and their functioning in the form of a code will bring specific, measurable benefits (e.g. reduction of the business costs).¹⁰ Moreover, authors repeatedly refer in their publication to services

7 Trevor J. Bench-Capon and Frans P. Coenen, 'Isomorphism and legal knowledge based systems.' (1992) 1 *Artificial Intelligence and Law* 65.

8 cf Laurence Diver, 'Disprudence: the design of legitimate code.' (LawArXiv Papers, 14 July 2020) <<https://doi.org/10.31228/osf.io/nechu>> accessed 18 March 2021.

9 Mohun and Roberts (n 2) 92.

10 This last feature is not substantive and seems to have been added mainly to economically incentivise actors to implement RaC.

provided to i.e. citizens as the possible subject of regulation. Thus, RaC is supposed to improve the satisfaction of standard needs reported by selected categories of entities.

In the paper *Better Rules for Government Discovery Report*, authors working in The Service Innovation Lab in New Zealand suggest (based on their experience) the possibility of transforming into RaC provisions that:

- contain the formulas needed to carry out the calculations,
- confirm the existence of the entitlement, the constitutive features, or the opportunity to examine the application,
- regulate standardized, repeatable processes
- describe the steps in a certain process that must take place before a finding of legal compliance can be made (area of compliance)
- describe a process that can be implemented immediately in digital form.¹¹

The importance of public services has been recognized in the proposal for a regulation of the European Parliament and of The Council laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union legislative acts (hereinafter the proposal).¹² Recital 3 of the proposal points directly to public services (e.g. applying for or receiving public assistance benefits) and justice as areas of interest that can benefit from the use of AI systems. Moreover, AI systems that ‘(...) are used for determining whether such benefits and services should be denied, reduced, revoked or reclaimed by authorities (...)’ will be considered as high-risk as their use ‘(...) may have a significant impact on persons’ livelihood and may infringe their fundamental rights, such as the right to social protection, non-discrimination, human dignity or an effective remedy.’¹³ RaC could (and should) be used to provide clear and coherent regulations to implement in high-risk AI systems. Otherwise, leaving the translation of text-written law into computer code exclusively to high-risk AI systems providers will increase the risk of emerging gaps

11 The Service Innovation Lab (LabPlus), ‘*Better Rules for Government Discovery Report*’ (NZ Digital Government, March 2018) 27 <<https://www.digital.govt.nz/dmsdocument/95-better-rules-for-government-discovery-report/html#summary>> accessed 31 January 2021.

12 <<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM:2021:206:FIN>> accessed 31 January 2021.

13 See recital 37, Article 6(2) and Annex III(5) of the proposal.

and inconsistencies between both versions¹⁴ as well as creating multiple translations. The consequence will be an incompatibility between systems, as described above, and a lower chance of meeting the requirements of accuracy and robustness as mentioned in the proposal.¹⁵

To sum up: the standardization and repeatability of the process, the mass usage, and the unambiguity of the regulations (or at least reduced need for interpretation) point to the possibility of implementing regulations in the form of RaC. Potential benefits in form of reducing operating costs or speeding up processes in an organization are an additional encouragement, important from an economic point of view. However, it should be remembered that RaC is at a very early stage of development. The aim of creating solutions according to the guidelines described above is to provide so much needed practical knowledge and to precede the preparation of more complex projects. It is necessary if RaC is ever to have a real application. Otherwise, it will remain one of the many ideas that have ended their existence at the proof-of-concept stage.

Another area where RaC can certainly find application is the regulation of cyberspace. S. Shcherbak notes that '(...) everything that one sees on the Internet is delivered by means of code. Therefore, code is the architecture of cyberspace, and pieces of code are a construction material of this architecture.'¹⁶ This thought is developed by D. Szostek concerning the regulation of artificial intelligence:

The traditional way of promulgating, or enforcing, a regulation that includes orders or prohibitions that should be taken into account by AI is doomed to failure in advance, a point raised by experts who suggest that the regulation of AI is one of the more difficult challenges for modern lawyers. Assuming, however, that the regulation would be a computer code containing the orders and prohibitions necessary to be considered by AI, in technical terms it represents an organizational and logistical challenge, but not an impossible one. AI is a code that is part of cyberspace, so only by code can prohibitions and orders be imposed on AI, thereby regulating it.¹⁷

14 The identification of such gaps has been described by The Service Innovation Lab (LabPlus) (n 11) 10.

15 See recital 49 and Article 15 of the proposal.

16 Sergii Shcherbak, 'Integrating Computer Science into Legal Discipline: The Rise of Legal Programming,' 4 (14 September 2014) <<https://ssrn.com/abstract=2496094>> accessed 5 February 2021.

17 Dariusz Szostek, 'Sztuczna inteligencja a kody. Czy rozwiązaniem dla uregulowania sztucznej inteligencji jest smart contract i blockchain?' in Lai L. and

Research on the RaC should therefore seek to set standards for law-making that will allow the effective regulation of cyberspace (understood broadly), in particular the systems and algorithms on which AI is based.

As for now, it is unlikely that the European Artificial Intelligence Act (the Regulation) will take the form of RaC. Still, the proposal mentions a quality management system as a measure to provide compliance of high-risk AI systems with the Regulation. It is possible that some of its components may refer to other regulations as well and therefore could benefit from the implementation of RaC. As a result, some of the quality management processes could be automated (to a point), as the official version of the RaC could be made publicly available i.e. through application programming protocol (API).¹⁸ Making RaC available in this manner could also facilitate internal quality checks in the process of creating and maintaining a high-risk AI system.

The effectiveness of regulation, however, must not be equated with a complete lack of interpretation. The research should also cover less clear provisions that contain more discretionary elements or refer to immeasurable values, vague concepts, or general clauses. It should not be expected that the existence of law in the form of a computer code will eliminate the above-mentioned elements from legal acts.¹⁹ The RaC presupposes the coexistence of the legal text and the code, rather than striving to reduce the entire law to a syllogism that requires only the substitution of relevant values. This is at odds with the idea of the RaC and is simply not feasible.

Świerczyński M. (eds.), *Prawo sztucznej inteligencji* (C. H. Beck 2020) 21. In the text, the author refers to the regulation of artificial intelligence by means of a smart contract. Given that the constitutive feature of both RaC and smart contract is readiness for immediate execution, the quoted passage should be considered true in both cases.

18 cf Wong (n 4) 13.

19 For this would mean a return to prescribing casuistic, elaborate legislation. At the same time, it should be noted that it is not a problem for a computer to execute instructions hundreds or thousands lines of code long. Normative acts could finely regulate complex cases in an attempt to replicate reality as accurately as possible; they would not have to be simple, they just need to be consistent and suitable for writing in code (see The Service Innovation Lab (LabPlus) (n 341) 25). A negative consequence would be the difficulty in maintaining the consistency of the RaC. This can be avoided by introducing testing procedures that have been used for many years in software development. Moreover, assumption that RaC are more concise than the same rules written solely in natural language proven to be false (cf Accident Compensation Better Rules Discovery Team (n 2) 6, 30).

It is therefore necessary to identify as many common features as possible between the execution of a computer code and the interpretation (and applying) of legal rules, even if the task seems extremely difficult. Certain interpretative directives are executed based on parameters that are completely measurable and, as a result, lend themselves to a description through a code. Referring to M. Zieliński's conception of interpretation,²⁰ the interpretative moment²¹ may be determined based on the date of the event initiating proceedings, recorded in system logs. The same date will constitute the basis for selecting the correct temporal version of the provisions (both in text and code form) requiring interpretation. Combined with version management in a manner similar to the one used in code development, it would be possible to immediately select the correct version of the legal act for the chosen interpretative moment. Therefore, the ordering phase of interpretation²² would be mostly automated.²³

The situation becomes slightly more complicated when one moves to the reconstructive phase of interpretation. Following M. Zieliński it should be assumed that:

The directives of the reconstructive phase are aimed at obtaining from the provisions of different syntactic form a norm-shaped expression with a structure: A, O, n/z, Z,²⁴ which is to facilitate the determination of the sense of norms expressed in this provision.²⁵

The principle is further formulated, according to which:

The process of interpretation proceedings in the reconstruction phase should begin with the recognition of those syntactic features of the

20 This conception of interpretation has been presented by M. Zieliński in his book *Interpretation of law. Principles - rules - guidelines* first published in Poland in 2002. Maciej Zieliński, *Wykładnia prawa. Zasady – reguły – wskazówki* (7 ed., Wolters Kluwer 2017).

21 *ibid* 279.

22 As described by M. Zieliński. *ibid* 281-258.

23 The implementation of RaC by state bodies would open the way to official assessment of the validity of legislation, similar to what is currently done in commercial legal databases (i.e. LEX or Legalis in Poland). The algorithms adopted by the editors of each system differ significantly and in consequence the same legal act may be indicated as binding in one database, while the other database will not mark it so. This solution is often a source of confusion and causes significant problems for less experienced lawyers.

24 Where A corresponds to the addressee of the norm, O to the circumstances, n/z to the order/prohibition, Z to the behaviour. Zieliński (n 20) 20.

25 *ibid* 286.

provision being interpreted, which determine the trends of further treatment of the provision to obtain from it a single norm or several norms.²⁶

The measures described above have been designed for the interpretation of text written in legal language. However, their applicability to computer code initially raises doubts. Nevertheless, to execute a given piece of code, all necessary elements and their relationships must also be identified. This occurs spontaneously when the code is executed, and deficiencies in this regard are reported by the program (in general) as errors. Thus, the activities of the reconstruction phase can, to some extent, be contained directly in the logic of the code itself. It must be coherent, non-contradictory, and, like a text in legal language, it should not contain redundant expressions.²⁷

Thus, a norm-shaped expression can be described, identified, and reconstructed using code. For example, in an object-oriented programming language such as Python,²⁸ a reconstructed norm-shaped expression could be an object created within a distinct class of objects. The attributes of this class would be the addressee of the norm (A) and the circumstances (O), while the methods in the class would be used to determine the pattern of ordered or forbidden (n/z) behaviour (Z). The modifiers described by M. Zieliński,²⁹ on the other hand, would be functions not directly connected with any class. A norm-shaped expression as an object would be reconstructed for the needs of a particular case and after its application, that is after the code is executed and legal effects are produced - it would be deleted. Also, it should not be assumed that all the mentioned elements must fit in a single provision. In the same way, as legal definitions or references are used in the text of a legal act, the Python code (and many others) refers to other fragments of code or uses so-called class inheritance, which allows creating new classes that are extensions of already existing ones.³⁰

26 *ibid.*

27 An additional benefit is that errors or loopholes can be detected by code testing if the two versions are kept equal. This issue is discussed in more detail later in the text.

28 More information about the Python language and its documentation are available at <https://docs.python.org>.

29 Zieliński (n 20) 111.

30 Please keep in mind that the above description is very much simplified and represents only an outline of the concept. Further research into the possible interactions between text and code is needed in order to develop optimal solutions.

However, to reconstruct the norm-shaped expression, a sufficiently broad set of input information necessary for the decision should be obtained at the earliest possible stage of the proceedings. Some of them will have to be provided by the entity initiating the proceedings (as it is now), others may come from the databases owned by the public administration (e.g. official registers from which data is retrieved through an appropriate interface). The scope and type of data collected would reflect the state of knowledge on a given subject (both general and specialized), the objectives of introducing a given regulation, and (if possible) other values that the legislator considered necessary to take into account at a given stage. As a result, the norm-shaped expression would be reconstructed from mostly objective information.

By far the most difficult part is to combine legal text interpretation and code execution at the final, perceptual stage.³¹ Following linguistic or systemic directives to determine the meaning of individual phrases of a norm-shaped expression is not that difficult; it may even be facilitated by the use of a code. However, the application of functional directives presents a significant difficulty and will in principle be impossible without human intervention.

The application of the linguistic directives of the perceptual phase can be regarded as similar to the process of code execution. Determining the meanings of the individual elements of a norm-shaped expression and their relationships to each other is akin to a computer checking³² that the code is complete and free of obvious errors; this stage precedes code execution. Specific values or attributes are established for specific expressions in the code, just as the meaning of individual words or clusters of words is determined when following linguistic directives. The use of references to other places in the code corresponds to the determination of the meaning of individual words by reference to legal definitions formulated earlier. These definitions, both content- and scope-related,³³ can also be mapped using the code, specifying the necessary input that indicates that the given expression (object) falls within the scope of the definition.

Despite the similarities between the application of linguistic interpretation directives and code enforcement described above, there still are some differences difficult to overcome. This is the case when in the course of in-

31 Zieliński (n 20) 290-302.

32 Specifically, by an interpreter, that is, by a computer program that executes the indicated programs.

33 Zieliński (n 20) 293.

terpretation one has to take into account someone else's binding decision (e.g. a Supreme Court ruling), or when a provision contains legal language phrases with an established meaning in the legal language (e.g. property) or factual phrases (e.g. cat).³⁴ Furthermore, in the case of application of the systemic directives, it should be pointed out that the norms-rules are often formulated with the use of general, unmeasurable terms, or even do not function as separate provisions, but are derived from the legal text through interpretation.

In the case of systemic directives,³⁵ vertical consistency can be enabled by the code architecture itself. Its hierarchical composition makes it easier to ensure the compliance of higher-order norms with lower-order ones. Possible exceptions to the rules can be introduced even through a basic if/then/else instruction. The difficulty arises with the need to ensure horizontal compliance with the norms-rules³⁶ of the legal system. This poses a serious problem at the moment and should be subject to further research.

By far the most problematic application is that of functional directives, in the form in which they currently operate.³⁷ Possible, and sometimes even necessary, references to sources outside the legal act or even completely outside the legal system make it impossible to ascribe meaning to individual elements of a normative expression using the code. Therefore, one of the aims of RaC research should be to determine the optimal way to map the functional directives of interpretation.

The existence of rules in two equal forms (text and code) does not mean the exclusion of human involvement. In the initial stages of the application of the RaC, human participation in the process and its supervision of the proceedings should be assumed. Solutions involving the application of the law, including dispute resolution, by artificial intelligence are only in the testing phase.³⁸ Until satisfactory results are obtained, algorithms should not be allowed to directly shape the legal situation of entities (due to low accuracy of decisions or ethical concerns). The role of the human supervisor would be threefold. First: to compare the results of the

34 *ibid* 294-295.

35 *ibid* 297-298.

36 More on norms-principles see *ibid* 34-36.

37 *ibid* 299-300.

38 Examples are Estonia and China. cf Maria Dymitruk, 'Sztuczna inteligencja w wymiarze sprawiedliwości?' in Luigi Lai and Marek Świerczyński (eds), *Prawo sztucznej inteligencji* (C. H. Beck 2020); Joshua Park, 'Your Honor, AI.' (Harvard International Review, 3 April 2020) <<https://hir.harvard.edu/your-honor-ai/>> accessed 5 February 2021.

linguistic and systemic interpretation obtained as a result of the execution of the code with the results of its functional interpretation and to make a final decision on the reconstructed norm-shaped expression. Then, to make discretionary decisions during the process, if required by the legislator,³⁹ and (finally) to come to a decision. Each of the described actions may in practice be divided into several lower-level decisions, which have their premises and adjudication. This solution may seem far from the idea of RaC, as it assumes the decisive participation of a human being in the process and resembles more the functioning of the so-called virtual assistant judges based on artificial intelligence. Nevertheless, the ordering and reconstruction phases will base on the execution of a code, just as for the determination of meanings using the directives of linguistic and systemic interpretation. These are activities at the level of data and information and (at least in part) knowledge. Describing them through code can result in significant time savings and less chance of error than if performed by a human. A supervisor will be able then to concentrate on the most human stage of the procedure - the application of functional interpretation directives requiring wisdom.⁴⁰ Moreover, the suggested solution aligns with the requirement of human oversight as provided by the proposal in recital 48 and Article 14. Assuming the proposal will come into force without significant changes in this matter, introducing the framework for the interpretation of RaC will be obligatory, at least for the providers of high-risk AI systems.

In parallel with subsequent decisions, a database of rulings will be created where the factual state, the legal state, the lower-level decisions described above, the final decision, and the relations between them are described in code. Such a database can be used for training machine-learning models and will provide high-quality data as mentioned in recital 44 and Article 10 of the provision. The emergence of artificial intelligence that can learn to apply law faster, more effectively, and accurately than today

39 Paradoxically, the degree of human interference in the process of applying the law can be a measure of the quality of provisions; see Accident Compensation Better Rules Discovery Team (n 2) 33. A law that is clear and logically coherent will require minimal human intervention, and in extreme cases it may not be required at all. By contrast, regulations that rely heavily on discretion, are internally contradictory or inconsistent with the rest of the legal system will not be able to function as a code.

40 cf Jennifer Rowley, 'The wisdom hierarchy: representations of the DIKW hierarchy' (2007) 33(2) *Journal of Information Science* 163. By wisdom one would also mean making ethical choices.

will be a matter of time. Whether this artificial intelligence will be allowed to apply the law to humans or will be only a more accurate and robust high-risk AI system remains a matter for debate.⁴¹ Nevertheless, translating the law into a language that can be understood by artificial intelligence seems like one of the biggest gains that RaC can offer.

The above considerations are only a sketch of the broader research problem of reconciling legal interpretation and its rich theoretical heritage - activities inherent in working with natural language text - with the development and execution of computer code. Without in-depth analysis, accompanied by the creation of prototypes, there is no chance of convincing a wider range of legal practitioners, let alone the legislator, of the feasibility of implementing RaC. The work should also cover other types of interpretation, in particular operative interpretation due to its role in the practice of law application.⁴² Some attempts have already been made to outline the standards that should be met by a code carrying legal norms, although they were motivated by determining the requirements for the legality of smart contracts (primarily decentralized autonomous organization, DAO).⁴³

3. Testing Code and Testing Law

RaC can be described simply as a set of rules of conduct. Undoubtedly, before implementing any rules it must be ensured that they will work properly and thus achieve the intended purpose. It is therefore necessary to carry out appropriate testing procedures.

41 As for now, see recital 40 of the proposal: '(...) In particular, to address the risks of potential biases, errors and opacity, it is appropriate to qualify as high-risk AI systems intended to assist judicial authorities in researching and interpreting facts and the law and in applying the law to a concrete set of facts. Such qualification should not extend, however, to AI systems intended for purely ancillary administrative activities that do not affect the actual administration of justice in individual cases, such as anonymisation or pseudonymisation of judicial decisions, documents or data, communication between personnel, administrative tasks or allocation of resources.'

42 The concept of operative interpretation is presented in detail in the articles by L. Leszczyński. cf Leszek Leszczyński, 'Wykładnia operatywna (podstawowe właściwości)' (2009) 6 Państwo i Prawo 11; Leszek Leszczyński, 'O wykładni prawa i jej wymiarze praktycznym. Kontekst sądowego stosowania prawa.' (2020) 2 Archiwum Filozofii Prawa i Filozofii Społecznej 66.

43 Diver (n 338).

At present, there is no single, coherent methodology for quality assurance of draft regulations in the Polish legal system. Certain activities aimed at testing regulations take place at different stages of the process and different levels of detail. For example, for legislation initiated by the government, the quality of drafted regulations is to be ensured by the impact assessment process, which consists of regulatory impact assessment and ex-post regulatory impact assessment. These activities are complemented by public consultations.⁴⁴ Even though their assumptions are described in detail,⁴⁵ the convergence with existing guidelines and the quality of the activities undertaken is often insufficient, as confirmed by the Supreme Chamber of Control audit.⁴⁶ Therefore, it can be concluded that at least part of the high-level procedures for ensuring the quality of law is defective. Another precaution is the law commission appointed during the legislative work carried out on the government side. The commission is responsible, among other things, for the quality check of the legislation. Nevertheless, the possibility to exempt a draft from the commission's consideration⁴⁷ may be thought of as a breach in the procedure for assuring the proper quality of draft legislation.

At the same time, lawyers not connected to the government (legal counsels, attorneys, or legislators) and working on drafts of normative acts (both generally and internally binding) conduct on their own various simulations and thought experiments. These may take place both in close cooperation with the entities commissioned to draft the project and without their participation. Sometimes an iterative approach is used (assuming the existence of several rounds of tests) as well as an incremental one (consisting of gradual coverage of the draft regulations with tests); tests may

44 Departament Oceny Skutków Regulacji, 'Ocena wpływu w rządowym procesie legislacyjnym.' (Gov.pl, 13 November 2020) <<https://www.gov.pl/web/premier/ocena-wplywu-w-rzadowym-procesie-legislacyjnym>> accessed 18 April 2021.

45 Ministerstwo Gospodarki and Kancelaria Prezesa Rady Ministrów, 'Wytyczne do przeprowadzania oceny wpływu oraz konsultacji publicznych w ramach rządowego procesu legislacyjnego.' (Rządowe Centrum Legislacji) <<http://www1.rcl.gov.pl/q=book/wytyczne>> accessed 5 February 2021.

46 Najwyższa Izba Kontroli, 'Dokonywanie oceny wpływu w ramach rządowego procesu legislacyjnego.' (Najwyższa Izba Kontroli, 5 March 2018) <<https://www.nik.gov.pl/plik/id,16190,vp,18712.pdf>> accessed 5 February 2021.

47 cf Maciej Berek, 'Rządowa procedura prawodawcza i jej znaczenie dla jakości stanowionego prawa.' in Federczyk W. and Peszkowski S. (eds.), *Doskonalenie i standaryzacja procesu legislacyjnego – dobre praktyki opracowane w ramach projektu LEGIS (Krajowa Szkoła Administracji Publicznej im. Prezydenta Rzeczypospolitej Polskiej Lecha Kaczyńskiego 2019)*.

also be carried out gradually, as subsequent parts of the draft regulation emerge. Again, however, there is no methodology for conducting quality control; the measures taken are the know-how of individuals or entities, and testing is not obligatory.

When a gap in the law is discovered, its proper application is possible (in general) because of appropriate interpretation. It plays a role of a last line of defence, an ex-post measure taken to mitigate potential damage, and may be a premise for amending the act. Although it is a natural process, it also consists of actions that only take place when a problem arises. As a result, they may negatively affect the confidence in the state and the law it creates, and in a more tangible aspect - generate higher costs than thorough testing of the proposed regulations before they enter into force.

The introduction of RaC creates a valuable opportunity to adapt the quality assurance practices known from the development of computer code to the legislative practice. This applies both to tests carried out during code development and the subsequent stage of acceptance by end-users. At this point, it should be noted that although the scope of topics related to code quality assurance far exceeds the volume of this paper, the author would like to briefly discuss the most important issues.

Assuming that the law is drafted in parallel in two forms: code and natural language, the need for code testing would facilitate simultaneous testing of the language form. Thus, at a very early stage of work, it would be possible to detect errors, potential gaps and determine whether the proposed legislation achieves the intended purpose. As a result, the number of amendments issued to improve the law could significantly decrease, as could the overall cost of legislative activities. A positive side effect would be an increase in stability and certainty of the law in force.

Testing RaC, like any computer code, can increase consistency and reduce conflicts with previous regulations by performing so-called integration and regression tests.⁴⁸ Similar actions are currently undertaken during

48 Integration testing can be divided into component integration testing which ‘(...) focuses on the interactions and interfaces between integrated components’ and system integration testing which ‘(...) focuses on the interactions and interfaces between systems, packages, and microservices. System integration testing can also cover interactions with, and interfaces provided by, external organizations (e.g., web services).’ Meanwhile ‘(...) automated component regression tests play a key role in building confidence that changes have not broken existing components.’ See International Software Testing Qualifications Board®, ‘Certified Tester Foundation Level Syllabus.’ (International Software Testing Qualifications Board, 11

impact assessment but, as mentioned above, they are not carried out according to a specific methodology. At this point, it should be stressed that integration and regression tests could initially cover only a small group of provisions created as RaC in a given branch of law. Only as the adoption of RaC becomes widespread would the integration and regression tests begin to cover an increasing number of provisions. Thus, the real benefit of conducting the tests would be postponed in time. Nor should integration tests be expected to reveal inconsistencies with legislation that did not originate as RaC. However, even a small improvement in the quality of legislation will be a significant benefit.

Along with the framework for the RaC quality assurance procedure, sets of test cases should be created like input data (factual states) which, when subsumed into the proposed regulations, would produce the expected results (output data). The test cases would gradually be extended with real-life situations. Over time, a comprehensive set of tests would emerge, which (if automated) could be carried out on a scale and at a speed unattainable by humans.⁴⁹ The scope of time and subject matter of the tests could be freely chosen, depending on established priorities. On the other hand, the task of curating the collection of test cases would demand a dedicated team of people to conduct reviews and updates periodically. Undoubtedly, some selection of test cases would also be necessary, as the need to maintain too rich a collection would generate significant costs.⁵⁰ Another disadvantage would be to limit the tests only to cases that are unambiguous or do not require complex interpretation - due to the previously described need for human involvement in the application of functional directives of the perceptual phase of interpretation.

The release of an official version of the RaC with a collection of test cases would allow certifying the software developed by private entities as compliant with the law in force. Such certification could be performed in

November 2019) 31-32 <<https://www.istqb.org/downloads/send/2-foundation-level-documents/281-istqb-ctfl-syllabus-2018-v3-1.html>> accessed 18 April 2021.

49 Accident Compensation Better Rules Discovery Team (n 2) 21.

50 Costs will result primarily from the need to periodically review and modify test cases. 'Continuously repeating the same tests leads to a situation where they stop detecting new defects at some point. To be able to detect new defects, it may be necessary to modify existing tests and test data, as well as to write new tests. Unmodified tests lose their ability to detect defects over time, just as pesticides are incapable of eliminating pests after a period of time. In some cases - such as automated regression testing - the pesticide paradox can be beneficial because it allows you to confirm that the number of defects associated with regression is small. International Software Testing Qualifications Board® (n 378) 17.'

a highly automated way (by passing specific sets of test cases), and the revenue from it would contribute to the state budget. Such a solution would be profitable also for software developers; appropriately calculated costs of certification would be more beneficial than the necessity to transcribe regulations into code by oneself and then test the created solutions.

Software testing is divided into different levels and types. Levels⁵¹ group the tests according to the complexity of the code and include tests:

- modular - checking the operation of individual components in isolation from the overall code; in the case of RaC, this would mean testing the operation of the lowest existing editorial unit,
- integration - already mentioned above, involves the interaction of a component (e.g. editorial unit) with other components, but may also concern the interaction of the whole system with other systems; in the case of RaC it could mean checking the integration of higher-level units (chapters, sections, etc.) or even entire normative acts with other provisions in the form of RaC,
- system - concerning the behaviour and capabilities of the system as a whole, in terms of functional and non-functional aspects (e.g. reliability); in the case of RaC this means testing interactions within or among individual normative acts,
- acceptance - involving a level close to the system level but carried out by the target user or system operator, e.g. the addressees of standards or law enforcement bodies.⁵²

The division of tests into types is based on separating groups of tests that check specific characteristics of the code.⁵³ RaC test types would not differ significantly from the quality assurance of standard code and would include functional tests (whether the code can perform the desired actions), non-functional tests (whether the code is efficient, safe, etc.), and so-called white-box tests checking to what extent the code is covered by tests. However, tests related to change would be of particular importance for RaC. In addition to the previously mentioned regression tests, this includes tests confirming the removal of a previously detected defect, e.g. a logical error (in the case of RaC this could be a loophole). In their most

⁵¹ *ibidem* 30.

⁵² It should be noted that at this stage tests are also carried out on the compliance of the product with the contract for its creation or the applicable legislation. cf *ibidem* 37.

⁵³ *ibidem* 39-41.

basic version, they consist of re-executing the test that previously returned an error.⁵⁴

RaC quality assurance can be automated to some extent, just like for any computer code. Software test creation has long been seen in the IT industry as a tedious and low-value activity that distracts professionals from their main objectives.⁵⁵ Systems such as Jenkins are widely used to facilitate, among other things, test execution but particular attention should be paid to the use of artificial intelligence-based solutions - due to their ability to learn quickly and be more efficient than previous applications. Some of them conduct static code analysis in real-time, which enables to detect, identify, and correct errors in code while still at the stage of development (similar to how text editor checks the correctness of spelling and grammar).⁵⁶ Other applications automatically create unit (module) tests for the analysed code.⁵⁷ This could create an interesting situation when one code (algorithm) controls another code (RaC), which in some cases would define the rules for other algorithms.

RaC quality assurance is also associated with regulatory sandboxes.⁵⁸ Testing of RaC may take place in special test environments, i.e. isolated programs or groups of programs simulating real-world operations. In the next step, the designed regulations should undergo a test on a selected group of addressees, who will apply them in practice and provide feedback.

The idea of regulatory sandboxes is not new. Dedicated pilot programs have been established in many countries, mostly in the FinTech sector,⁵⁹

54 The importance of frequent and early testing of code found its particular expression in a separate software development methodology Test-driven-development, which was described by Kent Beck. Kent Beck, *Test Driven Development: By Example* (1 ed., Addison-Wesley Professional 2002).

55 Matthew Lodge, 'Software Testing Is Tedious. AI Can Help.' (Harvard Business Review Home, 22 February 2021) <<https://hbr.org/2021/02/software-testing-is-tedious-ai-can-help#>> accessed 18 April 2021.

56 An example of this is the DeepCode tool:<https://www.deepcode.ai/>.

57 A model example is the Diffblue Cover application: <https://www.diffblue.com/>.

58 'Regulatory sandboxes enable a direct testing environment for innovative products, services or business models, pursuant to a specific testing plan, which usually includes some degree of regulatory lenience combined with certain safeguards.' Radostina Parenti, 'Regulatory Sandboxes and Innovation Hubs for FinTech' (European Parliament Think Tank, 30 September 2020) 9 <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652752/IPOL_STU\(2020\)652752_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652752/IPOL_STU(2020)652752_EN.pdf)> accessed 5 February 2021.

59 Examples of existing solutions for FinTech are mentioned by J. G. Jiménez and M. Hagan as well as R. Parenti. Jorge Gabriel Jiménez and Margaret Hagan, 'A

although similar programs have also been created for other sectors of the economy, e.g. transport or energy.⁶⁰ So far, the main purpose of sandboxes has not been to test new regulations, but to enable the implementation of new business ventures that are difficult to classify and to make it easier for supervisory authorities to understand how they operate.⁶¹ The conditions for running a venture within a sandbox are relaxed compared with reality. In return, the participating entities are obliged to cooperate closely with state authorities and comply with the established rules. New regulations are developed empirically, as a result of the experience of sandbox participants.

The model described above can, and should, be applied to RaC. Existing sandboxes could successfully serve to introduce and test regulations in the form of RaC. There is a chance to create a positive feedback loop: innovative ventures of sandbox participants would justify the creation of new regulations in the form of RaC, which during testing would inspire the creation of further innovations based also on the RaC code, which would cause further expansion and improvement of RaC. Separate regulatory sandboxes may also be established due to the specific needs of a particular area of law (e.g. tax law) or even a particular law (e.g. public procurement law). Thanks to them, interested entities would be able to test the proposed regulations and, at the same time, work on new business models or ways of providing certain services.⁶² There are thus two possible starting points: from the venture or the draft regulation. The effect will be similar: new regulations will be based on empirical data.⁶³

Recently a legal framework for creating AI regulatory sandboxes has been provided in Articles 53 to 55 of the proposal. This is particularly

regulatory sandbox for the industry of law.’ (Legal Executive Institute, 2019) 2 <<http://www.legalexecutiveinstitute.com/wp-content/uploads/2019/03/Regulatory-Sandbox-for-the-Industry-of-Law.pdf>> accessed 5 February 2021; *ibid* 9. It should be noted that the Polish Financial Supervision Authority has established a regulatory sandbox in 2018.

60 cf Deloitte Center for Government Insights, ‘Future of Regulation. Case studies.’ (Deloitte Center for Government Insights, 2018) <<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-fed-future-of-regulation.pdf>> accessed 5 February 2021.

61 cf Parenti (n 58) 9.

62 cf Jiménez and Hagan (n 59) 3.

63 Such an approach directly supports the idea of *evidence-informed policy making* supported by the OECD. cf OECD, ‘Building Capacity for Evidence-Informed Policy-Making: Lessons from Country Experiences’ (2020) OECD Public Governance Reviews <<https://doi.org/10.1787/86331250-en>> accessed 5 February 2021.

important to developing RaC as one of the objectives of creating regulatory sandboxes for high-risk AI systems is to conduct research on the effective way to regulate AI. The suggested approach is based on recital 71 of the proposal according to which ‘Artificial intelligence is a rapidly developing family of technologies that requires novel forms of regulatory oversight and a safe space for experimentation, while ensuring responsible innovation and integration of appropriate safeguards and risk mitigation measures.’ The statement above should be interpreted as referring not only to the meaning of the law but also to its form. Using text-written law as a sole form of regulating high-risk AI systems will have a negative impact on innovation for the reasons discussed above.

The detailed principles of regulatory sandboxes for RaC require an in-depth analysis, based on the experience for FinTech and AI sandboxes. A law tested in this way would be better adapted to the reality and expectations of the addressees and more stable compared with laws created only using consultation or impact assessment. Additionally, the way RaC is used in regulatory sandboxes can be analysed continuously, improving the identification of bottlenecks in the process, and accelerating the design of necessary improvements.⁶⁴

4. *The Beginning of the Road*

The topics discussed above are only a small part of the RaC issue. An issue that is complex, difficult but at the same time fascinating and closely related to the everyday problems of a vast number of people.

The computer code can support the interpretation of legal text despite the ambiguity of the latter. In turn, the need for interpretation will influence the development of RaC; the necessary elements of norm-shaped expressions will have to be represented in the computer code. However, it is unlikely that human involvement will be eliminated from the process, at least in the near future. Near-complete automation of law may be introduced to only some of the most repetitive, standardized services and only in the first instance of proceedings. In the remaining cases, the application of RaC ought to be supervised by a human, mainly because of technical and ethical issues concerning artificial intelligence.

64 Similar comments on the creation of regulatory smart contracts are raised by Dariusz Szostek. cf Szostek (n 17).

At the same time, the practice of developing code, in particular ensuring its quality, can offer proven solutions to enhance the drafting of normative acts, eliminate potential contradictions and prevent emerging gaps in the legal system. This can be conducted by humans or, to a certain extent, by artificial intelligence algorithms. Thus, errors detected in computer code will also be corrected in text written in natural language.

There is no doubt that the research on RaC must be continued and should also concern (apart from the aspects described above) the necessary changes in the principles of legislative technique, the creation of law focused on the end-user, the principles of promulgation of normative acts and finally the version management (e.g. using the Git version control system).⁶⁵ Regardless of which issue attracts more attention from researchers or businesses, the simultaneous existence of law in form of a text and code seems to be essential. Without RaC we accept the existence of a gap between human law and computer code, both of which define the rules for the functioning of our reality and are simply two sides of the same coin.

65 More information about Git is available on its official website: <http://git-scm.com>.

SECTION THREE.

Possibilities of Applying LegalTech Tools in Legal Practice

The Changing Role of the Lawyer. The Case of Digital Accessibility.

Ewa Fabian, Przemysław Polański

1. Introduction

The role of the lawyer will change due to the technological revolution, additionally accelerated by the COVID-19 pandemic. While it is unlikely that a lawyer will be replaced by artificial intelligence, it is becoming more and more realistic to replace some of a lawyer's activities with more and more specialized LegalTech tools. The chapter aims to introduce the issues of ensuring digital accessibility¹ with the use of new tools available to a technology lawyer. These tools allow, for example, to automatically assess the compliance of public authorities' websites with the provisions of domestic and EU law. However, one should not jump to too hasty conclusions from the existence of such tools. Humans maintain the most important role in the process of ensuring compliance.

In a brilliant futurological analysis, "The Future of the Professions: How Technology Will Transform the Work of Human Experts" R. and D. Susskind propose that although artificial intelligence will not replace all lawyers, it will replace expensive lawyers. The authors predict that in the post-professional society, practical knowledge will be available on the Internet,² and this in turn will trigger not so much a violent revolution as an incremental digital transformation of the profession. Field experts will gradually be replaced by a cheaper workforce capable of handling intelligent LegalTech solutions. The model of the lawyers' work will fundamentally change, as they will be surrounded by new technologies that will help them solve current problems in a previously unknown manner.

1 These findings result from empirical research on digital accessibility from the perspective of people with visual disabilities, carried out by the FREE Institute in the project "Model of making content available on the Internet to people with disabilities in accordance with applicable national and international law and WCAG 2.0 principles" NCN grant no. 2016/22/E/H55/00434, within which this chapter was prepared.

2 Richard Susskind and Daniel Susskind, *The Future of the Professions* (Oxford University Press 2015), see in particular the Authors' final conclusions.

This will mean that lawyers who will be able to use new technologies to provide cheaper and faster services will survive, not the lawyers with extensive trial experience.

Can the Susskinds' new vision really come true in Poland? Nothing can be ruled out but it seems unlikely. To build AI systems that are able to replace the elite of jurists you will need the foundations of well-developed legal knowledge databases which are an indispensable component of self-learning systems. While you do not need a good deal of imagination to see the operation of document or clauses classification systems that are already quite often used in due diligence processes, the creation of autonomous systems resolving disputes between parties or recommending a cause of action in a manner consistent with generally applicable law is an incomparably more difficult task.

There is a lack of foundations in the form of perfectly developed databases of normative acts and jurisprudence, as well as a stable legal system and court judgments that would clearly apply the provisions "for a specific date" and clearly refer to the essence of previous judgments. To this day, we have not lived to see an open legal information system that would make available not only unified versions of laws, but also of regulations. This remark applies not only in the PDF versions of such acts (difficult to process automatically), but in open formats such as HTML or XML.³

We also have no databases of judgments that would allow assigning the interpretation of provisions to precisely indicated legal grounds. When analyzing the content of grounds for judgments, it is impossible to indicate the temporal version of the interpreted provision, which, taking into account the level of legal inflation, significantly hinders the creation of a state system of legal information. As a result, it is impossible to determine which version of the regulations was used by the adjudicating panel, which in turn significantly hinders the construction of intelligent legal information systems.

This does not mean that lawyers do not have access to excellent databases of legal information. Lex and Legalis have revolutionized the way legal practice functions in Poland in such a way that today's lawyers actually only need a legal information system and a mobile phone to be able to provide legal services remotely. Thanks to these systems, we can precisely determine the laws applicable for a specific date, find related judgments,

3 Przemysław Paul Polański, (C. H. Beck LegalTech Forum conference, Warszawa, 16-17 June 2021).

and contextually delve into the reading of the doctrinal legal elite. Undoubtedly, this allows lawyers who do not belong to the juristic elite to provide services in the model described by the Susskinds today. Nevertheless, we are still a long way from the systems that automatically solve a specific legal issue.

This chapter also examines the changing role of the lawyer as a part of the digital revolution that has gained additional acceleration in the context of the COVID-19 pandemic. In order to make this chapter more specialized, we will show, on the example of digital accessibility, how the role of a lawyer is currently changing and how much will depend on the adaptation of the legal education system, where digital skills should be developed, instead of leaving this issue practically completely outside the main curriculum of young lawyers.

2. Case study: using LegalTech tools in measuring digital accessibility

Digital accessibility as a legal issue is new and little known to Polish lawyers, although, over the recent months, the websites of most public sector bodies have started to provide accessibility statements. This is the result of the implementation of Directive 2016/2102⁴ into Polish law, which obligated public authorities to adopt a new approach to serving content on websites and mobile applications in such a way that people with various types of disabilities - whether temporary or permanent - could access content. The aforementioned implementation took place in the Act of 4 April 2019 on digital accessibility of websites and mobile applications of public entities⁵ (the Act on Digital Accessibility).

Investigating whether a public administration body actually complies with the applicable regulations requires lawyers to learn about the so-called *assistive technology* and foundations of empirical research, in line with the basic idea of social sciences (which includes legal science). The above observations should make it clear that testing the digital accessibility of websites for people with visual disabilities requires a deep understanding of new IT tools. Testing digital accessibility should not be imagined

4 European Parliament and Council Directive 2016/2102 of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies [2016] OJ L327/1, requiring accessibility statements differing from the existing accessibility declarations, published on the websites of Polish public entities earlier.

5 *Dz.U. 2019 poz. 848*; see also Przemysław Paul Polański (ed.), *Ustawa o dostępności cyfrowej. Komentarz* (1st edn, C.H.Beck 2021).

as manual work or reading source code without an additional IT environment, but as work involving the use of various types of software. Thus, even without describing in detail the functionalities of programs used for assessing digital accessibility, which are more and more available on the market, and which may be designed basing on various presumptions,⁶ *it can be assumed that the analysis of digital accessibility cannot be carried out by an expert in isolation from specific technology and software.*

Below, we will present the Reader with a study on the issue of ensuring digital accessibility of websites keeping in mind the needs of people with visual disabilities. This is just one, albeit very important, aspect of digital accessibility. The process in question requires the selection of software (one or several programs), the ability to use it and understanding the impact of decisions made on the measurement results, and thus the use of specific methods of working with a given program(s). We note here, however, that digital accessibility concerns good user experience for all users, which explains why the most accessible websites are also very popular (e.g. Google search engine).

3. *Lawyer's analysis of digital accessibility - methodology*

Before we move on to discussing the IT tools used in digital accessibility research, let us first look at the legal framework regulating the process of ensuring compliance by the entities which the Act on Digital Accessibility addresses. At the outset, it is worth emphasizing that the international technical standard called WCAG (Web Content Accessibility Guidelines) has become an integral part of Polish law for many years (acts regulating digitization, the Act on Digital Accessibility). The development, testing, changes and translations of this standard are the result of the work of an international and diverse community of experts,⁷ which in itself is another proof of the viability of the *lex mercatoria informatica* concept, i.e. custom created bottom-up by the Internet community.⁸

6 See also the list maintained by the World Wide Web Consortium (W3C): <https://www.w3.org/WAI/ER/tools/> (accessed on 25/03/2021).

7 More about this process on the W3C website, Web Accessibility Initiative (WAI) - <https://www.w3.org/WAI/standards-guidelines/wcag/> accessed on 25 March 2021.

8 Przemysław Paul Polański, *Customary law of the Internet* (1st edn, T.M.C. Asser Press 2007) in which the author constructs the theoretical foundations of the

As the law requires public sector bodies to ensure digital accessibility, the question arises as to *how the measurement of the level of digital accessibility is to be made*. Directive 2016/2102 refers to this indirectly in several provisions, e.g. in Art. 8 Sec. 3.(f), where reference is made to a *monitoring methodology* that "may take into account expert analysis" and includes "appropriate arrangements, including where necessary examples and guidance, for automatic, manual and usability tests, in combination with the sampling settings, in a way which is compatible with the periodicity of the monitoring and reporting".⁹

When examining digital accessibility in the legal context, in accordance with the law of the Republic of Poland, attention should be paid to the need to conduct *empirical research*, which has so far been alien to legal science. In the very provisions of the Act on Digital Accessibility, there is a reference to the European standard,¹⁰ the application of which will require the lawyers of the future to be able to use tools used for measuring accessibility compliance by the public sector bodies, and soon - also by the entities of the private sector.

Commission Implementing Decision 2018/1524¹¹ concerning the implementation of Directive 2016/2102 contains detailed provisions on monitoring to be carried out by competent local supervisory authorities across the EU.

The core monitoring methodology set out in Implementing Decision 2018/1524 includes an *in-depth monitoring methodology* that:

custom as a source of law on the Internet and the methods of proving it with the use of information technology and social science methodology.

- 9 Directive 2016/2102 (n 399) is technology neutral (see recitals 9 and 36 thereof). Existing industry standards (WCAG) are also technology neutral. In practice, however, some aspects described in the regulations relate to specific technical solutions. For example, point 1.3.2 of Implementing Decision 2018/1524, which deals with use by blind persons, refers to assistive technology that allows a blind person to listen to the content of a website (e.g. a screen reader which is a computer program).
- 10 Currently, in the version of EN 301 549 V2.1.2, which includes Standard W3C - Web Content Accessibility Guidelines 2.1, Recommendation W3C 5.6.2018; see <https://www.w3.org/TR/WCAG21/> access 25 March 2021.
- 11 Commission Implementing Decision 2018/1524 of 11 October 2018 establishing a monitoring methodology and the arrangements for reporting by Member States in accordance with Directive (EU) 2016/2102 of the European Parliament and of the Council on the accessibility of the websites and mobile applications of public sector bodies [2018] OJ L256/108.

- 1) verifies all the steps of the processes in the sample, following at least the default sequence for completing the process;
- 2) evaluates at least the interaction with forms, interface controls and dialogue boxes, the confirmations for data entry, the error messages and other feedback resulting from user interaction when possible, as well as the behaviour of the website or mobile application when applying different settings or preferences;
- 3) may include, where appropriate, usability tests such as observing and analysing how users with disabilities perceive the content of the website or mobile application and how complex it is for them to use interface components like navigation menus or forms.¹²

On the other hand, the Implementing Decision 2018/1524 specifies *simplified monitoring*, which is carried out using automated tests and analyzes (point 1.3.2):

- 1) usage without vision;
- 2) usage with limited vision;
- 3) usage without perception of colour;
- 4) usage without hearing;
- 5) usage with limited hearing;
- 6) usage without vocal capability;
- 7) usage with limited manipulation or strength;
- 8) the need to minimise photosensitive seizure triggers;
- 9) usage with limited cognition.

Directive 2016/2102 and Implementing Decision 2018/1524 show the conviction that IT tools for the automatic analysis of the level of digital accessibility will develop, becoming less unreliable in the future and requiring less interpretative input from the analyst. We may assume that this type of technology can also be developed with the use of *machine learning techniques* (technologies usually more broadly referred to as the so-called *artificial intelligence - AI*). We are currently in the period of technological development, when the human factor is still treated as necessary to test the level of digital accessibility, but, at the same time, the existing technologies allowing for partial automation of this process are already included in applicable regulations. The development of legislation requires resorting to technical standards and empirical research. The provisions cited above clearly show one more aspect of the changing role of the lawyer. The

12 See point 1.2.2. - 1.2.4. of Implementing Decision 2018/1524.

lawyer of the future will have to be able to use, to a greater extent, not only the tools, but also the methodologies of ensuring compliance with the provisions expressed directly in the provisions of law.

4. Assistive technology - a new weapon in the LegalTech lawyer's arsenal?

Testing digital accessibility requires a very good knowledge of web browsers through which the content is downloaded and also the so-called screen readers which help the visually impaired people read the content, e.g. free NVDA¹³ or paid JAWS. This means that testing the level of digital accessibility will require the skills of a digital accessibility lawyer to use such programs, not just word processors or legal information databases. Incidentally, it is worth adding that the use of such computer programs as assistive technologies raises further problems, including:

- 1) the transparency of the operation of such programs;
- 2) trust in programs on the part of law enforcement authorities and parties in court;
- 3) criteria for assessing the validity of the work of a lawyer or expert in the context of court proceedings.

Questions that can be asked in this context are whether a computer program is able to "lie", what should be the standards for examining the way the program works, or whether the related problem of the so-called black box (i.e. the impossibility to observe the internal mode of operation) differs significantly from the assessment of the reliability of e.g. expert dogs (such as in drug cases - drug dogs), as well as what level of knowledge of the program should be required from a lawyer. By introducing technologies in the work of a lawyer to the courtroom, these aspects fit into the broadly understood subject of LegalTech.

Case study:

In this context, it is worth referring to the American experience (which we will discuss in more detail later in this work). In the case of *Andrews v. Blick Art Materials*,¹⁴ the judgment stated that, according to international research, the majority of Internet users used the paid JAWS technology. It cited a 2015 report according to which 30.2 % of screen reader users were

13 See <<https://www.nvaccess.org/>> accessed 25 March 2021.

14 *Andrews v. Blick Art Materials LLC* 286 F Supp 3d 365 (NY 2017)

using JAWS, and the list also included ZoomText (22.2 %), Window-Eyes (20.7 %), NVDA (14, 6 %), VoiceOver (7.6 %), System Access or System Access To Go (1.5 %), ChromeVox (0.3 %).¹⁵ It is worth adding that in 2017 the percentages for reader users included: JAWS (46.6 %), NVDA (31.9 %), VoiceOver (11.7 %), ZoomText (2.4 %), System Access or System Access To Go (1.7 %), Window-Eyes (1.5 %), ChromeVox (0.4 %), and Narrator (0.3 %).¹⁶

In 2019, NVDA outperformed JAWS in the WebAIM longitudinal study: NVDA (40.6 %), JAWS (40.1 %), VoiceOver (12.9 %), ZoomText / Fusion (2.0 %), System Access or System Access To Go (1.0 %), Narrator (1.0 %), ChromeVox (0.6 %).¹⁷ These values are different when surveying blind people, not all people using screen readers. This research was performed on a fairly small sample, for an international context (sample 1224 in 2019). As reported in the 2017 *Andrews v. Blick Art Materials* judgment, the JAWS reader cost \$ 900-1,100 at the time of the trial.

NVDA is a free technology. Using it requires learning about keyboard shortcuts (tabs, arrows, letter shortcuts allowing the user to jump to specific types of page elements, etc.). These shortcuts allow people who cannot see the content of a website to navigate through the page (NVDA relies on keyboard shortcuts, but also creates a solution for blind people to use the mouse; see NVDA's documentation for more detail).¹⁸

5. Tools for testing digital accessibility in American court proceedings

Digital accessibility is an issue deeply embedded in Western legal doctrine and American courts have been settling disputes over it for a few decades. What's more, the number of digital accessibility cases in US courts is steadily increasing. According to UsableNet analyzes, in 2020, despite epidemiological problems, there was a 23 % increase in the number of court cases related to digital accessibility compared to the previous year.¹⁹ The number of published judgments related to this subject is also significant. The question of the admissibility of expert testimony regarding the level of

15 <<https://webaim.org/projects/screenreadersurvey6/>> accessed 25 March 2021.

16 <<https://webaim.org/projects/screenreadersurvey7/>> accessed 25 March 2021.

17 <<https://webaim.org/projects/screenreadersurvey8/>> (accessed 25 March 2021).

18 See reference to the relevant documentation (in original to Polish version): <<https://nvda.pl/podrecznik-uzytownika>> accessed 25 March 2021.

19 See <<https://info.usablenet.com/2020-report-on-digital-accessibility-lawsuits>> accessed 25 March 2021.

digital accessibility of the defendant's website appeared in this jurisprudence at least twice (the cases of *Gomez v. General Nutrition*²⁰ and *Diaz v. Lobel's of New York*²¹). The courts mention the so-called *Daubert's Standard* (regarding Federal Rule of Evidence 702), according to which, when admitting expert evidence, the court checks whether:

- 1) the expert is qualified to testify competently;
- 2) the methodology by which the expert reaches his conclusions is sufficiently reliable;
- 3) the testimony assists the trier of fact, through the application of scientific, technical, or specialized expertise, to understand the evidence or to determine a fact in issue.²²

What is important in this context are features such as expertise (obtained through knowledge, skills, experience, training or education), reliability and usefulness (the relationship between an expert opinion and the case under examination) and reliability, tested on the basis of reliable principles or methods.

The measure used to assess reliability includes considering:

- 1) whether the expert's theory can be and has been tested;
- 2) whether the theory has been subjected to peer review and publication;
- 3) the known or potential rate of error of the particular scientific technique; and
- 4) whether the technique is generally accepted in the scientific community²³, and similar criteria are applied to the testimony of experts who have given an opinion based on experience.

Case study:

In the case of *Gomez v. General Nutrition Corp.* the expert's opinion was excluded from the evidence, the court indicating that the expert did not know the success criteria of the accessibility checking software relied upon, also taking into account the fact that the expert did not run these tests personally.

In the case of *Diaz v. LOBEL'S OF NEW YORK*, the court considered whether: 1) the testimony was grounded on sufficient facts or data; 2) the testimony was the product of reliable principles and methods; and

20 *Gomez v. General Nutrition Corp.* 323 F Supp 3d 1368 (FL 2018)

21 *Diaz v. Lobel's of New York LLC* 16-CV-6349 (NY 2019).

22 *Gomez v. General Nutrition Corp.* and case law quoted therein.

23 *ibid.*

whether 3) the witness has applied the principles and methods reliably to the facts of the case.²⁴ It was argued in the case that the expert failed to disclose any information about the process or methodology used to conduct the 'audit' of the website. This argument was that he failed to disclose any information concerning "what the audits entailed, how they were performed, what the audits were designed to accomplish, what standards were used to conduct the audits, or whether the method by which he performed the audits is accepted within his field".²⁵ The court found insufficient the contents of the "manual" describing the audit procedure, which was to include two steps: website code analysis by programmers to test the level of meeting the WCAG 2.0 success criteria A and AA (described as the first step) and analysis using automated tools to verify the results of step one and identify other issues (step two). The screen recording videos of the party's audit process provided to the court by the expert were not a sufficient replacement for a proper explanation of overall methodology and process.

6. *Software used in expert witness testimony in the US and Poland*

In Poland, there have been no court cases deciding the admissibility of an expert witness testimony regarding digital accessibility so far. However, in the judgments concerning the use of software in general, certain issues worthy of careful preliminary description can be identified. In the judgment of the Court of Appeal in Katowice of 5 February 2020,²⁶ the court assessed the issue of the correctness of *vehicle valuation made with the use of specialized software*. The court was convinced by the opinion issued by the court expert, but was not convinced enough by the private expert witness submitted by a party, explaining that "the significant difference between the value of the vehicle resulting from the opinion prepared on private commission before the sale of the vehicle and its value determined by the court expert results from the adoption of a different methodology in the process of valuation performed with the use of specialized software. The expert convincingly explained that in the case of the Bank, the value of the vehicle in question should be valued according to the program in the "sale" version, as the Bank does not deal with professional trade in motor

24 Diaz v. Lobel's of New York LLC and case law quoted therein.

25 *ibid.*

26 I ACa 504/19, Legalis.

vehicles and should strive to obtain the highest possible price from the sale. The situation is different in the case of an entity engaged in such trade. Such an entity must bear in mind the need to resell the vehicle and obtain a margin equal to the difference between the purchase price and the next sale price. In such a case, the prospective buyer determines the price of the vehicle by estimating it in the "purchase" version, which leads to a 10-15% lower value of the vehicle."

The use of *software supporting the valuation process* is an issue so important in the practice of Polish courts that there are professional publications on this subject. In this context, *M. Chmieleński* mentions the Polish Info-Ekspert system and the Eurotax system adapted from the German market. The Author describes that the foundations of databases enabling valuation support appeared as early as 1933 in the catalog under the name "Glass's Guide to Car Values"; he also provides that expert witness opinions prepared on the basis of such programs are taken seriously: "the Eurotax system is well-known and regarded as reliable, and the Eurotax system products are tailored to the individual requirements of individual user groups. The Eurotax system includes many solutions, from databases and catalogs to integration with internal systems".²⁷

Modeling and computer simulations were defined by *M. Chmieleński* as the third (interdisciplinary) method, next to the experimental (empirical) and theoretical procedures. This approach is useful in the context of the topic discussed in this chapter, because *digital accessibility testing* involves elements of a computer simulation (where there is an automatic analysis of potential digital accessibility errors), but at the same time an experiment (e.g. listening to a page using a screen reader) and theoretical analysis (analysis of code, e.g. in terms of the correctness of syntax or the ways of marking code fragments for readers in accordance with their actual purpose). The understanding of this multifaceted nature of tests carried out with the participation of experts is found in Polish jurisprudence. For example, in the judgment issued by the District Court in Świdnica 14 September 2018²⁸ (in a criminal case), the court emphasized that the expert must conduct experiments on the tested equipment (in this case - slot machines): "during the re-examination of the case, the Regional Court will be obliged to conduct the evidentiary proceedings in full, in

27 Mirosław Chmieleński, 'Możliwości wspomagania wybranych ekspertyz i opinii specjalistycznych w obszarze bezpieczeństwa przy wykorzystaniu różnych programów komputerowych' (2017) 8 2(28) Problemy mechatroniki. Uzbrojenie, lotnictwo, inżynieria bezpieczeństwa 159-176.

28 IV Ka 290/18, Legalis.

particular, to admit evidence from a supplementary opinion (...) of an expert in the field of computer science and computer software. The expert should inspect the machines and installed software and, in addition to the questions presented by the Regional Court, answer the question whether and what relationship existed between the platform (...) and the running of games, in particular whether the game could be run independently of the software (...). The expert should also take an opinion on the way the experiment was carried out by customs officers on these machines and assess the correctness of their operation in this regard and the conclusions drawn. When re-examining the case, the court should make a reservation that the expert should secure the connection of the devices in question with the Internet before issuing the opinion”.

As M. Szmit describes, in Poland, experts testifying in cases involving software struggle with the problem of the need to *evaluate the source code*. The Author described his experience in which he had to “comment on a computer program, the source code of which and the resulting program were not included in the presented material. Of course, formally it was probably possible to issue an inconclusive opinion, but it was much better and more reasonable from the point of view of the economy of the proceedings to ask the court to supplement the evidence and to provide the subject of the analysis”. Further adding that “it is hard to consider such a request as suggesting a specific tactic for the case”,²⁹ a question widely discussed in the legal doctrine on the taking of evidence, as well as in jurisprudence. The issue of the reliability of tools used by experts in computer forensics is, as the Author points out, supplemented with **standardization** (*American National Standards Institute*, which issued several standards for testing computer devices) and the *creation of industry standards and guidelines* (*The Scientific Working Group on Digital Evidence*, which develops guidelines on detailed technical aspects of computer forensics, and *The Scientific Working Group on Imaging*).³⁰ With the exception of a few historical examples, the lack of current Polish initiatives in this area shows how important the issue of reliability of software is for the American jurisdiction.

In a study related to the American jurisprudence of 2010 (*S. Bratus, A. Lembree, A. Shubina*), there appears a problem of *excessive trust in new tech-*

29 Maciej Szmit, 'Biegły informatyk w postępowaniu cywilnym' (2010) 121/1078 *Zeszyty Naukowe Politechniki Łódzkiej* 487-501.

30 Maciej Szmit, 'O standardach informatyki śledczej' (2018) 355 *Studia Ekonomiczne* 81-91.

nology on the part of courts. The Authors emphasized the need to question the reliability of technology which in itself may in theory seem impartial (the Authors used a wording in which *the machine was treated as an objective learned fool - idiot savant*). However, the way the program is written (which is why access to the source code is so important), as well as the *database* used in it, can affect the operation of the program. Therefore, the Authors suggest that expert witness testimony should be conducted in such a way that the persons performing the tests with the use of such software testify before the court, and the documentation concerning the correct operation of a program or machine is available to be analysed as evidence.³¹ A similar problem is pointed out by the Polish author M. Chmieleński, who calls it "illusory credibility".³² Apart from the description of procedural guarantees allowing for "deep" evidence submissions and considering the reliability of expert witnesses in American jurisprudence, the results of the 2010 research on the use of software in expert witness testimony in the US provoke questions about the future of expert witness testimony where machine learning software is used.

As is well known, solutions simulating the so-called artificial intelligence (AI), in particular machine learning techniques, work in a way that is difficult to observe. They are referred to as "*black boxes*", i.e. (as already mentioned) a situation in which we may learn the data entered into the program and the result of the analysis, but *we cannot observe the inner process of the analysis*. As indicated by P.W. Nutter, this issue is similar to the doubts one might have about the findings of drug dogs.³³ The Author points out that machine learning technologies can contribute to the justice system (e.g. by performing lip reading, in the absence of an audio track; by approximating features of the perpetrator from the DNA trace analysis; mentioning that DNA analysis using TrueAllele has gained the trust of the authorities by practical elimination of the "human factor" - laboratory technician - from the test).³⁴ According to the Author, machine learning techniques can pass the Daubert Standard test (discussed above).

31 Sergey Bratus, Ashlyn Lembree and Anna Shubina, 'Software on the witness stand: what should it take for us to trust it?' in *Alessandro Acquisti, Sean W Smith, Ahmad-Reza Sadeghi* (eds), *Trust and Trustworthy Computing, Third International Conference, TRUST 2010, Berlin, Germany, June 21-23, 2010, Proceedings* (Springer 2010) 396-416.

32 Chmieleński (n 27).

33 Patrick W. Nutter, 'Machine learning evidence: admissibility and weight.' 21 (2018) U. Pa. J. Const. L. 919.

34 *ibid*.

7. Summary

The role of the lawyer will change due to the technological revolution, additionally accelerated by the COVID-19 pandemic. While it is unlikely that lawyers will be replaced by artificial intelligence, it is becoming more and more realistic to replace some of their activities with more and more specialized LegalTech tools. The chapter discussed analyses into ensuring digital accessibility with the use of new tools in the arsenal of a technology lawyer, such as NVDA. Tools such as these make it possible to assess the compliance of public authorities' websites with domestic and EU law with the use of technology. However, one should not jump to too hasty conclusions from the existence of such tools. The human factor remains the most important link in the compliance process.

LegalTech in Law Firms and the Work of In-house Lawyers

Iga Kurowska, Kamil Szpyt

1. Introduction

Law offices and offices of in-house lawyers seem to be the first place where - in all likelihood - you will come across the practical application of Legal-Tech solutions. Unlike public administration bodies whose innovation may be limited by lack of adequate funding or unnecessary bureaucracy, attorneys – as the representatives of the private sector driven by the free market economy – should strive to provide service at the highest possible level.

This, however, is just a theory. The reality, unfortunately, is quite different. It should be remembered that the vast majority of entities in the legal sector present on the market are not large corporations with impressive capital but one-person or several-person law firms, usually employing only the indispensable administrative staff. With such a balance of power, it is difficult for the aforementioned lawyers to find both the time and the resources to invest in implementing innovative technological solutions that – with fair winds - will pay off only after a longer period of use¹.

Theoretically, so-called in-house lawyers - employed in large pharmaceutical, telecommunication, insurance companies, etc. - should be in a better situation. In their case, the costs of purchasing and implementing of new IT systems and software are usually borne by the employer/principal. This, in turn, involves the necessity of requesting consent for such actions, which may often be refused. Thus, the scope of freedom of decision in the case of these employees is significantly limited. In addition, there has recently been a widespread tendency to reduce the budgets of legal depart-

1 It should be pointed out, however, that there are also opinions that in the case of smaller law firms it is easier to decide to implement new, previously unused solutions; see: Tomasz Zalewski, 'LEGALTECH – wyzwanie przyszłości' (2019) 3 Temidium 9.

ments, even though - given the circumstances described in this chapter - this issue should rather look quite different².

Nevertheless, after the above somewhat pessimistic introduction, it should be pointed out that the situation of using LegalTech solutions in the legal services market does not look bad at all. They are becoming increasingly popular not only among large corporations, but also smaller law firms. It also seems that lawyers are increasingly willing to experiment and take the financial risk of implementing new solutions³. This is often the case when client expectations require so. However, this does not change the fact that, unfortunately, the process may involve numerous complications, which – at the very beginning - may be ignored by enthusiastic lawyers. On the other hand, in the doctrine, there is still a considerable gap as regards publications that could constitute a guide and introduction to the issues in question, which means that many lawyers have to make their adventure with LegalTech through trial and error, many of which could be avoided.

The above circumstances led to writing this chapter in an attempt to answer the question: what LegalTech solutions actually are or should be used by lawyers working in law firms and in-house lawyers⁴. The authors have refrained from discussing specific products available on the market in order to achieve the greatest possible universality of the present study. Such generalisation, due to the market's dynamic, will also guarantee the text to preserve its relevance⁵. In addition, for the sake of clarity of

2 See Mateusz Jakubik and Tomasz Świetnicki, 'Technologia coraz bardziej obecna w pracy prawników' <www.prawo.pl/prawnicy-sady/informatyka-w-pracy-prawnikow-eksperci-pisza-o-legal-tech,504169.html> accessed 25 April 2021.

3 However, it should be noted that the level of development of the LegalTech market in individual EU countries will vary. In some of them, similar solutions are slowly becoming a standard (France, Spain). In other countries, the market is just beginning to develop (e.g. Poland); see Maciej Wróblewski, 'Gdzie zaczęła się LegalTechowa rewolucja?', <<https://blockchainext.io/gdzie-zaczela-sie-legaltechowa-rewolucja-wywiad/>> accessed 25 April 2021.

4 Due to the fact that, despite appearances, the work of lawyers employed in law firms in many areas differs significantly from the activity of in-house lawyers, which also translates into LegalTech solutions recommended for and used by these groups, it was necessary in many places of this article to limit itself to relatively general considerations, since undertaking a more detailed analysis, detailing the differences in both cases, would go far beyond the scope of this chapter.

5 This decision was all the more obvious for the authors of this chapter, as the Internet offers rankings or entire databases of LegalTech products, often grouped according to their functions – see, e.g.: Katalog LegalTech available on Fundacja

the argument, it was done taking into account the three-level division of LegalTech⁶ presented in the first chapter.

2. *LegalTech 1.0*

2.1. *The Most Popular Tools*⁷

At the beginning of this discussion, it is worth pointing out that the elementary set of computer tools categorized as LegalTech 1.0 and used in everyday work of in-house and office lawyers includes software for word processing, organizing data in spreadsheets and preparing visual presentations. The tools which nowadays have an equally wide range of applications are: electronic mail, which continues to be the basis for both external and internal communication as well as video and teleconferencing tools (which gain increasing popularity as a result of the COVID-19 pandemic and travel restrictions associated therewith). Automated invoicing software can also be included in the array of commonly used solutions. Lawyers also seem to be taking more and more advantage of e-signature and public administration platforms. Although it is difficult to predict that all EU countries will introduce paperless solutions in the coming years, filing official documents in an electronic form or conducting court hearings online (although, not yet fully accepted by the entire legal community) is no longer seen as something unusual.

The above solutions have been widely implemented by almost all law firms and in-house lawyers. The implementation of these solutions is natural and not associated with major concerns or difficulties in application, except perhaps for some practical problems, however, resulting more from the slow digital transformation of public institutions rather than law firms handling lawsuits. Let us not forget, however, that obstacles of a similar nature, i.e. lengthy procedures, difficulties in communication and

LegalTech Polska website <<https://legaltechpolska.pl/katalog-legaltech-polska/>> accessed 25 April 2021.

6 Oliver Goodenough, 'Getting to Computational Jurisprudence 3.0' in: Oliver Goodenough, Amedeo Santosuosso and Marta Tomasi (eds.), 'The Challenge of Innovation in Law: The Impact of Technology and Science on Legal Studies and Practice' (Pavia University Press 2015), 3.

7 The division into subsections introduced in this chapter is highly conventional in nature and its purpose is to allow the reader to more easily navigate through its contents rather than to set rigid boundaries between different solutions.

technical problems, have been the concern of the justice system for many years⁸. Therefore, it would be wrong to expect that the use of new technologies alone would result in the removal of these obstacles. LegalTech, in the broad sense of the term, is only a part of improving legal work and systems; its application should therefore go hand in hand with the modernization of structures and management methods of organizations (whether we are talking about the private or the public sector).

Among LegalTech 1.0 tools which are intended to support lawyers in their daily work, making it faster, better and, consequently, more competitive⁹, we can also mention the use of legal information platforms (systems) designed to collect judgments and doctrinal studies in a dematerialized form. They are usually available in the Software as a Service (SaaS) model¹⁰, sometimes divided into modules, each of them charged separately. Access to these tools seems to be a commonly recognized standard of equipment for every law firm and in-house lawyer.

2.2. *Best Practices in Omplementing LegalTech 1.0 Solutions.*

When discussing the use of technology in improving the work of lawyers, it is important to mention that part of a law firm's digital transformation should also include, in addition to the monitoring of the LegalTech market and introducing new IT solutions, an attempt to make the widest and safest use of the technological solutions (already possessed by a law firm or

8 See 'Diagnoza stanu polskiego sądownictwa. Materiał RPO dla sejmowego zespołu ekspertów „okrągłego stołu”' <www.rpo.gov.pl/pl/content/diagnoza-sa-downictwa-material-rpo-dla-sejmowego-zespołu-ekspertow> accessed 25 April 2021.

9 As of 2019, the average lawyer invoices only 2.5 hours of work per day; see: 'Legal Trends Report 2019' (Clio 2019) <<https://www.clio.com/wp-content/uploads/2019/10/2019-Legal-Trends-Report.pdf>> accessed 25 April 2021.

10 For more on SaaS contracts, see Michał Modrzejewski, 'Podatkowe aspekty korzystania z oprogramowania komputerowego w modelu SaaS (Software as a Service)' (2016) 8 *Przegląd Podatkowy* 15; Krzysztof Żok, 'Prawna i ekonomiczna analiza umowy o korzystanie z programu komputerowego jako usługi (Software as a Service, SaaS)' (2017) 4 *Zeszyty Naukowe Uniwersytetu Jagiellońskiego* 63; Krzysztof Żok, 'Kwalifikacja umowy o korzystanie z programu komputerowego jako usługi (Software as a Service, SaaS) – uwagi na tle prawa polskiego i wybranych zagranicznych systemów prawnych' (2015) 3 *Zeszyty Naukowe Uniwersytetu Jagiellońskiego* 18.

legal department) possible for all lawyers and administrative staff. In this context, it is particularly important to take care of two issues:

- 1) a high level of competence in training lawyers and administrative staff using LegalTech solutions - for example, adequate proficiency in using apparently simple and obvious word processing functions, such as change tracking, document comparison, automatic creation of tables of contents, footnotes, bibliographies, or keyboard shortcuts, can positively affect the efficiency of a law firm's work. Moreover, spreading the word about the licenses purchased by your law firm and familiarizing your team with the capabilities of the tools possessed as well as their upgrades (i.e. permitted new functionalities) is an important part of changing your work culture. Unfortunately, lawyers (focused on their day-to-day activities under time pressure), find it difficult to develop new habits and appreciate the importance of training to take full advantage of the capabilities of even the simplest legal technologies;
- 2) compatibility, legality and update of software used - however improbable it may seem, it is quite common for employees of smaller law firms to use software from an illegal source, used in violation of the principles of a license, or in trial versions. It is not uncommon for people working in a law firm to use their own (non-corporate) equipment (e.g. laptops), which they take home after work and use for private purposes; they often install software by downloading files from unverified sources.

The consequences of such behavior may be numerous and diverse in nature, including legal (e.g., use of software without a license or in violation of its rules) and organizational (incompatible versions of a file developed by a group of people in a law firm resulting in wasted time). However, it is particularly important to ensure compliance with cybersecurity rules¹¹. As the coronavirus pandemic shows¹², the use of new technologies contributes to the increase of risks related to network security and data processing. This is directly related to more frequent work at home and an increase in the amount of software used.

The key issue to which attention should be paid with regard to the above is the introduction of appropriate procedures and good practices for

11 See Section V Chapter 26.

12 See Violet O'Gorman, 'Cybercrime during the coronavirus pandemic: what does it mean for the legal industry?' <<https://www.lexisnexis.co.uk/blog/in-house/cyber-crime-during-the-coronavirus-pandemic-what-does-it-mean-for-the-legal-industry>> accessed 25 April 2021.

keeping software up to date. This is especially important for the operating system and the elementary tools used (in principle) on a daily basis: the web browser and the antivirus program. If possible, automatic software updates or at least an alert should be set up to notify about the availability of a new update. All sorts of background programs designed for updating and maintaining operating systems, usually equipped with a built-in function of informing about a potential vulnerability in the software and the possibility of mitigating it by installing an update will be particularly helpful for more careless users.

The above issue should be regulated in the IT system management instruction applicable in a given entity. All employees should become familiar with its content. The adoption and observance of such instruction in the workplace shall undoubtedly be one of the first issues to be examined in the case of a possible personal data protection incident and control of the entity by the national supervisory authority.

One of the main conclusions from the above considerations is that before moving to more advanced solutions, lawyers who want to implement LegalTech solutions in their offices or legal departments should verify whether they use the simplest IT tools in a full and correct manner and whether the operational structure of the organization is suitable for taking another step forward in terms of modernization. It seems that lawyers falsely presume that they and their employees have the necessary competences in this area.

3. *LegalTech 2.0*

3.1. *General Remarks*

LegalTech 2.0 aims to replace lawyers in many of their activities, by having the machine assimilate some of the knowledge or legal processes. Thus, the technology in question does not only serve the purpose of streamlining everyday tasks by improving the efficiency of processes and work organization, but it is also intended to utilize technological potential to perform this work. LegalTech 2.0 solutions include i.a. e-discovery, document management automation software, contract analysis by Artificial Intelligence (AI), legal expert systems (i.e. chatbots), the use of Big data analytics to formulate legal arguments, predict the outcome of a hearing, and even business intelligence. Although the current state of Natural Language Processing (NLP) technology does not allow for high-quality understanding

and processing of legal text¹³, it is predicted that in the future similar, activities of summarizing and editing basic legal texts will be possible. Compared to the previous LegalTech 1.0 category, these are more advanced disruptive technologies that nowadays are only partially used by law firms and legal departments due to their sometimes high cost and lack of overall trust on the part of lawyers. The second most important reason for their slow adoption is the lack of initiative on the part of lawyers themselves to implement such solutions and use them on a regular basis.

Before analyzing different solutions, it is worth noting that LegalTech 2.0 has great potential in terms of enhancing access to justice, especially for those who do not choose the services of law firms either because they cannot afford them or because the case involves a small amount of money (e.g. an unpaid invoice or unreturned deposit for an apartment). As C. Christensen points out, innovations usually fill the downstream gap in the first place¹⁴. Understanding this phenomenon usually reassures those who fear for the future of themselves and their law firm colleagues. This thesis is confirmed by the position occupied in the market by alternative legal service providers (ALSPs)¹⁵. Their services, which are massively automated and aggressively promoted, are offered at affordable prices and often do not compete directly with law firms, which prefer to engage in more complex, revenue-generating activities. However, this does not preclude that the limit of the ALSP's range of services will continue to shift to include more and more complex services. An example is a platform offering a number of contracts for start-ups, which the customers personalize themselves using a form designed for this purpose and, if necessary, seeks advice from a virtual assistant. With the arrival of a new generation of employees, including managers¹⁶, such solutions, focused on the quality of User Experience (UX), must be adopted by law firms, otherwise all

13 Kevin D. Ashley, *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age* (Cambridge University Press 2017) 4.

14 Clayton Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston (MA: Harvard Business School Press 1997) 215.

15 An ALSP's market presence depends largely on the level of regulation of the legal profession in a particular state.

16 The U.S. Bureau of Labor Statistics predicts that by 2030, so-called millenials will make up 75% of the workforce; see: Jeff Schwartz and Bill Pelster, 'Global Human Capital Trends 2014: Engaging the 21st-century workforce' <<https://www2.deloitt.com/us/en/insights/focus/human-capital-trends/2014/hc-trends-2014-introduction.html/#endnote-sup-10>> accessed 25 April 2021.

customers will turn to ALSPs, even though they may be presumed to provide services of lower quality¹⁷.

3.2. Document Management Automation Software

Much less popular are programs for document automation, workflow management¹⁸ in a law firm or sophisticated Customer Relationship Management (CRM) systems¹⁹- tailored specifically to the needs of a given law firm. Thanks to these solutions, which have been used by entities from other sectors for over 15 years, clients have the possibility to track the progress of work on their case, including monitoring of the time spent by the law firm on assigned tasks, or exchange of documents and correspondence. In case of more advanced programs, the lawyer can manage e.g. general meetings online, send documents for electronic signature (when CRM has an integrated certified signature system), work on documents or issue invoices. Due to the fact that these types of solutions are cloud-based, multiple users can have both passive access as well as active participation in creating and editing documents at the same time, thus transforming CRM into an interactive platform. Such tools, in their more elaborated version, often are global in nature and successfully replace many other tools, such as instant messaging or e-billing²⁰.

In the context of LegalTech 2.0, one should also not forget about an extremely important automation process in the management of the docu-

17 It is worthwhile to refer to the considerations of R. Susskind on the right to a court in the context of the need to provide citizens with adequate tools to determine their rights and possible scenarios of action in the event of popularization of online courts; see: Richard Susskind, *Online Courts and the Future of Justice* (Oxford University Press 2019) 121.

18 The term can be understood in two ways: in a broad sense (as a way of information flow between various objects involved in its processing) and in a strict sense (as a way of document flow between employees performing a certain algorithmic set of activities); see dictionary entry: Wikipedia, 'workflow' <<https://pl.wikipedia.org/wiki/Workflow>> accessed 25 April 2021.

19 For more on CRM, see Ahmad M. Zamil, 'Customer Relationship Management: A Strategy to Sustain the Organization's Name and Products in the Customers' Minds' (2011) 3 *European Journal of Social Sciences* 451–459.

20 On e-billing see more: Christine Legner and Kristin Weber, 'Electronic bill presentment and payment' <www.researchgate.net/publication/221408047_Electronic_Bill_Presentment_and_Payment/link/55746c1f08ae7536374fee56/download> accessed 25 April 2021.

ments owned. Despite appearances (and some advertising slogans), it is not limited to purchasing software licenses only. In fact, the first step that law firms and legal departments should start with is to systematize their documents (knowledge management) and develop templates containing various modifications (e.g. potential contractual clauses). The law firm should also perform an audit of the documents to be automated, as it is possible that, for example, it may be sufficient to store some more untypical contracts which require a high degree of personalization and are rarely used, in a structured version, without the need to enter them into a document automation program. The aforementioned task cannot be entrusted solely to administrative staff or lower-rank lawyers but requires the involvement of more experienced law firm partners/associates as well. This allows you to place in the system the highest quality template documents, providing for all (or almost all) possible objections/modifications/comparisons. Only after this step has been completed should the work with the IT program begin.

This first step can be an opportunity for many people to reorganize their e-library of documents, rethink internal processes, unify the style of letters, or even implementation of further innovations, e.g. by using legal design techniques to simplify the form of legal communication²¹. The very introduction of pre-designed templates into the system can also be laborious, requiring meticulousness and equivalent training by the solution provider. Therefore, it is recommended that it be entrusted to an administrative employee familiar with law office procedures.

3.3. *Chatbots*

The above mentioned chatbots constitute a LegalTech 2.0 solution whose implementation could be a game-changer for numerous law firms. R. Susskind defines them as computer applications containing a representation of knowledge and expertise used to solve problems, advise or perform other various activities, in a manner analogous to that of humans²². Although they were invented *de facto* in the 1980s, their potential was not

21 On legal desing see, e.g: Véronique Fraser and Jean-François Roberge, 'Legal Design Lawyering: Rebooting Legal Business Model with Design Thinking' (2016) 16 Prepperdine Dispute Resoluton Law Journal 303–316; Roman M. Yankovskiy, Legal Design: New Challenges and New Opportunities (2019) 5 Zakon 76–86

22 Richard Susskind, The End of Lawyers? Rethinking the Nature of Legal Services, (Oxford 2010), p. 120.

initially recognized in the legal sector (mainly due to the competition of the Internet era). It is only recently that the possibilities of legal expert systems have been used by both public and private organizations²³. Nowadays, the application of these systems is extremely wide and easily available on the market, e.g. when evaluating compliance of company's practices with GDPR. For example, the system created by an expert in the form of a decision tree (mind mapping), asks questions directly to the client and, step by step, leads to final conclusions and recommendations²⁴.

It should be noted that such a result can be achieved without the need for artificial intelligence. However, more complex systems that are powered by AI for the purpose of carrying out diagnosis also have promising applications, especially because of the self-learning process of the algorithms. Unfortunately, even state-of-the-art *legal expert systems* are not equal to legal analysis carried out by humans²⁵. First, creating such a system is very laborious and requires top-level expertise, which is not financially rewarding due to rapidly changing legislation. Second, technologies developed on the basis of uncertain and incomplete information tend to be single-purpose rather than comprehensive ones. Third, manual reproduction of the law leads to a *knowledge acquisition bottleneck*, which itself is problematic as it does not reflect the complexity of legal provisions²⁶. Moreover, the current state of technology does not allow to solve this important problem²⁷. Therefore, nowadays we rather observe the alternative use of chatbot infrastructure to automate simple services preceding the

23 One of the more widely described applications of legal expert systems in the literature is BNA - a program of the British government used to evaluate applications of foreigners; see: Kevin D. Ashley (n 285) 48 ; or Foley & Lardner law firm's chatbot powered by artificial intelligence to analyze international operations' compliance with U.S. anti-corruption law, the Foreign Corrupt Practices Act - Michale Mills, 'Artificial Intelligence in Law: The State of Play, 2016, Part 3' <<https://www.neotalogic.com/wp-content/uploads/2016/04/Artificial-Intelligence-in-Law-The-State-of-Play-2016.pdf>> accessed 25 April 2021.

24 See Martin Hasal, Jana Nowaková, Khalifa Ahmed Saghair, Hussam Abdulla, Václav Snášel, Chatbots: Security, privacy, data protection, and social aspects <<https://onlinelibrary.wiley.com/doi/full/10.1002/cpe.6426>> accessed 25 July 2021.

25 Kevin D. Ashley (n 13) 8.

26 On the knowledge acquisition bottleneck (i.e., the difficulty in acquiring knowledge from human experts or other resources) see e.g.: Mihai Boicu, Gheorghe Tecuci, Bogdan Stanescu, Gabriel C. Balan and Elena Popovici, 'Ontologies and the Knowledge Acquisition Bottleneck' <www.researchgate.net/publication/228549124_Ontologies_and_the_knowledge_acquisition_bottleneck/link/549dbfd20cf2fedbc31198ec/download> accessed 25 April 2021.

27 Kevin D. Ashley (n 13). 9.

legal service and to build the brand of an innovative law firm, e.g., by locating a simple chatbot on a website, which, as a result of asking a series of questions, obtains information allowing to redirect the client to the appropriate department of the law firm.

3.4. Artificial Intelligence

The legal community's hopes have been raised by the development of machine learning and AI²⁸. Current AI-based software is successfully used to analyze large amounts of documents, e.g. in the due diligence process for mergers & acquisitions (M&A) or real estate. However, this solution is being used at the moment almost exclusively by large international law firms, due to its high cost and the large number of transactions that are necessary to leverage even partially the potential of AI. It is estimated that in order to teach the algorithm to properly distinguish the clauses (taking into account the differences in editing and terminology), 180-200 training contracts are needed. Lack of availability of multilingual training material for algorithms is one of the major obstacles for the development of these technologies on a larger scale, both geographically (so that they are applicable in other than English speaking markets) as well as by increasing the availability of ready-made solutions also to smaller law firms (reducing the cost of the solution through the economies of scale). Currently, the pioneers of such solutions, in order to enable their own development, most often start cooperation with law firms, providing them with a "semi-finished product", i.e. software with limited functionality of algorithms, counting on the improvement of algorithms along with their use, and justifying the price with other functionalities based on traditional programming, e.g. systematization and labeling of documents, possibility to co-edit and compare documents, operation management by assigning tasks (workflow management). However, despite the exclusivity of this solution, M&A departments, due to, i.a., the use of popular data rooms, which force them to make the first step necessary to enable the use of the discussed software, such as dematerialization of documents, are still considered as the so called 'early adopters' in the use of LegalTech 2.0.

28 See Section VII Chapter 4 and 7.

3.5. Blockchain

Blockchain²⁹ – depending on the way of use - can be divided into three categories: 1.0, 2.0, and 3.0, and categorized accordingly within the respective *LegalTech* categories. Currently, this technology although promptly replaced but Blockchain 3.0, seems to be most often used in LegalTech 2.0 (which led to its inclusion in this subchapter). Regardless of this, it should be pointed out that due to its properties (i.e. security, transparency, preservation of chronology, immediacy, proof of work), it is a breakthrough technology for lawyers³⁰. There are many initiatives aimed at leveraging blockchain capabilities for legal services. The best known and closest to law are definitely smart contracts - computerized transaction protocols executing the terms of a contract³¹. As these are addressed in separate chapters in this book, the applications that will be cited are of more niche character, yet they can still provide real convenience for lawyers.

This category includes the use of blockchain to maintain books and update entries in business registers - a legal obligation that entails numerous formalities involving the participation of a lawyer. The creation of dematerialized business registers covers in practice all sorts of company activities that are required to be recorded by national law, such as the register of shareholders, decisions of company bodies (e.g. the board of directors), or the register of employees³². In addition, company documents such as minutes of general meetings or written consultations of shareholders can be created and stored in a digital form.

Furthermore, blockchain can be used in a similar way to manage and protect intellectual property in which law firms are currently involved. It is possible to use this technology to record intellectual property rights,

29 For more on blockchain technology, see, e.g. Dariusz Szostek, *Blockchain and the Law* (1 ed., Nomos 2019).

30 See Yves Pouillet and Hervé Jacquemin, 'Blockchain: une révolution pour e droit?' (2018) 6748 *Journal des tribunaux* 801.

31 Nick Szabo, 'Smart Contracts', <www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart.contracts.html> accessed 25 April 2021.

32 Such obligations are required by French company law and their recording in blockchain technology has been enabled by law gradually in 2017 and 2019 - Ordonnance n° 2017-1674 du 8 décembre 2017, also known as Ordonnance "blockchain", décret n°2019-1118 du 31 octobre 2019 relatif à la dématérialisation des registres, des procès-verbaux et des décisions des sociétés et des registres comptables de certains commerçants

as well as transactions involving works³³. On the other hand, recording inventions by means of transcription in blockchain would solve a number of problems currently encountered, i.e. proof of priority. Moreover, blockchain would solve the problem of possible misappropriation attempts by a uniform traceability system that remains intact throughout the whole period of evolution and existence of the invention³⁴.

4. LegalTech 3.0

Tools included in the most recent (for the time being) level of LegalTech are characterized by much greater independence than in the previous two categories. In their case, we are no longer dealing with mere automation, but with far-reaching autonomy of decisions. For obvious reasons, these solutions raise as much concern as hope. On the one hand, there is a futuristic vision of replacing lawyers with computer programs or the risk of uncontrolled operation of IT solutions that affect our lives. On the other hand, there is a chance for jurists to focus on really complicated cases requiring experience and to leave the simple and repetitive ones to digital assistants.

LegalTech 3.0 means, above all, solutions based on artificial intelligence and advanced algorithms using machine learning. However, as it has already been indicated in the opening chapter of this monograph, in these cases, the decisions are made by the system on the basis of independently acquired data and self-learning, while the final decision may be made directly by the IT system, without any control, as well as previously accepted by a human.

At this stage, only experiments and first attempts to implement similar solutions are being carried out. Most likely, however, the real boom will

33 Monika A. Górka and Lena Marcinowska, 'Czy blockchain namiesza w umowach dotyczących własności intelektualnej?' <<https://newtech.law/pl/blockchain-namiesza-umowach-dotyczacych-wlasnosc-intelektualnej/>> accessed: 25 April 2021; for more on the use of blockchain for the protection and management of intellectual property rights, see B. P. Singh and Anand Kumar Tripathi, 'Blockchain Technology and Intellectual Property Rights' (2019) 24 *Journal of Intellectual Property Rights* 41–44; Gonenc Gürkaynak, İlay Yılmaz, Burak Yeşilaltay and Berk Bengi, 'Intellectual Property Law and Practice in the Blockchain Realm' (2018) 34 *Computer Law & Security Review* 847–862.

34 Guy Canivet, '«Preuve et Blockchain», présentation de la table ronde' (2019) 2 *Dalloz IP/IT* 201973.

come only with the development of the so-called strong (general) artificial intelligence, i.e. one characterized by self-awareness³⁵.

It seems that lawyers will (and should) approach the implementation of solutions based on LegalTech 3.0 with extreme caution. Due to the significant degree of their independence, full control of these solutions will be impracticable, which in practice will translate into a number of legal and ethical problems: from liability for the actions of the said software, through potential difficulties in respecting professional secrecy (attorneys, notaries, etc.), to the validity of such actions, for example: if the law restricts the group of persons entitled to lodge a cassation appeal to professional attorneys, does its preparation, affixing a secure electronic signature (assuming that the law of a given state allows such a solution) and sending by an AI, which was, however, launched by a professional attorney, meet the above-mentioned requirements?

5. Summary

The use of LegalTech solutions on a daily basis, although they are intended to facilitate and streamline the work of lawyers, also raises and will undoubtedly raise many doubts and challenges. The source of these doubts will often be hidden in the lack of prior consideration of the legitimacy of implementing certain solutions or misunderstanding of their actual nature and purpose. As a result, there are a few general reflections summarizing the previous considerations, which at the same time can serve as a kind of guidance at the stage of implementing such solutions in modern law firms.

First and foremost, all lawyers using LegalTech systems should start implementing any new solution by analyzing their needs and deciding whether this solution will actually be useful. For example, in the case of a law firm whose business is based primarily on court cases, the priority will be to systematize and automate letters rather than to invest in tools for conducting remote meetings of shareholders of companies. In practice, it may turn out that such a tool will not be used at all, and the money spent, objectively speaking, will be wasted. Ultimately, this may even discourage a given lawyer from using LegalTech solutions in the future.

Second, it is essential to learn the basics of any software being used before implementing new, more advanced solutions. A lawyer who is not

35 Aleksander Chłopecki, *Sztuczna inteligencja - szkice prawnicze i futurologiczne* (2nd edn, Wydawnictwo C.H. Beck 2021) 5.

proficient in using a "traditional" text editor is unlikely to be able to take full advantage of the potential of cloud solutions that allow real-time document sharing and editing. The digitization of a law firm should therefore be adapted both to the real level of its employees and to the expectations of clients.

Third, it's important to remember that technological deployment is only a part of the way to modernizing law firms and in-house offices. An innovative approach should become a certain standard rather than just a passing trend. Therefore, it is advisable to match technology solutions to real needs and to place emphasis on engaging the entire team to promote participation in finding solutions to the concerns of a given team, i.e. sub-optimal management of knowledge or time. Naturally, keeping abreast of technology trends, raising curiosity about its real applications in the legal sector, as well as experimentation are encouraged. It is the commitment of the entire law firm team, not the occasional initiatives of individual Legal-Tech enthusiasts, that will lead to a more efficient digital transformation of the law firm and the firm's legal department.

Lastly, using even the most advanced IT solutions does not relieve us, lawyers, from the obligation to constantly improve our skills and qualifications. LegalTech in a law firm should be a motivation to take the quality of our services to the next level, but not an excuse for future laziness.

Implementation of LegalTech Solutions in a Law Firm – Methodology of Risk Assessment and Risk Management

Małgorzata Kurowska

1. Introduction

LegalTech solutions – due to the automated information processing operations, as well as the generally significant level of technical complexity – trigger potential risks from the perspective of the core values associated with the legal profession. The values at stake here are ensuring the confidentiality of information covered by professional secrecy, trust between client and lawyer, or ensuring the highest possible level of service. Violation of these values – as indicated in the chapter *Legal Tech vs Data in Organisation* – involves potential disciplinary liability, and in certain cases may also constitute a civil tort or, still worse, a criminal offence.

A lawyer should therefore take a systematic approach to the project of implementing LegalTech solutions in a law firm – including ensuring accountability of the process of selecting and deciding on implementation in the context of risks related to implementation process.

This section describes such proposals for approaching the above-mentioned project as are intended to mitigate the risk of an alleged failure to exercise due diligence in this context. It should be noted here that the proposals refer to LegalTech solutions that are defined in this paper on several occasions. The proposed model will also be successful in projects involving new information technologies, qualified as LegalTech 1.0. (e.g. implementation of a document repository in a public cloud in a Law Firm), but also more advanced tools of Legaltech 2.0. or 3.0.

It should also be noted that this chapter's perspective is focused only on information security and legal/organisational/technical risks management, resulting from specifics of Legaltech tools. Such issues as business analysis of implementation process, operational aspects or principles internal communication are outside the scope of below considerations.

The basic implementation principles are described at the outset. These principles will serve as a reference for interpreting further steps discussed in the following parts of the section, i.e. information classification and

preliminary assessment of the acceptability of solution implementation, through risk estimation to risk monitoring.

Naturally, the size of this paper does not allow for these issues to be broadly discussed and, as such, the following considerations should be considered as a starting point for developing an optimal approach – in the case of an individual lawyer and his or her practice – that ensures compliance with the ethical standards of the legal profession and mitigates the risk of disciplinary liability or liability for damages.

2. General Principles

2.1. Principle of Proportionality

When implementing a new LegalTech solution, one should take account of the principle of proportionality, both balancing the associated risk and defining the necessary conditions for its use. One should take into account both the type of information to be processed as part of the solution (information classification) as well as its scale and processing context. Measures for safeguarding information handled in the process should match the conditions so defined.

On the other hand, the real possibilities of action on the part of a lawyer (Law Firm) must also be taken into account. In the case of an individual law firm or a law firm employing several or more individuals, extensive paperwork and internal requirements might deter the team and impede the use of LegalTech solutions, thus undermining the efficiency and quality of work.

When balancing sometimes conflicting arguments and making an ultimate decision, a lawyer should bear in mind liability attached to a violation of professional rules, in particular with regard to the protection of information covered by professional secrecy. As such, the principle of proportionality should not be relied on to justify a decision not to conduct an analysis or to apply measures that provide merely an apparent safeguard against the risks identified.

2.2. Principle of Transparency

The implementation of modern LegalTech solutions should take into account the subsequent transparency of actions of a lawyer who will use the

solutions, in the context of his or her relationship with the client. Trust between client and lawyer is a core ethical value of a legal profession and a practical use of the solution should only be allowed where such trust is preserved.

In certain cases, the duty to inform the client will be an explicit legal requirement. This will be the case, for example, for the processing of personal data using profiling – cf. Article 5(1)(a) in conjunction with Article 21(4) of the General Data Protection Regulation (GDPR), or automated decision-making¹ – Article 22 GDPR. Principles of transparency may also be set out in a lawyer's code of ethics or derive from the case law of commercial courts.

However, even in cases where no personal data are processed via the solution used, a lawyer should assess to what extent it is reasonable to inform the client of the use of a particular technology, bearing in mind the crucial importance of trust for the lawyer-client relationship. In practice, a different assessment will apply to solutions that support legal research or the drafting of standard documents, that are subsequently reviewed by a lawyer, and a different assessment will apply to tools whose use may entail specific risks to the confidentiality of client-related information: be it personal data of an individual, data of corporate clients, or data constituting business secrets, etc.

Methods of ensuring transparency may also vary, ranging from individualised information provided at the contract stage to privacy policies posted on a Law Firm's website.

2.3. Principle of Accountability

When implementing LegalTech tools, a lawyer should be able to demonstrate that he or she has exercised due diligence when selecting and implementing the solution (accountability).

It is therefore important to ensure that:

- *all activities related to the selection and implementation of the solution are documented.*
- The activities should be documented in such a manner that makes it possible to establish what steps have been taken, when, by whom and in what order.

1 In the latter case, a lawyer must, in addition to informing the client of personal data processing, provide a specific legal basis set out in this provision.

- For this purpose, the analyses should be recorded in the form of a document – either a hard copy or an electronic version; depending on the specific needs and circumstances, such a document may additionally be protected against subsequent modifications (e.g. by means of an appropriate electronic signature).
- *roles have been clearly defined for the processes of implementation and use of the solution, i.e. specific responsibilities or authorisations have been clearly assigned to them.*
- This approach makes it possible to avoid both positive and negative conflicts of competence and to clearly allocate intra-corporate responsibility. On the other hand, it improves the comfort of work for the Law Firm's employees and associates whose tasks and responsibilities are clearly defined.
- In defining these competencies, a lawyer should take into account the different roles performed in a Law Firm, associated with different levels of disciplinary liability depending on the professional status, as well as the liability of the owner or manager(s) of the Law Firm for acts and omissions of its employees or associates. In this context, it is particularly important to consider:
- the specific role of managing partners or other persons performing managerial functions. Depending on the organisational model, these may not only be partners, but also team coordinators or other senior staff;
- the position of lawyers who are not yet fully licensed but who are required to comply with the relevant code of ethics (trainees);
- the situation of lawyers that are not subject to codes of ethics. In this case, the need to impose certain contractual obligations must in particular be assessed;
- the specific nature of work of those who support the provision of legal services – such as administrative staff, assistants or trainees.

In practice, it is a good solution, especially in the case of teams composed of several dozen or more individuals, to designate a person responsible for all activities related to the use of LegalTech solutions. Such a project manager manages the selection and operation of tools, and ensures that tasks assigned to various risk owners (cf. below) are properly carried out.

2.4. Due Dilligence

We have looked in detail at the principles of lawyer's liability in the chapter Legal Tech vs Data in Organisation. At this point, it is worth recalling that the central importance of protecting professional secrecy and promoting trust between lawyer and client is an essential element of the legal profession. Violation of these ethical principles may give rise to disciplinary liability, and civil liability may also be involved if the client additionally suffers damage. In view of the foregoing, a lawyer should exercise due professional care not only to protect himself or herself against such liability, but above all to avoid causing damage to the client (whether in the form of a tangible financial loss or a moral loss). In practice, this diligence will be reflected in conducting a detailed analysis of the solution to be implemented, learning how it works and identifying the risks associated with its use. In order to structure this process, it is possible – based on the standard information security management model set out in ISO 27 001 – to define the following scheme of action for a lawyer embarking on the implementation of a new LegalTech tool:

<p>1. PRELIMINARY ASSESSMENT PURPOSE: Determining the features of the LegalTech tool, identifying the purpose of the process and the information resources processed by the LegalTech tool.</p> <p>a. Determining the process flow.</p> <p>b. Collecting information on the currently applied information classification and risk estimation principles.</p> <p>c. Collecting documents to be reviewed (provider agreements, policies, internal procedures).</p>	<p>2. INFORMATION CLASSIFICATION AND ASSESSMENT PURPOSE: Determining the features of the LegalTech tool, identifying the purpose of the process and the information resources processed by the LegalTech tool.</p> <p>a. Assigning information resources used in the process to classes.</p> <p>b. Assessment of whether there are any limiting or excluding grounds.</p> <p>c. Assessment of the relevance of the information and its nature.</p>	<p>3. PRELIMINARY DECISION TO USE THE LEGALTECH TOOL</p>	<p>4. RISK ESTIMATION PURPOSE: Risk identification and management.</p> <p>a. Identification of risks associated with the use of LegalTech tool.</p> <p>b. Determining the impact of the risk materialisation and the likelihood of its occurrence.</p> <p>c. Estimating initial risk and identifying countermeasures.</p> <p>d. Identifying residual risk and risk response strategy.</p>
--	--	--	---

5. RISK RESPONSE DESIGN	d. Estimating the scale of the process. 6. IMPLEMENTATION AND APPLICATION OF COUNTERMEASURES PURPOSE: Mitigation of identified risks, process accountability. a. Designating individuals responsible for risk management. b. Conducting ongoing risk monitoring. c. Evidencing actions taken.	7. LAUNCHING LEGALTECH TOOL	8. RISK MONITORING
-------------------------	--	-----------------------------	--------------------

Detailed comments on the individual elements of the above scheme are described below.

3. *Information Classification and Process Evaluation*

3.1. *Preliminary Analysis and Classification of Information*

In view of the liability implications, a lawyer, when opting for a specific solution, should select, in addition to the tool itself, the types of information to be processed as part of the contemplated operations and the manner of processing. This step helps to structure the project assumptions and is the starting point for the risk analysis that follows.

Information classification is nothing more than the assignment of individual pieces of information to categories, singled out as per criteria defined by the organisation. Information classification should be regarded as the first step in implementing information security risk management. Information classification handled on an ongoing basis provides the organisation with up-to-date knowledge of information resources and how they are used, and consequently allows the organisation to respond to changes in its environment.

How to classify information

On the practical side, classification should begin with an inventory of the Law Firm's information resources. A record of processing activities (so-called RPA), maintained pursuant to Article 30 of the GDPR, may be a helpful, albeit not an exclusive, source of information in this respect. However, the Law Firm's internal records (such as RPA, or other records) are sometimes obsolete or incomplete in practice. Therefore, the information inventory should be based on arrangements made directly with those involved in information processing. For small organisations, such as law firms employing a few individuals or so, it is most practical to collect information directly, at meetings; for larger entities, audit questionnaires can be a functional solution.

The inventory should result in a list of information resources, set in the specific context of the organisation.

Example:

Type of information	Scope of information	Context (description)
Client contact information (B2B)	Business name, email address, telephone number, mailing address	Contact details in the team's CRM, used to contact and send marketing information
Information – client matters	Assignment-related correspondence, content of legal opinions, pleadings, documentation provided by the client	Information covered by professional secrecy which constitutes the content of legal assistance
HR information	Full name, type of agreement, amount of remuneration,	Information on employees – team members

It is worth bearing in mind that at this stage the breakdown of data is based solely on a mainly intuitive functional separation. Only at the next stage – the classification – will the inventoried information be assigned to a specific category (class). However, this requires a **decision on the classification criteria**.

The selection of each classification criterion always remains at the discretion of the organisation (a lawyer). In the context of the objective of ensuring information security, it is reasonable to rely on the criterion of information confidentiality, i.e. the criterion relating to the consequences of disclosing information to an unauthorised individual or individuals).

Example:

Class designation	Description	Examples of information
Class A	<i>Public data – no confidentiality measures are required</i>	<i>Contact details of the Law Firm Full names of team members</i>
Class B	<i>Internal use information – information that may be disclosed to individuals within the organisation and, if necessary, to specific third parties</i>	<i>Contact details of the Law Firm's employees Procedure for reporting security incidents</i>
Class C	<i>Restricted information – information that may be disclosed to individuals other than its owner only subject to certain conditions, that do not fall under Class D</i>	<i>Information on the Law Firm's financial performance Information contained in personnel files</i>
Class D	<i>Information covered by professional secrecy – accessible only to a lawyer and persons assisted by him/her</i>	<i>Information on the subject matter of legal assistance, content of pleadings drafted</i>

One of the common mistakes made at this stage is to single out an excessive number of classes. This is due to the temptation to describe the information in the organisation as precisely as possible, but this results in losing sight of the fundamental objective of simplifying information management. Singling out a number of classes has no practical consequences as it would not be possible to implement different security rules for so many categories of information.

Another solution is the use of hybrid criteria, i.e. criteria that are attributes of information security (e.g. confidentiality) coupled with normative criteria (e.g. personal data). This type of classification, although encouraging at first sight, turns out to be of little practical use.

Example:

In X Law Firm, “Personal Data” has been singled out as a separate class and a principle has been put in place that no information constituting personal data may be processed with the use of cloud computing.

No one has noticed that the Law Firm uses Jira – in this particular case in a SaaS model – for project management; therefore, full names of team members and project names are recorded in the cloud. The Law Firm also uses Gmail to handle emails.

Context of Solution Implementation

Once the information has been classified by reference to technically neutral criteria (standards) adopted by the organisation, we move on to the selection of LegalTech tools. This is always done in a specific context, which should be properly described before making a decision to implement the solution.

The basic elements to be considered by a lawyer include:

a) **Nature of Information**

This is the element most closely related to the classification of information and involves establishing whether the information processed with the use of the selected tool, or as part of the assumed operation, constitutes professional secrecy. In certain jurisdictions, professional secrecy related to the provision of legal services in a criminal case (secrecy of defence) may also require additional distinction.

b) **Scale of Information Processing (planned scale of use of the tool)**

The scale should be established taking into account both an objective factor (the actual volume of data processed by the tool or the processes it implements) and a subjective factor (the scale of the process in relation to the scale of the Law Firm’s operations).

c) **Legal Constraints**

A lawyer should make a search for legal constraints that may affect the acceptability of implementing a specific solution. These constraints can:

- **take the form of a specific provision of law**

Example:

no legal basis (Article 22 of the GDPR) for the automated processing of contractual or organisational data for the purpose of making relevant decisions concerning an individual.

- **have a contractual nature**

Example:

Law Firm's client – a financial sector entity – has expressly stipulated in a legal services agreement that it is not possible to process the information concerning it in a public computing cloud.

- **have an intra-organisational nature**

Example:

The Law Firm's corporate requirements, which apply globally, mandate prior notification to head office of any intended implementation of AI-based tools.

d) **Relevance of information**

In order to assess whether it is acceptable to use the selected Legal Tech tool, it is reasonable to take into account, in addition, an attribute which, for the purposes of this paper, will be referred to as relevance of information.

Relevance should be understood as the adequacy of information, taking into account primarily the impact of potential security breaches related to the use of the LegalTech tool on the elements that are most important from the point of view of the legal profession – both from an ethical and a purely practical (organisational) perspective. It is therefore advisable, when determining the relevance of information, for a lawyer to take into account aspects such as security threats related to information constituting professional secrecy and continuity of provision of legal assistance (ethical aspects), as well as to a lawyer's financial situation and reputation – as aspects affecting the practical possibility of practising law.

Assessing the Acceptability of Implementing the LegalTech Solution

The final step of this stage should be a preliminary assessment of the acceptability of implementing the selected LegalTech solution. This assess-

ment should be based on confirmed information – both concerning the tool itself and the context of its use across the organisation. It is worth bearing in mind that in this model the initial assessment precedes the risk analysis, which may result in the identification of additional conditions or qualifications related to implementation.

Depending on the model adopted, the assessment may also indicate the extent to which a risk analysis will be carried out – in particular whether the Law Firm allows for a simplified risk analysis in a given case, in accordance with the standards it has defined.

4. Risk Assessment

4.1. Risk-based Approach

The risk-based approach is one of the concepts that have in recent years been used by legislators and regulators in the area of information protection (including personal data or other sensitive information). This is justified by rapid technological change, requiring a complete change of an approach to the obligation to protect information. Instead of defining, as previously, only “hard” technical and organisational requirements, the legislator now expects an entity responsible for protecting information to analyse the risks to information security itself and to select adequate security measures. At the same time, while regulations such as e.g. the GDPR expressly encourage a “pure” risk-based approach, for specific sectors or areas of law – both the EU legislator and the legislator in the Member States – supplements the risk-based approach by defining a certain standard as a minimum set of functionalities or features that need to be implemented.

ISO 31000 Risk management – Principles and guidelines is a global standard on risk management. The approach set out below takes into account the above standard while respecting the principle of proportionality.

Risk-based Approach in Implementing LegalTech

When implementing LegalTech solutions in a Law Firm, while a key element, risk assessment requires a well-thought, case-by-case approach. The principle of proportionality requires that both the scope of analytical activities and the safeguards to be implemented be adequate – both in

the context of the Law Firm's day-to-day operations and the planned implementation process.

For this reason, it is worth taking into account the possibility of grading the complexity of the analytical process and defining principles for **simplified risk analysis** in the solutions adopted. Such a simplified risk analysis may in particular consist in verifying the fulfilment of the conditions considered to be the minimum acceptable standard for the Law Firm (cf. comments below).

In any event, when deciding to implement a structured approach to risk management, a lawyer should consider elements such as:

- a) precise definition of the process and a good understanding of the Legal-Tech tool under analysis;
- b) definition of the context of the process (what information will be processed, whether the information is sensitive, the scale of the processing, its purpose, etc.).

As can easily be seen, clauses a) and b) are comprised in the step above referred to as classification of information and assessment of the acceptability of implementation.

In addition to these elements, as part of risk management, and regardless of the methodology chosen for its assessment, it is necessary:

- c) to decide **which areas will be relevant in the context of risk**
For example, such areas may include the security of professional secrecy, continuity of provision of legal assistance, the financial situation or reputation of the Law Firm.
- d) to identify, according to the method selected, **the risks associated with the selected solution**;
Risks can be identified, for example, on the basis of a standard risk "checklist", based on brainstorming, the expertise of those involved in the process, or by analysing the so-called "worst case scenario"².
- e) To carry out a risk assessment in the context of the above areas – in line with the method selected.

A proposal on how to carry out steps from c) to e) is described below under "Risk analysis". It should be stipulated here that there are numerous risk assessment methods – the ISO 31000 standard is adopted below. At the outset of the risk assessment method decision stage, it is important to look at the standards indicated, including **31010:2019 Risk Management –**

2 31010:2019 Risk Management – Risk Assessment Techniques.

Risk Assessment Techniques, which contains a comprehensive discussion of the assessment methods. An ultimate decision should take into account the circumstances of the Law Firm, including its organisational capacity and ease of implementation.

f) Defining the risk response strategy and the risk monitoring rules

However, the risk assessment alone should not put an end to the process. The next step in the risk management process is to define a risk response strategy, the rules for risk monitoring and reporting the results of such monitoring (see below).

4.2. Risk Analysis

Identification of Risk Areas

The first assumption under this approach is based on the identification of areas for which risk will be assessed. It should be noted that a single event can generate different types of risks. From the perspective of implementing the LegalTech solution, we consider at least the following risk areas to be reasonable:

- Risk to the security of information covered by professional secrecy,
- Risk of compromising the continuity of provision of legal services,
- Risk to the financial situation of the organisation (Law Firm),
- Reputational risk.

While the first two areas of risk are closely related to the ethical principles of the legal profession and as such are of paramount importance, especially from the perspective of disciplinary or civil liability, financial or reputational risks are essential from the perspective of the overall situation of the Law Firm as a business entity and workplace.

It should be noted that the above list is by no means exhaustive. Indeed, the obligation to carry out a risk analysis may arise directly from the law – the most typical example in this respect being the obligation to assess the risk to the rights and freedoms of natural persons, as set out in the provisions of the GDPR.

Risk Identification

For a standard risk analysis (leaving aside a simplified analysis here, as discussed below), each of the above areas should be reviewed for the risks they carry.

A **risk** is to be construed as *an event which may result in negative consequences, connected with a potential event (circumstances), concerning a given area* (e.g. security of professional secrecy, continuity of provision of legal services, financial situation or reputation of the Law Firm).

Example: geographical dispersion of data processing using BigData analytics based on cloud computing.

It is natural for a lawyer to identify **legal risks** – such as, for example, the “take-it-or-leave-it” nature of a contract based on a contractual template and subject to changes that are virtually beyond the user’s control, absence of guarantees relating to professional secrecy as required by law to which the lawyer is subject – particularly when the provider is located in another jurisdiction and the contract is governed by the law of the provider’s country.

However, it is important to remember that when identifying the risks associated with the selected LegalTech solution, one should not limit their analysis to legal risks alone. Factors of a non-legal nature may also be a source of risk – most notably these include:

- **Organisational factors:** e.g. no effective security incident response procedures; no training for tool users;
- **Technical factors:** e.g. no encryption of data subject to professional secrecy, no adequate authentication mechanisms.

For each defined risk, it is then possible to define basic parameters for risk estimation:

- Relevance of the impact (**consequences**) of the risk on the area(s) identified, and
- **Likelihood** of its occurrence.

Risk Impact Assessment

In a lawyer’s practice, the impact of a particular risk will be assessed at an expert level – with an “expert level” to be construed not only as a lawyer’s professional judgement, but also as the need, in certain cases, to use the assistance and judgement of a technical expert. When designing a risk

assessment tool, in order to increase the transparency of the assessment, one may consider breaking down the impact assessment into an analysis of the consequences of a given risk for each risk area separately. With this approach, it is only in the next step that an aggregate risk impact assessment is made.

Example:

A	B	C	D	E
Risk	Impact on the security of professional secrecy (1–4)	Impact on the continuity of provision of legal services (1–4)	Impact on the financial situation (1–4)	Impact assessment – the highest of the values specified in headings B to D
<i>geographical dispersion of data processing using BigData analytics based on cloud computing</i>	2	1	3	3

Whichever approach is selected, the widest possible range of information sources – such as industry portals, results of security tests carried out, independent calculations, etc. – should be taken into account to estimate the size of the risk.

Determination of the Likelihood of a Risk Occurring

The likelihood of a particular risk occurring may be assessed by taking into account, in particular, factors such as:

- The attractiveness of the “resource” – primarily the information processed by the tool, or all the information processed in the Law Firm that is accessible by exploiting the vulnerabilities of the tool under analysis;
- Known vulnerabilities of the tool or vulnerabilities identifiable based on technical expertise;

- c) Historical data on similar past events, such as incident data relating to a given LegalTech solution or service provider;
- d) Environmental and social factors that determine the possibility of a risk occurring, such as weather conditions or the political situation in the country where the information is processed.

Similarly to the assessment of impact of risk, likelihood can be assessed at an expert level.

Estimation of Overall Risk Value

The overall risk value is an ordered set of risk measures (numbers) for individual risk factors. A lawyer, managing risk at the Law Firm, will set priorities of preventive actions in a descending order of the individual measures once the overall risk value is obtained. This will ensure that the organisation does not waste resources on irrelevant issues and instead focuses on those relevant for its particular situation.

The simplest way to obtain the risk value is to use the following formula:

$$E_1 = I_1 \times L_1$$

Σ

where:

E_i – means the risk value for the risk factor

I_1 - means the impact of the consequences of the risk factor

L_1 – means the likelihood of the occurrence of the risk factor

Once the risk value have been determined for all identified factors, i.e. E_1 , E_2 , E_3 , etc. we rank them – as described above – in a descending order, indicating the significance of the factor.

Assigning values (for example – from 1 to 4) to the impact and likelihood parameters, we obtain the following standard risk matrix:

Likelihood Impact	Likelihood of risk occurrence			
	low (1)	medium (2)	high (3)	very high (4)
low (1)	1	2	3	4
medium (2)	2	4	6	8
high (3)	3	6	9	12
very high (4)	4	8	12	16
Risk value	1–3 (low)	4–8 (medium)	9–16 (high)	

The above approach – necessarily presented above in a simplified and abbreviated manner – is subject to certain limitations; such as the sometimes strongly subjective evaluation of individual factors (impact and likelihood). However, it also has very important advantages; first of all, it allows risks to be presented in a numerical way, and consequently the results of the estimation are easily **comparable** – both among themselves and also over time. It is also relatively simple to implement in practice.

Issues to be Analysed

As mentioned above, risk assessment methods can vary and the complexity of the assessment method can vary as well. However, a lawyer should in any event consider and analyse the following aspects related to the implemented tool:

- **Legal requirements** related to the implemented tool in the area of:
 - Principles governing the protection of information constituting professional secrecy and personal data;
 - Intellectual property rights to the deliverables of the implemented LegalTech solution;
 - Access rights to the databases used in the solution and acceptability of their use for the intended purpose;
- **Professional conduct requirements**, including:

- Assessment of the compliance of the solution with the ethical requirements applicable to a lawyer, in particular with regard to the protection of professional secrecy;
- In the case of cross-border provision of services, the principles expected to be followed by the client;
- **Technical competence in:**
 - Verifying to what extent the organisation (the Law Firm, the users of the tool) has the resources to ensure the correct configuration of the solution and the monitoring of any irregularities;
 - Verifying the resources of potential business partners (solution implementer, maintenance provider, etc.);
- **Law Firm's organisational skills, including:**
 - Verifying that the necessary roles and responsibilities are defined so as to minimise the risk of conflicts of competence when using the solution;
 - Evaluating procedures to ensure the correct application of internal rules for the use of LegalTech solutions (compliance enforcement mechanism);
 - Maturity of the organisation understood as its readiness for a new solution with the possibility of effective implementation (level of awareness of employees and associates);
- **Technical and organisational security offered by solution provider:**
 - Assessment of declared technical and organisational safeguards;
 - Compliance with international norms or standards; or possession of cybersecurity certification from any EU Member State;
 - Use of data encryption, which is the source of information covered by professional secrecy, in any situation where the information would be stored or transmitted to a third party (provider). In the event that a provider were to have access to unencrypted information (e.g. for analytical purposes), the legal permissibility should be verified and the extent of such disclosure documented;
- **Location of data processing resources**
 - Irrespective of the legal requirements related to data localisation (primarily GDPR and client-specific requirements, e.g. cybersecurity requirements or requirements specific to the financial sector), a lawyer should also consider other risks relating to the location of processing centres and its consequences, e.g. the possibility of an actual on-site audit, the possibility of enforcing surveillance by public authorities, etc.;
- **Terms of a solution provider agreement:**

- In a prevailing number of cases, the terms of use of the LegalTech solution purchased are “take-it-or-leave-it” terms. This does not relieve a lawyer of his or her liability for assessing these conditions and balancing the risks;
- A lawyer should focus in particular on issues relating to:
 - a) Rules for changing the terms of service and technical aspects of the solution offered;
 - b) Commitments (guarantees) to comply with the standards described above (e.g. a contractual guarantee not to use the data for own purposes);
 - c) offered SLA (service availability, incident recovery);
 - d) Rules for communication (including notification of potential security incidents);
 - e) Jurisdiction and applicable law.

4.3. Simplified Risk Analysis

A simplified risk analysis may be considered in certain situations. The criteria allowing for such an assumption should be established and justified by the Law Firm. However, a simplified risk analysis can, as a rule, be carried out especially when:

- The scale of information processing or intended use of the LegalTech solution is insignificant;
- The relevance of information (as defined above) is low;
- LegalTech solution has been granted a cybersecurity certificate based on the national law of the Member State, within the framework set out in the Cybersecurity Act³;
- There are other specific documented circumstances that justify a simplified risk analysis.

Naturally, the mere possibility of applying the simplified approach in accordance with internal procedures **does not oblige** a lawyer to do so. Conversely, a lawyer **is obliged** to carry out a full-scale risk analysis in a situation where, despite the formal fulfilment of the prerequisites set out

3 Regulation (EU) 2019/881 of the European Parliament and of the Council of 17 April 2019 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 [2019] OJ L151.

by the Law Firm for relying on a simplified approach, there are specific circumstances that indicate the grounds for such an in-depth analysis.

The scope of the simplified risk analysis should be defined by the Law Firm, but should always refer to the risk areas indicated above. A simplified risk analysis may – for instance – take the form of a checklist in which the actual situation is compared with the minimum acceptable standard applicable in the Law Firm.

Example:

Issue	Minimum acceptable standard	How the standard is complied with	Comment; information source
Legal requirements related to data processing		The processing agreement fulfils the conditions of Article 28 of the GDPR	Draft provider agreement dated XXXX - Clause 3, Clause 5
	Compliance with GDPR (including as regards a personal data processing agreement, if applicable)	An impact assessment of the information provision has been carried out	Processing impact assessment document – available on the web drive [link].
	An undertaking by the provider that the information processed will be kept confidential by the provider and by those it engages in performing the agreement (if applicable)	It has been ensured that data subjects are properly informed in accordance with the GDPR	Draft email to clients containing an information notice [link].
	Contractual prohibition from using information covered by professional secrecy for the provider's own purposes (if applicable)	In the agreement the provider undertakes to keep confidential any information processed and not to use the same for other purposes	Draft provider agreement dated XXX, Clause 8.3

Issue	Minimum acceptable standard	How the standard is complied with	Comment; information source
Processing territory	No transfer of information covered by professional secrecy outside the European Economic Area In other cases, ensuring GDPR-compliant mechanisms for transferring personal data outside the EEA	Data will be processed in a data centre in the EEA (Frankfurt am Main)	Order No. XXXXX
Technical security	Encryption of information covered by professional secrecy in transit and at rest The provider has an ISO 27001 certificate of conformity or a declaration of conformity with the standard	No information provided: The provider has informed the law firm that it has an up-to-date ISO 27001 certificate of compliance, but fails to provide the same at the time of the assessment	The missing document must be received before the agreement is entered into
Competences	Guarantee of adequate technical competence on the part of the provider (if applicable)	Guarantees provided in the provider agreement	Provider agreement dated XXX, Clause 9
	Providing necessary training or manuals to the Law Firm's team	Training on the tool is planned in the Law Firm within 2 weeks after the tool has been launched	Information received from XYZ; Necessary monitoring of whether training has been provided

4.4. Risk Response Strategy

For each risk identified, it is necessary for a lawyer to define a *risk response strategy*. Typically, four such strategies are distinguished:

- Risk Acceptance

There are situations where a lawyer can accept the risk. However, such a decision should be informed and justified. For example, as a rule the Law Firm may consider *Acceptance* for all circumstances for which the designated risk measure indicates a low level. A higher-level risk may be accepted in particularly justified cases where the benefits of the implemented solution outweigh the identified risk. It is also recommended to adopt the principle of non-acceptability of risk at a specific highest level, or in relation to a specific area.

Whenever the risk is accepted, it should be ensured that it is monitored to identify any new circumstances affecting its level.

- Risk Mitigation

Risk mitigation is the implementation of solutions that ultimately reduce the defined level of risk. This effect can be achieved by:

- **Modifications to the safeguards applied** (technical, organisational, contractual countermeasures) to reduce the likelihood of a particular risk occurring

Example:

The provider agreement stipulates that incident alerts will be directed to the client administration panel. In order to minimise the probability of an alert being omitted, the Law Firm designates a specific person required to log into the user panel on a daily basis to verify the status of alerts.

- **Modifications to the processes in which LegalTech is used**

Example:

The selected solution reviews court judgements in a specific region of the country to identify case law and generates a simplified description of the recommended litigation strategy. In order to minimise the risk of errors, all lawyers using the tool are required to independently review at least 20 % of randomly selected judgements indicated by the solution in order to analyse the usefulness of the tool in achieving its objective on an ongoing basis.

- **Risk Transfer**

Risk transfer is the transfer of the burden associated with a risk occurring to another entity.

Example:

- *Recourse clauses in a solution provider agreement*
- *Insurance policy for third party liability in connection with the use of the solution*

- **Risk Avoidance**

Risk avoidance is the abandonment of an intended action (in whole or in part). The strategy to be applied when identified risks go beyond the acceptable levels.

Example:

The ambiguous wording of a model provider agreement suggests that the provider may use the information covered by professional secrecy for its own purposes in order to improve the solution offered. Provision of data for these purposes is in direct violation of the Law Firm's ethical principles.

Designation of Responsible Persons

Defining a risk response strategy – that is not all. Risk management also requires that specific operations be defined.

Examples of countermeasures in the risk management process may include:

- putting in place internal procedures – in particular as regards communication and analysis of potential incidents;
- training of team members using the implemented tools;
- setting out necessary guarantees in a provider agreement;
- defining internal mechanisms for periodic verification of the effects of the implemented tools.

It is also recommended to document properly appointment of a specific person (or persons, which, however, undermines the effectiveness of the approach) responsible for carrying out specific activities. Apparently, this does not mean that the designated employees will in each and every case personally carry out the tasks assigned to them – rather, it is a question of clearly indicating the ownership of the individual risks. As such, the Law

Firm is able to efficiently verify and periodically account for risk owners, keeping the status of the risk management process under review.

4.5. Identification of Countermeasures

Unless an identified risk is accepted, a lawyer – intending to pursue the process – should identify countermeasures to minimise the level of identified risk.

As is the case with risks, countermeasures can be not only of legal, but also organisational nature.

Example:

Where a risk has been identified relating to a lack of adequate communication regarding security incidents, the following may be identified as countermeasures:

- *Monitoring mailbox designed to receive notifications;*
- *Monitoring publicly available information on security incidents related to a specific solution or provider;*
- *Defining an internal incident response procedure;*
- *Designing persons responsible for carrying out specific tasks related to security incident management.*

The identification of countermeasures then makes it possible to assess how the level of risk changes as a result of the application of countermeasures, and thus to determine whether the proposed countermeasures have been selected correctly, i.e. whether they lead to a reduction in the level of risk originally identified. It should be stressed here that the mere existence of a residual risk (which persists after countermeasures have been applied) is a principle and cannot by itself constitute an obstacle to the implementation of a solution. It is a lawyer (Law Firm) that assesses, based on the analysis carried out, whether such residual risk is acceptable to him or her.

4.6. Risk Monitoring

Regardless of the adopted strategy, risk monitoring is an extremely important element of risk management, including the risks identified as negligible. This ensures that if there is any change in circumstances likely to affect the level of risk, we can respond appropriately and put in place additional countermeasures, if necessary.

In order to monitor risk effectively, it is necessary to designate a specific person in the organisation to whom employees responsible for applying the countermeasures or monitoring process parameters report the results of their activities in this respect on an ongoing basis.

Risk monitoring can be done on an ongoing (regular reporting on individual risks, based on a uniform reporting scheme to ensure comparability over time) or ad hoc basis (ad hoc monitoring, e.g. by internal control in a selected area). Like the other steps in the process, the activities undertaken in relation to risk monitoring should be documented to ensure accountability.

5. Conclusion

This section discusses the basic principles that should apply to a LegalTech implementation project, as well as a proposed approach to estimating the associated risks. The aim of the presented actions is to minimise the risk of disciplinary, civil and, in the most extreme cases, even criminal liability that may attach to a lawyer if he or she violates professional rules. Above all, however, the proposed approach sets out a framework of conduct that allows for compliance with the ethics of the profession, which should underpin every decision taken by a lawyer.

LegalTech and Cloud Computing

Katarzyna Biczysko-Pudętko

1. Introduction

When R. Susskind's book *The Future of Law: Facing the Challenges of Information Technology* was published in 1996, in which he made a bold claim that in the future lawyers would communicate with their clients via e-mail, for many this thesis was abstract, just like the technology and the very concept of cloud computing. It was not until 1996¹ that the latter appeared for the first time in the document².

However, less than a quarter of a century later, the fact that lawyers use e-mail is already undisputed, which also makes the thesis about the use of cloud computing services, i.e. computing in the cloud, undisputed. The level of interest in cloud computing services among the representatives of le-

-
- 1 In 1996, two Compaq specialists, G. Favaloro and S. O'Sullivan, came to the conclusion that in the near future both software, storage and computing power of computers will be accessed through actions undertaken on the Internet, the above phenomenon describing in more detail within the framework of a business plan prepared for their firm and calling it cloud computing. Nozar Daylami, 'The origin and Construct of Cloud Computing' (2015) 9, 2 *International Journal of the Academic Business World*, 39; Suryanarayanan Srinivasan, *Cloud Computing Basics*, (Springer 2014, 4); 'The era of cloud computing' <<https://www.matillion.com/cloud-computing-era>> accessed 13 January 2021.
 - 2 It should be noted that in scientific studies devoted to the origins of the very concept of cloud computing there are also such views, according to which the term was used for the first time by Professor R. Chellappa from the University of Texas in his publication entitled "Intermediaries on cloud computing". Intermediaries on cloud computing". In resolving this dispute, it should be pointed out that in the case of Compaq specialists, we were dealing not so much with a scientific publication as with an internal document of the company in the form of a business plan. Thus, none of the above events should be depreciated and both Compaq specialists and Professor Chellappa should be credited with influencing the concept of cloud computing. Antonio Regalado, 'Who Coined "Cloud Computing"?' (MIT Technology Review, 31 October 2011) <<https://www.technologyreview.com/s/425970/who-coined-cloud-computing>> accessed 9 March 2021.

gal professions is perfectly illustrated by a survey conducted in 2020³ by The International Legal Technology Association (ILTA), in which as many as 89 % of lawyers⁴ declared that they would consider using cloud computing services⁵. The above trend is also followed by Polish representatives of the legal industry, where as recently as in 2013 there were discussions whether to include the issue of using cloud computing technology in the rules of ethics⁶, but already today: "using cloud computing is like breathing. We just don't think about it. From the users' point of view, current solutions are almost transparent"⁷.

However, it would be insufficient to say that lawyers are using cloud computing quite extensively today, because as cloud technology itself evolves, so does the way it is used. While initially the use of cloud computing was limited mainly to email, currently, there is a growing trend towards greater interest among lawyers in more complex and technologically advanced solutions offered by cloud computing - which is directly related to the desire to optimise costs and working time, but is also a natural consequence of the development of the IT industry. Therefore, just as in the case of LegalTech we can talk about a division into three levels, i.e. LegalTech 1.0, 2.0 and 3.0, so it seems justified - at least for the purposes of this analysis - to distinguish cloud computing 1.0, 2.0 and 3.0, each of which, reflecting the individual stages of its development, will imply various doubts as to the admissibility of its use, in the context of personal data processing⁸, by lawyers within their organisations. The following part of the work will therefore signal those aspects that are of the most sensitive nature with regard to particular cloud tools - in the context of personal data protection law.

3 ILTA's, '2020 Technology Survey' <www.iltanet.org/resources/publications/surveys/2020ts?ssopc=1> accessed 9 March 2021 r.

4 The survey involved 470 entities representing over 103,000 lawyers and 208,000 users.

5 Latest ILTA Survey Suggests Security Has Taken a Back Seat to Productivity in Firms. Here's How to Fix it, (*Netdocuments*, 23 November 2020) <<https://www.netdocuments.com/blog/latest-ilta-survey-suggests-security-has-taken-a-back-seat-to-productivity-in-firms-heres-how-to-fix-it>> accessed 9 January 2021.

6 Katarzyna Żaczekiewicz-Zborska, 'Kancelaria w chmurze obliczeniowej naraża na szwank tajemnicę zawodową', <www.prawo.pl/prawnicy-sady/kancelaria-w-chmurze-e-obliczeniowej-naraza-na-szwank-tajemnice,175923.html> accessed 9 March 2021.

7 Anna Klimczuk, 'Chmura jak powietrze: cyfrowa transformacja kancelarii prawnej Magnusson' <news.microsoft.com/pl-pl/2016/12/13/chmura-jak-powietrze-cyfrowa-transformacja-kancelarii-prawnej-magnusson/> accessed 9 March 2021.

8 More on the concept of personal data in part IV chapter 5.

2. Cloud Computing 1.0

The concept of cloud computing, for which the term "cloudcomputing" or "cloud computing" is used alternately in the literature as well as in everyday speech, has not yet been reflected in a single commonly used definition. However, the one most often quoted is the one proposed by the US National Institute of Standards and Technology (NIST), according to which cloud computing is a model enabling ubiquitous, convenient and on-demand network access to shared computing resources (i.e. network, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management or provider intervention⁹.

According to another, slightly more simplified definition, cloud computing "allows access to data from any device, anywhere, as long as there is an Internet connection"¹⁰.

In practice, the use of cloud computing by a lawyer, as referred to above, will include within its conceptual scope the possibility to use electronic mail, file storage and processing (e.g. Dropbox, Google Drive), or even online office packages (e.g. Microsoft Office 365), i.e. services that are already common today, both in the case of large legal corporations and individual entities. This state of affairs is not surprising, if we take into account a number of benefits that cloud computing brings (can bring), i.e. from cost minimisation, through flexibility (which in practice works out to automatic access to resources of almost unlimited scale), to increased work efficiency.

Nevertheless, cloud computing also poses a number of challenges of various types, with one of the biggest threats being that related to the broadly understood security of data¹¹, including personal data stored and

9 Peter M. Mell and Timothy Grance, 'The NIST Definition of Cloud Computing Recommendations of National Institute of Standards and Technology', (2011) No. 800-145 Computer Security Division, Information Technology Laboratory, National Institute of Standards and Technology, ,2, <csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf> accessed 9 January 2021, Commission 'Unleashing the Potential of Cloud Computing in Europe', (Communication) COM (2012) 529 final, 2, <https://eur-lex.europa.eu/legal-content/pl/TXT/?uri=CELEX%3A52012DC0529> access: 9 March 2021); Kenneth L. Bostick, 'Pie in the Sky: Cloud Computing Brings an End to the Professionalism Paradigm in the Practice of Law', (2012) 60, 5 Buffalo Law Review, 1375.

10 Kenneth L. Bostick, (n 9) 1382.

11 While understanding the essence of this technology, one cannot help but ask a number of questions concerning not so much the technological processes of data processing in a computing cloud, but their security, bearing in mind the

processed in it, which in the case of representatives of the legal industry, as those obliged to maintain professional secrecy, seems to be even greater. Therefore, as rightly indicated in the documents prepared by the Council of Bars and Law Societies of Europe (CCBE), i.e. in 2012 Guide - Electronic Communications and the Internet¹² and the Guidelines on the Use of Cloud Computing Services by Lawyers¹³, when considering the possibility to use cloud computing technology, a lawyer should first examine whether the laws and rules of professional ethics in force in his or her country allow the storage of data off-site. In the case of investigating the possibility to process personal data in cloud computing, the answers to the above questions, in relation to a huge number of lawyers, will be shaped by the provisions of GDPR.

First of all, a lawyer using cloud computing tools must be aware that as a rule - in the light of the provisions of the above mentioned GDPR - he acts as a data controller, i.e. as the one who alone or together with others determines the purposes and means of the processing of personal data, while the provider of services in cloud computing as a processor. The consequence of the above will be, therefore, the requirement for the lawyer to fulfil a number of duties, as well as the scope of his or her responsibility

Often, it is worth emphasizing that the EU legislator, when regulating the scope and distribution of controllers' duties, relied on two concepts that significantly differ from the hitherto rigid and non-relative protection frameworks, i.e. the risk-based approach and the concept of technological neutrality of the regulation.

The first concept, i.e. risk-based approach, assumes that a legal decision regarding the processing is based on a risk assessment of the processing, which is nothing more than a regulation based on shaping the controllers' obligations *ad casum* through the prism of a risk assessment¹⁴. This assessment should take into account the state of the art, the cost of imple-

whole spectrum of threats, from the so-called "data leakage", through data loss, to unauthorised access to data.

12 CCBE, 'Komunikacja elektroniczna i Internet –przewodnik CCBE' (2013) 142 Radca Prawny Dodatek Naukowy 5D.

13 Council of Bars and Law Societies of Europe, 'CCBE Guidelines on the Use of cloud Computing Services by Lawyers', (CCBE, 7 September 2012), <http://www.ccbe.eu/fileadmin/speciality_distribution/public/documents/IT_LAW/ITL_Position_papers/EN_ITL_20120907_CCBE_guidelines_on_the_use_of_cloud_computing_services_by_lawyers.pdf> accessed 21 January 2018.

14 Dominik Lubasz, in: Edyta Bielak-Jomaa and Dominik Lubasz (eds), *RODO. Ogólne Rozporządzenie o Ochronie Danych. komentarz* (Wolters Kluwer 2017) 586.

menting security measures, the nature, scope, context and purposes of the processing and the risk of violation of the rights or freedoms of natural persons with varying degrees of probability and seriousness arising from the processing

On the other hand, the second concept, i.e. the technological neutrality of the GDPR, boils down to the lack of indication in its provisions of specific technical or IT solutions that the controller should implement to ensure compliance. Indeed, as stated in Recital 15 of the GDPR, in order to prevent a serious risk of circumvention, the protection of individuals should be technologically neutral and should not depend on the techniques used. Thus, the data protection regime should be tailored to risks of varying likelihood and relevance to the rights and freedoms of individuals and linked precisely to a risk assessment by a lawyer and a data protection impact assessment, while the instruments should be adequate and chosen by the controller itself.

In the spirit of the concepts referred to above, a lawyer must fulfil a number of individual obligations imposed on him/her by the provisions of GDPR, i.e. both those provided for in the content of Chapter IV and those resulting from the need to guarantee natural persons the implementation of their rights provided for in Chapter III of GDPR. In particular, it is important that a lawyer, when selecting a cloud computing provider, should be guided by the content of Article 28(1) of the GDPR, i.e. use only services of such entities that provide sufficient guarantees of implementing appropriate technical and organisational measures so that the processing meets the requirements of the GDPR and protects the rights of data subjects. In this context, as pointed out in the CCBE Guide mentioned earlier, it seems indispensable to examine the experience, reputation and credibility of such a provider, but also to verify whether the provider operates under procedures compliant with international IT risk management standards, such as e.g. ISO 27001:2005.

Inseparably connected with the above obligation is also the issue of appropriate construction of the contract concluded with the cloud computing provider and ensuring the possibility to control the performance of contractual obligations by the provider¹⁵. In addition to determining the law applicable and the competent court for resolving disputes, the

15 Fédération Suisse des Avocats, 'Indications et recommandations de la FSA pour la sous-traitance informatique et l'utilisation de services cloud' <[https://www.sav-fsa.ch/fr/documents/dynamiccontent/190408-sav-guidelines-outsourcing_f-\(4\).pdf](https://www.sav-fsa.ch/fr/documents/dynamiccontent/190408-sav-guidelines-outsourcing_f-(4).pdf)> accessed 9 January 2021.

contract should also contain provisions on data ownership and the exclusive right of access, on the prohibition to use subcontractors without the prior consent of the recipient, on the physical location of the servers, on the right to control and audit compliance with the contract, on data processing rules in accordance with national requirements applicable to the recipient, on contractual penalties and on the recipient's liability in the event of a breach of confidentiality.

Moreover, in the context of ensuring compliance of the processing of personal data in cloud computing by a lawyer with the provisions of the GDPR the lawyer should take into account the issues related to the transfer of data to third countries, which due to the specificity of cloud computing is not an incidental situation. In the case of cloud computing, the phenomenon of cross-border data processing becomes particularly visible, which results, inter alia, from such factors as service providers' provision of services on the basis of servers located in the so-called third countries or the use of services of sub-processors not only not having their registered office or organisational unit in EU countries, but also performing processing in third countries. However, in accordance with the provisions of GDPR, the transfer of data to another country is permitted, provided that it belongs to the European Economic Area (EEA). However, when data is transferred outside the EEA, the possibility of such a transfer should be analysed individually and in accordance with Articles 45-49 of the GDPR.

In this context, the issue of data transfer based on the so-called standard contractual clauses that constitute part of the provider's terms and conditions deserves particular attention, due to the ruling of the CJEU of 16 July 2020, C-311/18 (*Schrems II*)¹⁶. In the framework of this ruling, the CJEU held that the transfer of data to the US on the basis of an EC decision called the "Privacy Shield"¹⁷ is not possible, as this decision is invalid. Therefore, if a lawyer (acting as the data controller) processes data in computing resources located in the USA, it should always assess whether the standard contractual clauses ensure a sufficient level of personal data protection (a situation where the legislation of the country in which the data importer is located does not ensure a level of protection equivalent to the level set by the provisions of GDPR cannot be deemed as such).

16 Case C-311/18 *Data Protection Commissioner v. Facebook Ireland Limited and Maximilian Schrems* [2020] EU:C:2020:559.

17 Commission Implementing Regulation (EU) 2016/1250 of 12.7.2016 adopted pursuant to Directive 95/46 of the European Parliament and of the Council, on the adequacy of the protection provided by the EU-US Privacy Shield.

Therefore, it would be beneficial for the lawyer to limit the processing to the EEA.

3. *Cloud Computing 2.0 - or Multi-Cloud in the Work of Lawyers.*

Multi-cloud (in multi-cloud computing), just like cloud computing, may be defined in various ways, and the variable in this respect is primarily the defining entity. It is obvious that a representative of the IT or business sector will have a different understanding of the term, while a user (client) will have a different one. For example, while for representatives of the first of the above-mentioned industries multi-cloud will be a kind of process of integration of IT resources, more precisely¹⁸, for representatives of the business industry it will be a strategy¹⁹. On the other hand, individual (single) users of the multi-cloud will associate it either with the possibility to use multiple platforms provided and managed by different public cloud providers, or with the possibility to combine their own computing resources with those of external entities, or with the possibility of simultaneous use of the resources of a cloud.

However one defines the term it is important to distinguish multi-cloud from hybrid cloud. As pointed out in the literature, in the case of multi-cloud all its components are unique cloud computing systems, not methods of implementation, as it is the case under hybrid cloud²⁰. Moreover, in the case of hybrid cloud, unlike within multi-cloud, there is also interference of the hardware layer.²¹ Furthermore, multi-cloud is sometimes mistakenly identified with a virtual IT environment that is based on different operating system platforms, i.e. with the so-called multi-cloud platform.

For the purposes of this study, however, the term multi-cloud should be understood as the serial or simultaneous use of multiple data processing

18 Ana Juan Ferrer, Davi García Pérez, Román Sosa González, 'Multi-Cloud Platform-as-a-Service Model' (2016) 97 Functionalities and Approaches *Procedia Computer Science* 65.

19 Alan R. Earsl, 'Multi-cloud strategy', <<https://searchcloudcomputing.techtarget.com/definition/multi-cloud-strategy>> accessed 9 March 2021.

20 Jiannghshui Hong, Thomas Dreibholz, Joseph Adam Schenkel, Jiaxi Alessia Hu, 'An Overview of Multi-Cloud Computing' in Leonard. Barolli, Makoto Takizawa, Fatos. Xhafa, Tomoya Enokido (eds), *Web, Artificial Intelligence and Network Applications. Proceedings of the Workshops of the 33rd International Conference on Advanced Information Networking and Applications (WAINA-2019)* 7.

21 Ibid.

and storage services provided by different providers in a public or private cloud, and integrated within a single IT environment (architecture).

To illustrate the above in the context of LegalTech, we can use an example where a lawyer, for the purposes of his daily work, will simultaneously use computing resources made available by provider "X" (e.g. for document storage) and others made available by provider "Y". (e.g., for document storage), while at the same time using computing resources provided by provider "Y" (for data processing) (for data processing), and others by provider "Z" (e.g. for data analysis). As you can imagine, the use of multi-cloud by a lawyer can bring many benefits and be a great tool to facilitate daily work.

First multi-cloud allows for optimisation of labour costs and improvement of effectiveness, for example by providing lawyers with tools that can significantly streamline billing processes and reduce the working time associated with administrative tasks. Another unquestionable advantage of using this solution is the high availability of computing resources and services tailored to the individual needs of an organisation²². In addition, multi-cloud, as indicated in the literature, creates better conditions than classic cloud computing for the possible recovery of IT resources and data in the event of failure or other unforeseen events²³. Finally, what fundamentally distinguishes multi-cloud from classic computing cloud is the fact that it allows avoiding the phenomenon of vendor lock-in, i.e. dependence on a single provider of this type of service.

The above, just an example of the benefits that the use of multi-cloud can bring, seem to highlight the circumstance why this technology has already been evaluated as a solution worthy of attention and use by lawyers. However, quite understandably, alongside a number of advantages and potential benefits, multi-cloud is also a whole new set of challenges and risks, which, although they find their origin in the technological dimension, ultimately also lead to a number of different types of legal challenges, including those focused on data protection, and in particular personal data processed in multi-cloud.

First making some general remarks with regard to the challenges created by the multi-cloud already at the IT level, it should be noted that the very implementation of the solution in question may prove problematic in

22 Giuseppe Di Modica, Antonella Di Stefano, Giovanni Morana, Orazio Tomarcho, 'On the Cost of the Management of user Applications in a Multicloud Environment', (7th International Conference on Future Internet of Things and Cloud (FiCloud), Istanbul, 2019).

23 Hong, Dreibholz, Schenkel, Hu. (n 20) 6.

practice, i.e. the collection of data processed so far under a classic cloud, and then their integration with the environment of another computing cloud, so that from a functional point of view, it is possible to create one coherent multi-cloud infrastructure²⁴. Another challenge may turn out to be the skilful management of complex infrastructure and the implementation of consistent rules for the management of data processed by several cloud computing providers simultaneously, so that the multi-cloud potential is not lost in the form of increased efficiency in comparison to classic cloud computing. Incompetent use of multi-cloud solutions may also lead to the problem of duplication of data in the computing resources of individual providers, which, apart from the risk of increasing the costs of such processing, may negatively affect the level of data security²⁵. The issue of data security is undoubtedly one of the biggest challenges in multi-cloud solutions. While in the case of classic cloud computing ensuring security required a number of measures and the development of a certain methodology, in the case of multi-cloud this task becomes even more complicated. Each provider of cloud services, which constitute the "components" of the multi-cloud, implements its own security policy and information flow, which directly implies potential problems in terms of ensuring the integrity of the security policy for the entire multi-cloud architecture. Moreover, in the case of multi-cloud it is very likely that one process running in a particular computing cloud will be inextricably linked with a process already running in another provider's infrastructure. This in turn, as indicated in the literature, makes the use of a single access control mechanism impossible and creates a potential risk in the area of data transfer from the resources of one computing cloud to another, which often takes place on a large scale and in an automated manner²⁶.

These general remarks on the potential challenges of multi-cloud technology may, in the reality of everyday work of lawyers, boil down to the need to find answers to a number of individual questions, i.e. in

24 Faction, 'What is Multi-Cloud? Everything You Need to Know', <<https://www.factioninc.com/blog/what-is-multi-cloud/>> accessed 28 December 2020.

25 CIO, 'Defining your data strategy for a multi-cloud world' <<https://www.cio.com/playlist/the-cloud-control-room/collection/cloud-operations-and-management/article/defining-your-data-strategy-for-a-multi-cloud-world>> <<https://www.cio.com/playlist/the-cloud-control-room/collection/cloud-operations-and-management/article/defining-your-data-strategy-for-a-multi-cloud-world>> accessed 18 December 2020.

26 Piotr Waszczuk, 'Trend Micro: W jaki sposób zapewnić bezpieczeństwo infrastruktury IT w modelu multcloud?', <<https://www.itwiz.pl/trend-micro-jaki-sposob-zapewnic-bezpieczenstwo-infrastruktury-modelu-multcloud/>> access 8 December 2020.

particular: where is the data (including personal data) located today and will it be located in the resources of the same provider in the future? How to manage a multi-cloud environment while maintaining full control over data processing? How to minimise the risk of data security breaches, which may increase especially when transferring data from one provider's resources to another's infrastructure? The search for answers to the last of these questions also seems to be complicated by the fact that often the interoperability of the individual computing clouds that make up the multi-cloud architecture must be coordinated and automated, which is often done using an additional IT tool (platform), the use of which may imply further questions about data security.

Paraphrasing the words of P. Miller, in order to summarize the above, it can therefore be said that a lawyer, before using a multi-cloud, must map its complexity before it becomes impossible to map it²⁷. Doing so may increase the likelihood of satisfying legal requirements which, as mentioned above, in the case of multi-cloud environments seem to revolve particularly around data protection law. Since already today a large part of the legal profession uses a classic computing cloud for data processing, including data of a personal nature, this will undoubtedly also be the case in the multi-cloud, with the difference that in the case of the latter the legal challenges will both multiply, and completely new ones will appear, directly implied by the complexity of the multi-cloud environment.

In principle, one can risk a claim that all those obligations, which a lawyer identified (as it was established earlier) as a data controller in the light of the provisions of the GDPR must fulfil when using a classic computing cloud, will be obliged to fulfil also in the case of a multi-cloud, i.e. from the obligation to carefully select providers of individual services, through the appropriate risk assessment, to at least the implementation of data subjects' rights.

In the context of the obligation to carefully select providers of particular services, it seems particularly important, apart from the need for the provider to ensure an adequate level of availability of the service, as well as an adequate level of security assurance, to verify whether the cloud computing provider meets the conditions for the legality of its service, including the provisions of the General Regulation on the protection of personal data, which in turn involves, for instance, the need to analyse the content of particular cloud computing service contracts. Thus, a lawyer wishing to use multi-cloud in his or her everyday activity faces a challenge

27 CIO (n 26)

in the form of familiarising himself or herself with the content of individual contracts for the provision of services in computing clouds concluded with individual providers in order to ensure the compliance of each of the contracts with the requirements specified in Article 28 of the GDPR, which on the one hand is a challenge due to the lack of standards or commonly applied best practices in this respect, and on the other hand, may prove to be problematic in the context of the practical possibility to select individual cloud computing service providers who ensure not only an adequate, but also similar level of services. In practice, the above will involve, for example, the necessity to analyse Service Level Agreements (SLA), under which the minimum level of service is defined, starting with issues related to its availability or performance, and ending with provisions concerning the level of provider support. If, in a multi-cloud environment, at least one of the providers does not provide sufficient guarantees that appropriate technical and organisational measures are implemented to ensure that the processing complies with the requirements of the GDPR, a lawyer should not be able to include the services of this provider in the multi-cloud architecture being developed. In this context, the obligations that a lawyer as a data controller should fulfil will thus multiply in relation to those whose fulfilment is related to the use of the classic computing cloud.

On the other hand, the obligation of a lawyer, as a data controller, to exercise the data subject's right to erasure may be regarded as a completely new challenge, which will be directly implied by the multi-cloud character. It should be reminded that pursuant to Article 17 of GDPR the data subject has the right to demand from the controller immediate erasure of data relating to him/her, and the controller is obliged to erase such personal data without undue delay, if one of the circumstances indicated in the aforementioned Article 17 of GDPR occurs. As it has already been indicated above, one of the "derivatives" of multi-cloud use may be the phenomenon of duplication of the same personal data in the resources of various cloud computing providers, which - as it is not difficult to imagine - may later be connected to the challenge of exercising the right to erasure. Undoubtedly, whether the data controller will be able to meet this obligation will depend on whether it has sufficient knowledge as to where, i.e. in the resources of which provider personal data of a given data subject have been and are being processed.

However, for the same reasons as in the case of exercising the right to erasure, it may turn out problematic to fulfil the obligation to notify the data subject about the personal data breach, which is provided for in Article 34 of the GDPR. In case of a personal data breach under

circumstances which indicate that the breach may result in a high risk of violation of rights or freedoms of natural persons, the controller shall notify the data subject of the breach without undue delay. In the case of multi-cloud, the fulfilment of the above obligation will be possible, if the lawyer has knowledge as to which personal data of which subjects were actually processed in the particular computing cloud, where the breach occurred. Mere knowledge about a possible security incident within the resources of a specific computing cloud, without the possibility to identify whose data were processed in its resources, may turn out to be insufficient for the fulfilment of the above obligation.

An analogous challenge, i.e. connected with the controller's lack of knowledge as to whose data were processed exactly in the resources of the computing cloud in which the breach has occurred, will also appear in the situation of the necessity to notify the personal data protection breach to the supervisory authority, to which the data controller is obliged by Article 33 of the GDPR.

As a kind of countermeasure to minimise the risk of controller's failure to meet the obligations described above, the literature, following a proposal made earlier by L. DalleMulle and T.H. Devenport in Harvard Business Review²⁸, suggests that in case of willingness to use a multi-cloud solution, a "compromise" between defensive and offensive data strategies should be considered. In the case of an offensive strategy, the priority would be to support business objectives, e.g. increasing the efficiency and profitability of the business, and thus to process the data that could be used to achieve these objectives within the computing resources of a single provider. A defensive strategy, on the other hand, would boil down to processing within a computing cloud offered by another provider those data which are of a personal nature and are covered by legal protection. Subsequently, the computing resources provided by the various cloud computing providers should be integrated in a single virtualised and automated platform that will facilitate and simplify the management of data in the various clouds²⁹.

The above strategy, however interesting, in certain situations, especially when the processing operations concern large amounts of data and the resources of which increase rapidly, may turn out to be an insufficient tool to minimize the risk of personal data breach. That is why it is commonly

28 Leonardo. DalleMulle and Thomas H. Devenport, 'What's Your Data Strategy? The key is to balance offense and defense', <<https://www.hbr.org/2017/05/whats-your-data-strategy>> accessed 18 December 2020.

29 CIO (n 26).

suggested in the literature³⁰ that in the case of multi-cloud data processing personal data should be encrypted. It should be noted that pursuant to Article 32 of the GDPR, encryption of personal data was indicated as one of the technical and organisational measures which may contribute to ensuring an appropriate level of security of processing.

The very notion of encryption is a process of converting data into an unreadable sequence of characters without the knowledge of the relevant key and - so far - has not been reflected in a single legal definition. The provisions of the GDPR do not provide any further guidance as to the details and requirements of the process, but in practice there are certain variables that should be taken into account when implementing encryption processes - also by lawyers - and which may largely affect the level of data security.

Above all, it is important that encryption covers both so-called "data at rest" and data "in transit", i.e. during transmission, as well as data in use.

The first category includes data stored in databases, files or mass storage infrastructure. They usually constitute a certain logical whole and structure, hence gaining access to them for unauthorised persons seems to be particularly desirable and attractive, while for a lawyer (as an administrator) particularly dangerous. Meanwhile, statistics show that only 9 % of the 12,000 cryptographic service providers encrypt data at rest³¹. For this reason, it is important for lawyers wishing to use this security measure to recognise the need to select a provider that will provide encryption of data at rest - which can prove to be quite a challenge.

Moreover, it is equally important to adequately encrypt the second of the indicated data categories, i.e. data "on the move", i.e. during its transmission, movement through any network. In this case, however, apart from the encryption itself, it seems inevitable to implement robust and adequate security control mechanisms for the network through which the data are transmitted, such as firewalls, network access control, etc³².

30 Ramya Srikanteswara and others 'Data security using encryption on multi-cloud' (2018) 5, 6 International Research Journal of Engineering and Technology 2969 HYTrust, 'Protecting sensitive data and achieving compliance in a multi-cloud world', <https://www.hytrust.com/uploads/Compliance-in-a-Multi-Cloud-World_WP.pdf> accessed 11 January 2021.

31 HYTrust (n 31)

32 Nate Lord, 'Data Protection: Data In transit vs. Data At Rest', <<https://www.digitguardian.com/blog/data-protection-data-in-transit-vs-data-at-rest>> accessed 13 January 2021.

Finally, the third category, data in use, refers to information that is currently being updated, processed, deleted, accessed or read by the system. This type of data is not passively stored, but actively moves through elements of the IT infrastructure³³. Here, in addition to encryption, important data protection measures such as user authentication at all stages, including data access monitoring (e.g. login history) should be implemented³⁴.

Although the above-described need to categorise data and include in the encryption process both data at rest and "en route" as well as data in use is an important element of security, encryption alone is nevertheless insufficient. In the context of the aforementioned concept of encryption, it seems indisputable that it is the above-mentioned key - to put it figuratively - which is the equivalent of the combination of a series of numbers opening a safe's combination lock, that is the most important element of the whole process. If an unauthorised person knows this combination of numbers, he will be able to open every safe, and thus - returning to the multi-cloud case - will gain access to data processed within the cloud computing resources. Hence, once encryption begins, the most important aspect becomes the organisation's ability to manage these keys, especially as this very management is often a process so operationally complex that it is sometimes referred to as the "Achilles' heel of encryption".

For a lawyer wishing to use a multi-cloud, it is therefore important not so much that he implements the encryption process itself, but that he manages the encryption keys in an appropriate way, which should be comprehensive and include the possibility to generate, distribute, store or revoke or destroy keys if necessary. Of course, in the case of a multi-cloud environment, this key management seems to present a much higher degree of complexity than in the case of a classical cloud. In practice, the greater the amount of computing resources of individual providers used by a lawyer, the greater the number of keys in use and the more complex their management becomes. Hence, a certain remedy for this state of affairs may turn out to be the use of management solutions that allow for the automation of all critical tasks related to the key management cycle, and this without disrupting or affecting the daily processing³⁵.

33 Laura Fitzgibbons, 'Data in use. Definition', <<https://www.whatis.techtarget.com/definition/data-in-use>> accessed 15 January 2021.

34 *ibid.*

35 HYTrust (n 31).

Finally, apart from data encryption and key management, indicated earlier, a *sine qua non* condition for increasing the level of data security is also its control and, more broadly, ownership. Well, when data were processed within the entity's own IT structure, the question of key ownership did not raise any doubts. However, in the cloudcomputing environment, and even more so in the case of multi-cloud architecture, the question of ownership of the key is no longer so obvious. Indeed, even when data at rest are strongly encrypted, it is still necessary to avoid that the cloud provider has control over the key. Firstly, this reduces the risk of a data security breach, since - hypothetically - if an unauthorised person learns the user's credentials and gains access to resources stored in the computing cloud, he or she will gain access to data that will be nothing more than an incomprehensible string of characters. Secondly, the issue of key ownership may also play an important role in the context of enhanced data access monitoring.

In conclusion, in order for encryption to play its role, it must take an appropriate - i.e. actually ensuring an adequate level of security of the processing - form, and be perceived as a certain component of a broader process, in which, apart from the fact of encryption itself, what seems to be more important is the management and possession of encryption keys. Only an encryption process identified in this way may significantly affect the security level of data processed in a multi-cloud environment by a lawyer. At the same time, however, there should be no doubt that the encryption in question is, first and foremost, a method of securing data, and not a process leading to the deprivation of personal characteristics of the information, which further leads to the conclusion, which every lawyer using this method in the multi-cloud environment must remember, that encrypted data remains personal data, and encryption itself is not a method of performing only a specific operation on encrypted data within the scope of application of the GDPR.

4. Cloud Computing 3.0

4.1 General Remarks

Finally, when analysing issues related to the admissibility of the processing of personal data by a lawyer in a computing cloud, reference should also be made to the case of cloud computing 3.0, mentioned in the intro-

duction to this work, i.e. the one based on blockchain technologies³⁶. A natural consequence of the constant expansion of both these technologies, i.e. cloud computing on the one hand and blockchain technology on the other, is their integration³⁷, especially that the latter turns out to be an excellent tool where cloud computing may fail, i.e. for example in terms of increasing the security of processing. This, in turn, makes it a legitimate conclusion that also in the work of lawyers using cloud computing technology, the percentage of such "cloud" processing based on blockchain will increase year by year, which, in addition to the undoubted benefits arising from it again - as in the case of classic cloud or cloud 2.0 - will imply questions about the mutual relationship between personal data protection regulations, i.e. the GDPR in particular, and cloud computing 3.0. At the same time, it is necessary to underline the fact that compliance with the GDPR may be discussed not so much in relation to the technological solution itself, but the way it is used. Therefore, ultimately, the legitimacy of the methodologies applied should always be assessed by the lawyer through the prism of his or her own organisation, i.e. on a case-by-case basis³⁸.

36 Due to the fact that both the very notion of blockchain, as well as issues related to its use in the work of a lawyer have been discussed in more detail in part IV, chapter 6, the author will limit herself only to pointing out the problems that may arise in the case of use of cloud computing based on the said blockchain by a lawyer, and only in the context of the problems that may arise in this respect from the data protection law.

37 The purpose of this analysis is the use by lawyers of cloud computing, which is based on blockchain. However, it should be noted that in practice, in addition to the mentioned correlation, there may also be a correlation between cloud computing and the mentioned technology, in which the blockchain technology will be based on cloud computing. Simanta Shekhar 'Sarmah, Application of Blockchain in Cloud Computing' (2019) Vol. 8 Issue 12 International Journal of Innovative Technology and Exploring Engineering. 4968.

38 Ministerstwo Cyfryzacji, Grupa robocza ds. rejestrów rozproszonych i blockchain, 'GDPR a technologia blockchain', <<https://www.google.com/url?sa=t&rcct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj1rtT-scTvAhVmsYsKHcsTAC8QFjAAegQIARAD&url=https%3A%2F%2Fwww.gov.pl%2Fattachment%2Fd39a05b8-f04c-4e7c-93ac-3b5b9946ed0c&usg=AOvVaw2Nhg2B3Pcf1XAUCdeplnnC9>> accessed 19 February 2021

In the case of assessing that the provisions of the GDPR, due to their territorial³⁹ and material scope⁴⁰, will apply to cloud 3.0⁴¹ processing, a lawyer using it must be able to identify (in the light of the provisions of the GDPR) his status, i.e. whether he plays the role of a data controller or perhaps a processor⁴². The answer to this question, although quite clear in the case of cloud 1.0 or cloud 2.0, seems to require a bit more commentary.

According to the Commission Nationale Informatique & Libertés (CNIL), and therefore the French supervisory authority, those users who use blockchain and have the right to decide to transmit data and place it on the blockchain for validation should be considered as data controllers. In particular, the CNIL takes the position that a user will be a data controller when:

- 1) is a natural person and the processing operation is not strictly personal;
- 2) he/she is a legal person and enters personal data into the blockchain.

Transferring the above to the LegalTech area, by way of example, it may be pointed out that if a notary registers his client's property deed in a

39 According to Article 3, the GDPR will apply to the processing of personal data in connection with the activities of an establishment of the controller or processor in the EU, regardless of whether the processing takes place in the EU. Further, as stated in paragraph 2, the GDPR applies to the processing of personal data of data subjects residing in the EU by a controller or processor that does not have an establishment in the EU, if the processing activities involve: (1) offering goods or services to such data subjects in the EU, whether or not they are required to pay; or

(2) the monitoring of their behaviour, insofar as that behaviour takes place in the EU. Finally, according to paragraph 3, the GDPR applies to the processing of personal data by a controller that does not have an establishment in the EU but has an establishment in a place where the law of a Member State is applicable under public international law.

40 The GDPR applies to the processing of personal data by fully or partly automated means and to the processing otherwise than by automated means of personal data which form part of a filing system or are intended to form part of a filing system (Article 2).

41 Michèle Finck, 'Blockchain and the General Data Protection Regulation, Can distributed ledgers be squared with European data protection law?', (2019) Study. European Parliament,

42 Luiz-Daniel Ibáñez, Kieron O'Hara, Eelena Simperl, 'On Blockchains and the General Data Protection Regulation' <www.eublockchainforum.eu/sites/default/files/research-paper/blockchains-general-data_4.pdf> accessed 9 January 2021.

blockchain, he will be identified as the data controller⁴³. At the same time, the literature on the subject does not lack the opinion that due to the decentralised nature of blockchain and activity based mostly on P2P relations, each user is a controller with regard to the data they enter. Resolving the above, it should be pointed out that the determination of who is the data controller in a given situation will require an individual assessment for each case⁴⁴.

In the situation when, within the framework of the assessment of a particular processing process in cloud computing 3.0, there will be grounds to consider that the provisions of the GDPR (due to their territorial and material scope) are applicable and, further, that the lawyer will play the role of a data controller, he will thus be obliged to fulfil a number of obligations that arise from the regulation in question and will further be held liable in the event of their breach.

With regard to the first of the above-mentioned implications, i.e. the necessity to meet the obligations imposed on the administrator, in the case of cloud computing 3.0 satisfying some of them, while not proving impossible, is certainly extremely difficult to achieve in practice. This is because cloud 3.0 will focus, as if through a lens, all those problems and challenges that, on the one hand, are characteristic of cloud 1.0 and, on the other, are characteristic of blockchain, and it is the latter that will be the subject of further considerations.

The first fundamental difficulty seems to be the ability of the lawyer (data controller) to comply with the principle of retention limitation resulting from Article 5.1.e GDPR, according to which data must be kept in a form which permits the identification of the data subject for no longer than is necessary for the purposes for which the data are processed. If this is combined with the feature of blockchain, which implies that data, once stored in blocks, cannot be deleted or modified⁴⁵, compliance with the aforementioned obligation seems doubtful. Furthermore, it is not clear how the 'purpose' of the processing of personal data should be understood in the context of blockchain, in particular whether this only includes the initial transaction or whether it also includes further processing of

43 CNIL, 'Blockchain:Solutions for a responsible use of the blockchain in the context of personal data' <https://www.cnil.fr/sites/default/files/atoms/files/blockchain_en.pdf> accessed 11 December 2020.

44 Michał Dymiński, Dominik Ferenc, 'GDPR w łańcuchu bloków' (2020) 6 *Przegląd Prawa Publicznego* 202061.

45 See more: Part IV chapter. 6

personal data (such as their storage and consensus use) once it has been introduced in the chain⁴⁶.

In the light of the above statements, it seems obvious to assume that under cloud computing 3.0 it will be difficult to meet the data minimisation principle, which is set out in Article 5(1)(c) of the GDPR and further specified in Article 11. In accordance with them, data should be adequate, used and limited to what is necessary for the purposes for which they are processed. This principle is often associated with the need to quantitatively limit data collection, and in this sense it is difficult to assume that there is a possibility of its implementation in the case of cloud computing 3.0. Alternatively, however, it could be assumed that data minimisation is not so much about the quantity but rather about the quality of data, which means that it would be required that no special categories of data are processed unless absolutely necessary, and that data are pseudonymised or even anonymised whenever possible. However, the possibility of such an interpretation seems irreconcilable in light of Article 25(2) of the GDPR, which provides that the controller shall implement appropriate technical and organisational measures so that, by default, only those personal data are processed which are necessary for each specific purpose of the processing. This obligation relates to the amount of personal data collected, the extent of their processing, their storage period and their availability⁴⁷.

The possibility for a lawyer to exercise the right to rectify data referred to in Article 16 of GDPR should also be assessed in an analogous way. How, in the case of the processing of personal data in a computing cloud that operates on the basis of blockchain, would a lawyer exercise this right, since in blockchain it is practically possible to modify the information contained in the blocks? Well, a certain answer to this type of question may be the fact that in certain situations, private or public blockchains nevertheless allow for the possibility of modifying data by, for example, mixing blocks, which should be possible by appropriate technical configuration. Then each user has specific write rights and is entitled to add new blocks which should correct previously placed information⁴⁸.

Going further, similar concerns as before may also imply the need for the controller to satisfy the right set out in Article 17 GDPR, i.e. the right to erasure (right to be forgotten). Assuming that the prerequisites of Article 17 GDPR for the admissibility of exercising the right to be for-

46 Finck (n 42) II

47 *ibid.*

48 Dymiński, Ferenc (n 45)

gotten by the data subject are met, due to both the previously mentioned technical factors characterising blockchain and its governance structure, the possibility of its fulfilment comes into question⁴⁹.

Taking into account the above, only exemplarily indicated problems that, in the light of the provisions of the GDPR, may cause the use of cloud computing based on blockchain by a lawyer, it seems justified to pose the question of whether a lawyer should process personal data under cloud 3.0 at all, precisely due to these problems, at least with the implementation of data subjects' rights and, more broadly, compliance with the provisions of the GDPR? It seems that if possible, personal data should be processed off-chain. The chain itself should contain links (hashes) to the document, allowing to verify its authenticity and correctness⁵⁰. This procedure allows avoiding difficulties with the use of dispersed databases in accordance with GDPR, and also simplifies the management of personal data, because the data processed off-chain are stored in a centralised database, which further facilitates the identification of the data controller, which will be the entity storing the data off-chain, or at least enables the rectification and erasure of personal data in the light of Articles 16 and 17 of GDPR. Importantly, such register still needs to comply with the GDPR and every lawyer should bear this in mind.

However, if the rights referred to in Articles 16 and 17 GDPR are exercised in the framework of centralised data outside the blockchain, the question of what status will be given to the remaining hash, which after all will still remain in the blockchain, is still open. In this regard, it will need to be determined whether this hash will fall within the category of personal data and enable the identification of the data subject. However, as indicated in the literature, determining the above is an extremely complicated process today. Therefore, until at least a guideline or recommendation is issued on this subject, a lawyer should be aware of the existence of this doubt⁵¹.

Moreover, it should be noted that the previously mentioned possibility to store data off-chain does not apply to public keys.

Although storing personal data outside the blockchain seems to be a certain remedy for the previously mentioned potential risks of non-compliance with GDPR, it should be realised that this solution is not without its drawbacks. The consequence of applying this solution will be a situation

49 Fábio Coelho and George Younes, 'The GDPR-Blockchain paradox: a work around' (W-GCS'18 2018: 1st workshop on GDPR compliant systems, co-located with 19th ACM international middleware conference, Rennes, 2018).

50 Dariusz Szostek, *Blockchain and the Law* (1 ed., Nomos 2019) 109-110.

51 Michèle. Finck (n 42) 32.

in which it is the personal data that will be centralised. Thus, if a failure occurs, the data may be irretrievably lost, as it will not be possible to reconstruct them on the basis of a hash. Moreover, the availability failure (intentional or not) may disrupt the entire data processing, bringing us back to the problem whose solution motivated the blockchain developers⁵².

4.2. Smart Contract and Personal Data

The previously presented considerations concerning the processing of personal data in blockchain-based cloud computing would not be complete without reference to issues related to smart contract⁵³. Indeed, the combination of blockchain and smart contract is the most classic model of their functioning⁵⁴. This in turn, from a lawyer's perspective, implies questions about the correlation between the provisions of GDPR and the smart contract. And although, as rightly pointed out in Part IV, Chapter 7, for most lawyers dealing with the machine language in which the smart contract is written may involve the need to cooperate with programmers, nevertheless, the need to know what legal consequences - including those related to the protection of personal data - will be triggered by running an algorithm in a smart contract will be on the side of the lawyer. And these consequences are not lacking.

Above all, practitioners need to be aware that it is the European data protection framework shaped by the GDPR provisions that will be one of the decisive factors in determining the extent to which smart contracts can be used in the EU⁵⁵. Although smart contracts have so far attracted the attention of legal practitioners mainly in the context of contract law, it should be noted that although a smart contract is not always a contract in the legal sense, it may - and this will be further analysed - more often than not involve the automated processing of data, including personal data, which directly raises various implications under the GDPR⁵⁶.

52 Luiz Daniel Ibáñez, Kieron O'Hara, Eelena Simperl (n 43)

53 More on smart contracts in Section Three 'Smart Contracts, Blockchain and Distributed Ledger Technology' (DLT) in the Work of a Lawyer.

54 Marlena Pecyna, Adam Behan, 'Smart contracts — nowa technologia prawa umów?' (2020) 3 *Transformacje prawa prywatnego* 189.

55 Michèle Finck, 'Smart Contracts as a Form of Solely Automated Processing under the GDPR', (2019) 9(2) *International Data Privacy Law* 78.

56 *ibid.*

Article 22(1) of the GDPR provides that the data subject has the right not to be subject to a decision which is based solely on automated processing, including profiling, and which produces legal effects concerning him or her or significantly affects him or her in a similar manner. Thus, as aptly assumed by Ms Finck, in order to assess whether smart contracts are covered by this provision, it must be determined whether they are considered a decision based solely on automated processing and whether the decision produces legal effects on the data subject or otherwise significantly affects the data subject⁵⁷.

With regard to the question of understanding how - in the context of smart contracts and for the purposes of Article 22 GDPR - 'decision making' should be interpreted, the literature proposes two alternative possibilities. Firstly, the execution of a smart contract code following the occurrence of a predetermined event may be considered as a 'decision'. According to the nature of smart contracts, there is no human involvement at the 'decision' stage, which means that Article 22(1) applies in this situation. Secondly, it is also possible to consider that the concept of 'decision' will encompass a broader time scale and thus the initial decisions that led to the smart contract. Indeed, in many circumstances people will agree on the purpose and configuration of the smart contract. Sometimes a human will act as an , "oracle", giving the smart contract the inputs needed to make it work. In addition, a human agent is also needed to translate human intentions into computer code. When the smart contract is combined with a contract, the 'decision' can also be equated with preliminary contractual negotiations. Such an understanding of the concept of decision in the context of Article 22 GDPR would certainly be accepted by those who care about excluding the application of the said GDPR standard. However, this scenario is unlikely if one considers that Article 22(2) contains an explicit exemption from the prohibition in Article 22(1) where a smart contract is used for the performance of a contract. If human involvement in the development of the contract were to be taken into account for the purposes of paragraph 1, there would be no need for an explicit exemption to this effect in paragraph 2. Hence, taking into account the wording of Article 22 of the GDPR, it can be concluded that the , "decision" for the purposes of Article 22(1) is probably only the final execution of the code, which actually takes place without direct human involvement. It can therefore be concluded that smart contracts, at least in certain circumstances, fall under Article 22(1) GDPR. On the other hand,

57 *ibid.*

as regards the determination of whether the decision produces legal effects for the data subject or otherwise significantly affects the data subject, it is worth emphasising, on the basis of the meticulously conducted analysis by M. Finck, that such a scenario is not excluded either, if only when smart contracts decide whether an insurance premium is paid, consumer rights are enforced or payment for goods or services is made⁵⁸. According to the author, this leads to the conclusion that smart contracts may not comply with the GDPR in this respect and that this fact should be taken into account when designing them.

Moreover, when analysing possible correlations between GDPR provisions and smart contracts, the lawyer should take into account the fact that the scope of application of these provisions will be determined by the ecosystem in which the smart contract operates. If we are dealing with an open ecosystem, the specificity of which is the transfer of data from external sources, then questions may arise in the context of personal data protection law, i.e. in particular whether an agreement on entrustment of processing should be concluded, subcontracting or perhaps we are dealing with co-management. Obviously, giving an unambiguous answer to this question seems to go far beyond the framework of this paper, and moreover, it depends on the factual circumstances, nevertheless, it is important for a lawyer to be aware of this type of coincidences

In the light of the above mentioned implications, which may arise at the junction of data protection law and smart contracts, the question of how a lawyer should find himself in this "reality" seems to be without a single exhaustive answer. Nevertheless, it seems interesting to draw attention to an idea presented by M. Corrales, P. Jurcys and G. Kousiouris, who proposed to apply the so-called smart disclosure strategy⁵⁹. These authors point out that while a typical contract is written using natural language, smart contracts are written in computer code using special programming languages. Such languages use strict algorithms and can be very complicated for non-programmers, including lawyers. Therefore, as a solution, they proposed a pseudo-code process, which is an intermediate step between planning and programming. It is basically a step-by-step code outline that can later be rewritten into any programming language. The purpose of pseudo-code is to simplify operations, instead of using a real programming

58 *ibid.*

59 Marcelo Corrales, Paulius Jurcys and George Kousiouris, 'Smart Contracts and Smart Disclosure: Coding a GDPR Compliance Framework' in Marcelo Corrales, Mark Fenwick and Helena Haapio (eds), *Legal Tech, Smart Contracts and Blockchain* (Springer 2019) 189.

language with a complex syntax. The proposed pseudocode follows a programming logic that allows the implementation of legal concepts in the user interface and related systems. It has been developed to comply with the requirements of the GDPR, as the pseudo-code project includes a set of specific legal and technical questions.

And it is the need to answer these questions that aims to , "intelligently disclose" the relevant information so that, in effect, cloud service providers make the necessary changes to SLAs and the underlying software, compliant with GDPR, which could further be used in the blockchain sphere as a piece of code along with the normal blockchain code. M. Corrales, P. Jurcys and G. Kousiourisza proposed a list of the following questions:

- 1) are personal data/special category data referred to in Article 9 of the GDPR subject to processing?
- 2) is the processing subject to encryption/authentication?
- 3) is it possible to choose the location where the data will be processed?
- 4) is the processing (e.g. within a SaaS service) dynamically configured to use IaaS/PaaS services?
- 5) are the "ownership" rights of the data or metadata clearly defined and explained in the contract/SLA?
- 6) does the provider undertake to notify if the terms of the contract change?
- 7) does the provider commit to notify in case its underlying PaaS/IaaS provider changes the terms of the contract?
- 8) does the provider enable "greater virtual control" of the data, ensuring data portability and interoperability within the cloud?
- 9) does the provider commit to exercise the right to erasure of data in the originally used service?
- 10) does the provider declare that its subcontractor offering PaaS/IaaS services applies standard contractual clauses?
- 11) does the provider apply measures to prevent data loss (regular backups, etc.)?
- 12) does the provider use its own resources to run the application?

4.2 Cloud Computing and Electronic Communications

The issue of using cloud computing services by a lawyer in his or her daily practice is inextricably linked with the subject of electronic communication. This is because cloud computing is an excellent tool for changing the mode of communication from "on paper" to electronic. While initially

the above was associated mainly with the use of electronic mail in the communication process, currently, due to the increasingly advanced communication tools based on cloud computing, there is a paradigm shift in this respect. If the subject of such communication is also personal data, and other prerequisites are met (e.g. territorial or substantive scope of the GDPR), then the provisions of the GDPR will be applicable, which will thus create obligations on the part of the lawyer, first of all, to identify in which role (in the light of the provisions of the GDPR) he/she acts, and further, what obligations, scope of responsibility, etc. he/she will have in connection with it. And the possible scenarios in this context can be multiplied.

As already mentioned in Part VI, Chapter 1, it is becoming more and more common to use cloud computing not for data transmission, but for making data available to authorised or entitled entities. Moreover, this is also increasingly taking place using cloud computing 3.0

Although the provisions of GDPR lack the legal definition of making available, there should be no doubt that it is one of the forms of personal data processing. The disclosure shall take place whenever the data are taken into possession by the data recipient, who then becomes the controller of personal data, whereas it is essential that the controller of data allows another person or entity, which will act as the data controller, to get familiar with such data. The very "making available" of the data shall be of a factual nature and may be effected in any way, as long as the result of the activity is to enable another entity to gain an actual access to and authority over the data⁶⁰.

Thus, in the case where, for example, between lawyers there will be a sharing of data just within the framework of electronic communication undertaken with the use of cloud tools, the lawyer (both the one who shares personal data and the one to whom the data have been shared) should consider the legal consequences of that. The lawyer who makes the data available must fulfil the obligation to have an appropriate legal basis to make the data available, verify whether the entity to which the data is made available has been specified within the information obligation referred to in Article 13 of the GDPR. Moreover, also the form in which such personal data will be made available should meet the requirements of personal data security referred to in GDPR, for example through the

60 Paweł Barta and Maciej Kawecki in Paweł Litwiński (ed), *Rozporządzenie UE w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i swobodnym przepływem takich danych. Komentarz* (C. H. Beck 2018) 202-203.

aforementioned encryption. On the other hand, the lawyer who gains access to such data and has 'authority' over it, will - in the light of the provisions of the GDPR - act as a personal data controller, with all the implications of this that have already been mentioned above, such as the need to fulfil a number of duties, or to guarantee the data subjects the exercise of their rights⁶¹.

In the event that cloud computing tools are used by lawyers to communicate within the organisational structure of which they are a part, then there will be no sharing of personal data in the shape discussed earlier. Thus, if, for example, lawyers - employed in different departments, but within the same organisation - communicate with one another and share data under the cloud computing, then not they themselves, but their organisation will still act as a data controller. Moreover, the situation of transferring data to the entity to which the processing of personal data has been commissioned cannot be treated as sharing either, because in such a case it will be the processor. Therefore, with regard to the use of cloud computing by lawyers, it should be concluded that the provider of the services we are interested in will be the processor.

The above scenario should be distinguished from the situation, where in the process of personal data processing there are involved at least two lawyers (from other organisations), who for the purposes of communication interact with each other and who jointly determine the purposes and means of the processing⁶². Then, in accordance with Article 26 of GDPR, we will be dealing with co-management of personal data - which will furthermore give rise to various legal obligations on their side, both in a purely internal relationship (i.e. between them) and in an external context (i.e. in relation to the data subject, but also to the supervisory authority)⁶³.

First of all, pursuant to Article 26 of GDPR, the lawyers should, by way of joint arrangements, clearly determine the scope of their responsibility for the performance of obligations under GDPR, as well as set out the principles for the exercise of data subjects' rights. And although the GDPR provisions do not provide guidance on the form of the arrangements in question, it is worth emphasising that the form should be such that the

61 *ibid.*

62 It is the joint formulation of the purposes and means of processing that will be the *sine qua non* for it to be possible to speak of co-management rather than entrustment of processing.

63 Katarzyna Witkowska-Nowakowska in Edyta Bielak-Jomaa and Dominik Lubasz (eds), *RODO. Ogólne rozporządzenie o ochronie danych. Komentarz* (Wolters Kluwer 2018) 612-622.

obligation to make the contents of those arrangements available to the data subject can be implemented. Therefore, it is reasonable to assume that it should be a written form, including an electronic one. On the other hand, the division of duties made by them - as postulated in the doctrine - should be as transparent and clear as possible⁶⁴.

5. Summary

The analysis conducted above makes it necessary to conclude that just as it is natural nowadays for lawyers to use cloud computing solutions in their everyday activity, it should also be natural to identify the above with the provisions of the personal data protection law. And although it may also be assumed that in certain factual situations the aforementioned processing processes will not be covered by the provisions of GDPR, the very fact that such an assumption cannot be excluded a priori in relation to all situations requires the lawyer to be very careful when using these tools within his or her own activity. This task, as demonstrated earlier, appears to be difficult for at least two reasons. First and foremost, with the evolution of cloud technology itself, the challenges that any lawyer will face under data protection law have changed and, it is fair to assume, will continue to change. This is perfectly illustrated by the example of cloud computing 1.0 or 3.0.

Moreover, due to a number of different types of variables (such as the categories of personal data to be processed, the purpose of the processing, etc.) the legitimacy of the methodologies applied should always be assessed by the lawyer through the prism of his/her own organisation, i.e. on a case-by-case basis. This makes it impossible to indicate one "golden mean" in this respect.

It seems, however, that if a lawyer is familiar enough with the specificity of cloud computing technology to be able to identify the problems that its application may pose in the light of the GDPR regulations (as discussed above) and juxtaposes that with the methodology of implementing Legal-Tech solutions as such (as discussed in Part V), the risk of violating GDPR regulations, and thus being exposed to liability, will be lower.

64 *ibid.*

Legal Tech in the Law Enforcement Agencies

Maria Dymitruk

1. Introduction

The tasks of the law enforcement agencies are primarily concerned with crime prevention, maintaining public order and security as well as detecting and prosecuting offences through pre-trial investigations. Their activities are largely coercive, and they deal not only with the criminal offence and its perpetrators, but also with a wide range of cases in which it is not known whether a given act constitutes a criminal offence or who the actual perpetrator is, as well as cases in which the aim of the authorities' actions is not to detect a crime but to ensure that it is not committed (e.g. in securing the order of public demonstrations). In this way, the activities of the law enforcement authorities concern an indefinite circle of people, including citizens whose activity is in no way directed towards actions of a criminal nature.

The work performed by law enforcement agencies is significantly facilitated (and often improved) by technological development¹. Of course, the intensification of the use of more and more advanced IT solutions is a double-edged weapon: on the one hand it provides law enforcement agencies with tools enabling faster, more efficient and more reliable detection of crime and prosecution of its perpetrators, and on the other hand it allows the use of highly developed IT solutions for criminal purposes. The issue of identifying the right technological response to 'innovative crime' by law enforcement agencies remains therefore of utmost importance. It should also be noted that technological tools can be used by the law enforcement agencies to detect traditionally committed criminal acts. A good example of such application of the technology is a system recognizing a potential thief face in a crowd, based on a facial recognition system, i.e. a system for

1 This thesis is valid not only in the 21st century. The influence of technological development on the activities of police authorities is a constant phenomenon - see Mathieu Deflem and Stephen Chicoine, 'History of Technology in Policing' in Gerben Bruinsma and David Weisburd (eds), *Encyclopedia of Criminology and Criminal Justice* (Springer 2017) 2269 – 2277.

automatic identification of individuals based on individual facial characteristics through pattern recognition algorithms.

Legal Tech, which covers the three levels discussed in Chapter One of the monograph: 1.0, 2.0 and 3.0, refers to an extremely broad spectrum of applications within the legal sphere. Due to the fact that information technologies understood as Legal Tech 1.0., most often referring to the software supporting non-lawyer activities, have been used by both law firms and public entities (including law enforcement agencies) for a long time, the focus in this chapter will be on Legal Tech 2.0 and Legal Tech 3.0 tools, of which main guiding element is automation, and which differ mainly from one another by the level of the technological system autonomy.

2. Possible Legal Tech Application by the Law Enforcement Agencies

The indicated diversity of applications of technological tools would not allow conducting a legal analysis on their exploitation in the context of the law enforcement agencies work without making the necessary systematization. For this purpose, it should be pointed out that Legal Tech can be used by the law enforcement agencies for: 1) administrative and organisational activities and 2) substantive activities. The criterion for distinguishing between the above types of the services' activities results from their nature. The first group of activities relates to non-substantive, clerical activities, serving to improve the performance of the relevant tasks of law enforcement agencies. The second group includes overt and covert activities of the services aimed at the performance of tasks connected with the prevention and detection of criminal acts both in the course of preparatory proceedings as well as in an out-of-trial mode.

2.1. Legal Tech on Administrative and Organisational Activities

Application of Legal Tech with regard to the first type of law enforcement activity, i.e. administrative and organisational activities, can take various forms: from improving communication between entities involved in the criminal process (e.g. remote communication between the public prosecutor and the criminal court), through ensuring electronic circulation of documentation issued and processed by the services (paperless document management), to introducing tools that automate certain law enforcement ac-

tivities (such as drafting pleadings or dealing with notifications of crimes). Legal document automation software on the technological market² could easily be used in the administrative work of services to speed up and facilitate the preparation of standard and routine pleadings, statements or standard elements of records. Similarly, the work of law enforcement agencies would be facilitated by the widespread use of automatic speech recognition (ASR)³ and optical character recognition (OCR)⁴ systems, which would considerably speed up routine law enforcement activities, such as taking witness statements or processing information contained in historically produced paper documents. Some countries have also already embarked on innovative AI implementation projects within the law enforcement tasks: they have introduced police chatbots to provide security information and enable people to inform law enforcement agencies of suspected crimes, they have also developed mobile applications to reduce crime or started patrolling cities using robots⁵.

-
- 2 Examples of this type of software include LISA (<<http://robotlawyerlisa.com/>>, accessed 08 February 2021) or IntelliLex (<<https://www.intelilex.net/en>>, accessed 08 February 2021).
 - 3 For more on this subject see also: Dong Yu and Deng Li, *Automatic Speech Recognition* (Springer London Limited 2016); Bing-Hwang Juang and Lawrence R Rabiner, 'Automatic speech recognition – a brief history of the technology development' (2005) Georgia Institute of Technology. Atlanta Rutgers University and the University of California. Santa Barbara 67; Yi Ren, Xu Tan, Tao Qin, Sheng Zhao, Zhou Zhao and Tie-Yan Liu, 'Almost Unsupervised Text to Speech and Automatic Speech Recognition' (Volume 97: International Conference on Machine Learning, Long Beach, 9-15 June 2019) 5410.
 - 4 For more on this subject see also: Arindam Chaudhuri, Krupa Mandaviya, Pratixa Badelia and Soumya K. Ghosh, 'Optical Character Recognition Systems' in: Arindam Chaudhuri, Krupa Mandaviya, Pratixa Badelia and Soumya K Ghosh (eds), *Optical Character Recognition Systems for Different Languages with Soft Computing, Studies in Fuzziness and Soft Computing Vol. 352* (Springer 2017) 9 – 41; Norman Islam, Zeeshan Islam and Nazia Noor, 'A Survey on Optical Character Recognition System' (2016) 10 Journal of Information & Communication Technology -IJCT <<https://arxiv.org/abs/1710.05703>> accessed 8 February 2021.
 - 5 Many examples of innovative applications of AI in the police operations are provided by the Dubai10X project, which is undergoing a technological transformation using artificial intelligence tools in the United Arab Emirates police force, among others (see Amira Agarib, 'Dubai Police unveil Artificial Intelligence projects, Smart Tech' (Khaleej Times, 12 March 2018) <<https://www.khaleejtimes.com/nation/dubai/dubai-police-unveil-artificial-intelligence-projects-smart-tec>>, accessed 08 February 2021; Rory Cellan-Jones, 'Dubai Police Unveil Robot Officer' (BBC, 24 May 2017) <https://www.bbc.com/news/technology-40026940>, accessed 08 February 2021.

All applications of technological tools in the field of administrative and organisational activities are intended to streamline and speed up the processing of cases. While changing the nature of traditionally efforts- and time-consuming activities, as a rule they do not change the basic way in which services perform their functions. The use of IT tools in the course of extra-legal activities, although important from the point of view of streamlining the functioning of services (and as a result valuable from the perspective of security of the whole society), does not revolutionise the philosophy of law enforcement agencies, and from the IT point of view does not differ from general technological trends prevailing in other sectors.

Business-oriented and non-legal applications may be here advantageously implemented by the law enforcement agencies without a significant risk of violating the basic legal and ethical principles governing the functioning of services. On the other hand, automation of substantive activities, including first of all investigative activities, which are within the core of law enforcement activities, takes on a completely different character.

2.2. *Legal Tech in Substantive Activities*

While in the case of technological tools used in office activities it is rather impossible to state that such systems are dedicated to lawyers only and are characteristic solely for the legal industry (thus, this is not Legal Tech *sensu stricto*, but tech in general that is used just for the purpose of practicing law), within the scope of investigative activities at least some of the tools will be strictly dedicated for legal purposes or even the need to create them will arise directly from a specific demand of the services.

Although it is not possible - if only due to the constantly advancing technological development - to list exhaustively the areas in which law enforcement agencies currently use advanced Legal Tech tools in the course of their substantive work⁶, it is required to divide them into four main categories of activities. These are: 1) crime prediction, 2) automation of the detection of crimes and their perpetrators, 3) automated analysis of

6 See also Ephraim Nissan's review of the tools (Ephraim Nissan, 'Digital technologies and artificial intelligence's present and foreseeable impact on lawyering, judging, policing and law enforcement' (2017) 32 *AI & Society* 441 – 464, more broadly on this subject Ephraim Nissan, *Computer Applications for Handling Legal Evidence, Police Investigation and Case Argumentation* (Springer 2012).

evidence, and 4) automation of decision-making processes in the course of investigations conducted by services.

2.2.1. Crime Prediction

The idea of crime prediction is well known to the average citizen thanks to pop culture's ideas about punishing offenders before they commit a crime⁷. Modern predictive policing techniques primarily aim to automatically identify certain characteristics, events or persons, mainly to prevent crime, and often also to use the results of predictive policing in criminal proceedings⁸. Predictive policing includes four main categories of predictions based on advanced analytical techniques: methods for predicting crime (places and time periods with a higher risk of crime), methods for predicting offenders (people at risk of committing crime in the future), methods for predicting offender identity (matching likely offenders to past offences based on profiling), and methods for predicting victims of crime (identifying people potentially at risk of becoming a victim as a

7 The most famous example from the mass culture is the 2002 film „Minority Report”, directed by Steven Spielberg, based on the short story of the same name by Philip K. Dick published in *Fantastic Universe* magazine in January 1956. Clearly, the predictions generated by modern systems have little in common with the predictions on which the story of "Minority Report" was based. Nowadays these are software based on statistical methods producing estimates of the future based on data from the past (collected by information services or publicly available databases). Prediction results are always probabilistic, never certain. For more on predictive policing see Andrew Ferguson, 'Predictive Policing' (2017) 94 *Washington University Law Review* 1109; Albert Meijer and Martijn Wessels, 'Predictive Policing: Review of Benefits and Drawbacks' (2019) 42 *International Journal of Public Administration* 1031.

8 See the case of *Loomis v. Wisconsin*, pending before the Supreme Court of the State of Wisconsin, United States of America (<<https://caselaw.findlaw.com/wi-su-preme-court/1742124.html>>, accessed 08 February 2021). Eric L. Loomis in 2013 was arrested while driving a car that had been used earlier during the shooting. When he applied for parole, his profile was assessed by software called COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) used by US courts to assess the likelihood of recidivism (for more on how the system works, see the software developer's guide available at <https://assets.documentcloud.org/documents/2840784/Practitioner-s-Guide-to-COMPAS-Core.pdf>, accessed February 2021). As the system indicated a high risk of recidivism against Eric L. Loomis, the court denied the possibility of parole and sentenced the applicant to six years in prison.

result of a criminal act)⁹. Crime mapping based on advanced risk analysis techniques is useful both from the point of view of resolving an individual case, as well as from the broader perspective of allocating human resources in service activities and determining overall law enforcement strategies. However, it is quite clear from this example that the use of certain IT tools by services is not only targeted at a small group of persons already identified as involved in criminal activities, but also - and perhaps above all - at the general public, from which cases with a specific criminal risk are "picked up"¹⁰. Recent, widely discussed cases of discovered discriminatory tendencies of predictive tools based on machine learning raise legitimate questions about the acceptability of using such tools in criminal cases¹¹.

2.2.2. Automated Detection of Crime and Offenders

The second highlighted area of application of Legal Tech within the field of the law enforcement, i.e. automation of the detection of crimes and

9 Walter L. Perry, Brian McInnis, Carter C. Price, Susan C. Smith and John S. Hollywood, 'Predictive Policing: The Role of Crime Forecasting in Law Enforcement Operations' (2013) National Institute of Justice, Safety and Justice Program, RAND Corporation research report series XIV <https://www.rand.org/pubs/research_reports/RR233.html> accessed 8 February 2021.

10 Citing Rodney Monroe, currently retired police commissioner in Charlotte-Mecklenburg, North Carolina, United States: "We're not just looking for crime. We're looking for people" - quoted in Robert L. Mitchell, 'Predictive policing gets personal' (ComputerWorld, 24 October 2013) <<https://www.computerworld.com/article/2486424/predictive-policing-gets-personal.html>>., accessed 8 February 2021.

11 See the report of the NGO ProPublica regarding the abovementioned COMPAS (Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, 'Machine Bias' (ProPublica, 23 May 2016) <<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>> accessed 8 February 2021), a także Ninareh Mehrabi, Fred Morstatter, Nripsuta Saxena, Kristina Lerman and Aram Galstyan, 'A Survey on Bias and Fairness in Machine Learning' (2019) arXiv preprint arXiv:1908.09635; Xue Songkai, Mikhail Yurochkin and Yuekai Sun, 'Auditing ML Models for Individual Bias and Unfairness' (2020) 108 (PMLR 108/2020) Proceedings of the Twenty Third International Conference on Artificial Intelligence and Statistics () 4552; Ellora Israni, 'Algorithmic Due Process: Mistaken Accountability and Attribution in State v. Loomis' (Jolt Digest, 31 August 2017), <<https://jolt.law.harvard.edu/digest/algorithmic-due-process-mistaken-accountability-and-attribution-in-state-v-loomis-1>> accessed 8 February 2021.

their perpetrators¹², is mostly based on techniques capable of extracting information from data (data mining). This can take the form of automated analysis of the anomaly (e.g. of thefts) based on data from CCTV footage in public spaces, automated examination of electronic money transfers to uncover money laundering, detection of child pornography based on analysis of online video material or ongoing examination of social media content to uncover hate speech¹³. The facial recognition systems, which enable the matching of a human face from a digital image or video frame to law enforcement databases of faces, are quite a specific case¹⁴. Such systems are widely used by security services in many countries, including a large part of the Member States of the European Union¹⁵. Some countries have also chosen to use facial recognition systems in real-time interventions by equipping service personnel with facial recognition goggles¹⁶, an interesting combination of two technologies: a software facial recognition system and a hardware body cam i.e. a video recorder attached to the body or clothing of uniformed service personnel.

12 Clearly, most of the techniques set out in this paragraph can be successfully used not only to detect crimes and criminals, but also to obtain evidence in criminal cases.

13 See also Mohammad Reza Keyvanpour, Mostafa Javideh and Mohammad Reza Ebrahimi, 'Detecting and investigating crime by means of data mining: a general crime matching framework' (2011) 3 *Procedia Computer Science* 872.

14 The threats connected with the use of such tools to human rights had been promptly recognised by the Council of Europe, which has been active in regulating the use of automatic facial recognition tools ('Facial recognition: strict regulation is needed to prevent human rights violations' (CoE, 28 January 2021) <<https://www.coe.int/en/web/artificial-intelligence/-/facial-recognition-strict-regulation-is-needed-to-prevent-human-rights-violations>> accessed 8 February 2021).

15 Nicolas Kayser-Bril, 'At least 11 police forces use face recognition in the EU, AlgorithmWatch reveals', Algorithm Watch, 11 December 2019, updated 19 June 2020, <<https://algorithmwatch.org/en/story/face-recognition-police-europe/>> accessed 8 February 2021. The Polish Police uses a system called BriefCam that performs automatic analysis of video content to detect people, vehicles, etc. (Ewelina Kucharska, 'BriefCam - one system, many possibilities' (2019) 12 *Stołeczny Magazyn Policyjny* 20).

16 'Chinese police spot suspects with surveillance sunglasses' (BBC, 7 February 2018) <<https://www.bbc.com/news/world-asia-china-42973456#:~:text=Police%20in%20China%20have%20begun,crowds%20while%20looking%20for%20fugitives>> accessed 8 February 2021.

2.2.3. Automatic Evidence Analysis

The third area in which law enforcement agencies use Legal Tech tools in their substantive work is evidence analysis. These tools are of particular importance in the area of so-called e-discovery¹⁷, i.e. the discovery of electronically stored information (ESI) during legal proceedings¹⁸. Various Legal Tech 1.0 tools can be used in e-discovery, including in the course of a criminal case, as this process primarily involves the collection and processing of electronic evidence. From the point of view of Legal Tech 2.0 and 3.0, however, technology-assisted review (TAR), which at the current stage of technological development is usually based on natural language processing (NLP) techniques and machine learning (ML) models, is of particular importance. TAR enables the effective analysis of a big number of data. In a world of Big Data, without such tools law enforcement agencies would rely on "manual" verification of electronic data, which would almost always result in drastically reduced effectiveness¹⁹. At the same time, it is important to remember that AI-based automated data analysis tools can be a very useful search assistant, identifying relevant data and sorting it, however it is impossible to assign the entire evidence proceedings to them. The success of AI-based e-discovery lies in the seamless collaboration between a human being and a system²⁰.

17 *Discovery - in common law countries it is a pre-trial procedure for gathering evidence. In the countries of the continental system, the actions aimed at establishing the circumstances in question are generally carried out in the course of an evidentiary procedure.*

18 *E-discovery has always been of interests to academics in the context of criminal law – see Ken Strutin, 'Databases, E-Discovery and Criminal Law' (2008) 15 Rich. JL & Tech. 1; Justin P Murphy, 'E-Discovery in Criminal Matters - Emerging Trends & the Influence of Civil Litigation Principles' (2010) 11 Sedona Conference Journal 257; Jenia Turner, 'Managing Digital Discovery In Criminal Cases' (2019) 109 The Journal of Criminal Law and Criminology 237.*

19 Maura R Grossman and Gordon V Cormack, 'Technology-Assisted Review in E-Discovery Can Be More Effective and More Efficient Than Exhaustive Manual Review' (2010) 17 Rich. JL & Tech. 1; Herbert L Roitblat, Anne Kershaw and Patrick Oot, 'Document categorization in legal electronic discovery: computer classification vs. manual review' (2010) 61 Journal of the American Society for Information Science and Technology 70.

20 See Michael Mills, 'Artificial Intelligence in Law: the State of Play 2016', Thomson Reuters, 4, <https://britishlegalitforum.com/wp-content/uploads/2016/12/Keynote-Mills-AI-in-Law-State-of-Play-2016.pdf>, accessed 8 February 2021.

2.2.4. Automating Decision-Making Processes

However, Legal Tech tools need not only be of an assistance for the personnel of the law enforcement agencies. In certain instance they can participate in decision-making processes carried out in the course of proceedings, and even take over the role of an independent decision-maker. The fourth of the highlighted areas of application of Legal Tech tools in the work of services is automation of decision-making processes in the course of conducted proceedings. The use of Legal Tech tools for the purposes of algorithmisation of the process of law application has already been discussed from the theoretical point of view in part II of this monograph. Incorporating these considerations into the practice of law enforcement agencies, it should be noted that in this case we will be dealing with automation of a potentially wide range of decisions²¹. Although one might be of the opinion that such a level of automation of proceedings conducted by law enforcement agencies has not become yet a standard, it has in fact been used in practice for years, e.g. in automatic traffic surveillance systems. For instance, CANARD²² has been operating in Poland since 2011 which due to the automatic registration of offences reports violations of regulations within the scope of exceeding the established speed limits and disobeying traffic lights by the drivers. Information sourced from the point and section speed measuring devices or monitoring of intersections are processed automatically by the Central Processing System and then verified by the system in terms of the possibility of their further processing and use as evidence in a case of a traffic violation. The system also automatically exchanges information with the Central Register of Vehicles and Drivers, which makes it possible to send an automatic request to identify the driver of the vehicle. After receiving (or failing to receive) an answer from the vehicle owner, the system creates another solution such as: issuing a fine, delivering a statement to a person indicated

21 Both those which take the form of a formal procedural decision (e.g. the system, on the basis of the analysis of data concerning the offence and the suspect, decides that it is appropriate to issue a decision on bail rather than to apply to the court for temporary arrest) and those which do not take any particular procedural form (e.g. the system, after the analysis of the database of inhabitants of a given city, selects persons who could potentially be the perpetrators of an offence and then automatically recognises their faces on public surveillance recordings, locating them for the law enforcement agencies).

22 The Automatic Road Traffic Supervision Centre (CANARD) is an organisational unit of the General Inspectorate of Road Transport established to supervise road traffic.

by the owner or referring the case to court²³. Employees of CANARD supervise the correctness of the whole procedure, however, as a rule, the system automatically performs all actions necessary to issue a summons.

It should be assumed that with the development of Legal Tech tools (especially those based on ML and NLP) the scope of their autonomy will increase. This will inevitably result in more and more significant interference in the scope of data regarding citizens processed by law enforcement agencies and, what is more important, will increasingly allow for automation of decisions made by law enforcement agencies with regard to citizens. For this reason, it is necessary to determine a legal framework for such actions.

3. Legal Tech in Law Enforcement - a Regulatory Perspective

The undisturbed functioning of most of the methods in which Legal Tech tools are used in the work of law enforcement agencies set out in this chapter relies on ensuring automatic analysis of data held by the services. This can contribute both to speeding up and improving the quality of law enforcement investigations and, more generally, to better managing of the public security. However, these data remain to a large extent personal data. Taking into account the fact that the activities of law enforcement services - as it has been mentioned in this chapter - are aimed at a very wide range of citizens - not only those who are in any way involved in criminal activities, but also those who have never had and will never have any contact with the criminal world, one of the most important axis of legal considerations in this area are the legal regulations related to the protection of natural persons in relation to the processing of personal data by competent authorities for broadly defined criminal purposes²⁴. Importantly, the general regulations on personal data would not be applicable within this

23 <<https://www.canard.gitd.gov.pl/cms/>> accessed 8 February 2021.

24 Obviously, this is not the only legal perspective that can be analysed in terms of the use of Legal Tech tools in the work of uniformed services. Equally important as personal data protection regulations remain the fundamental rights, which are not the topic of this chapter. In this respect, however, see: European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs, Artificial Intelligence and Law Enforcement: Impact on Fundamental Rights, PE 656.295, 2020, <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/656295/IPO_L_STU> \(2020\)656295_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/656295/IPO_L_STU> (2020)656295_EN.pdf), accessed 8 February 2021.

scope²⁵. On European level²⁶, the relevant law remains Directive 2016/680 of the European Parliament and of the Council of 27 April 2016²⁷, hereinafter referred to as the "LED Directive"²⁸.

As rightly highlighted in recital 3 of the preamble of the LED Directive, a rapid technological development and globalization have brought new challenges within the field of personal data protection, increasing the scale of collection and cross-border exchange of personal data by law enforcement agencies. Technology now makes it possible to process personal data²⁹ on an unprecedented scale for activities such as the prevention, investigation, detection and prosecution of criminal offences or the execution of criminal penalties. The LED, seeking a balance between the free movement of personal data between EU Member States' services for criminal purposes while ensuring effective police cooperation and the

25 Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) [2016] OJ L119/1, hereinafter referred to as "GDPR". As regards the exclusion of the application of the GDPR as to the protection of natural persons in relation to the processing of personal data by competent authorities in the framework of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, including for the purpose of protecting against and preventing threats to public security, see Recital 19 GDPR. For more on the scope of the GDPR and the LED see Juraj Sajfert and Teresa Quintel, 'Data Protection Directive (EU) 2016/680 for Police and Criminal Justice Authorities' in Mark Cole and Franziska Boehm (eds), *GDPR Commentary* (Edward Elgar Publishing 2020) 3 <https://papers.ssrn.com/sol3/paper.cfm?abstract_id=3285873>, accessed 8 February 2021.

26 Those interested in non-EU, US regulation are referred to, inter alia: Reema Shah, 'Law Enforcement and Data Privacy - A Forward-Looking Approach' (2015) 125 *Yale Law Journal* 543.

27 Directive (EU) 2016/680 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of prevention, investigation, detection and prosecution of criminal offences or the execution of criminal penalties, on the free movement of such data, and repealing Council Framework Decision 2008/977/JHA [2016] OJ L119/89. The LED Directive, similarly to the GDPR, was adopted in May 2016, together representing an important step forward in establishing a comprehensive EU data protection regime. It can be seen both as a *lex specialis* to the GDPR and a completely independent parallel regulation (Mark Leiser and Bart Custers, 'The Law Enforcement Directive: Conceptual Challenges of EU Directive 2016/680' (2019) 5 *European Data Protection Law Review* 367).

28 Abbreviation for Law Enforcement Directive.

29 This includes any information about identified or identifiable natural persons (see Article 3(1) LED).

due protection of the fundamental rights and freedoms of individuals, introduces an equivalent level of protection of personal data used in the field of criminal policy³⁰ and common rules for monitoring compliance with and enforcement of the binding principles³¹.

The processing of personal data³² under the LED must comply with the fundamental principles governing data protection law, i.e. lawfulness, fairness, purpose limitation, data minimization, accuracy, storage limitation, integrity and confidentiality³³ as well as accountability³⁴. These rules are broadly in line with the general principles of the GDPR³⁵, with one important exception relating to transparency. Indeed, Article 4(1)(a) of the LED - contrary to Article 5(1)(a) of the GDPR - does not provide for an obligation to process personal data in a way which is transparent to the data subject. On the one hand, the lack of transparency is justified by the nature of the activities carried out by the services³⁶, but on the other hand, one may not forget that these activities often concern a basically unlimited circle of citizens. It is also worth highlighting a certain inconsistency in the text of the Directive - although Article 4(1) of the LED Directive does not mention the principle of transparency in its content, recital 26 of its preamble indicates that „the processing of personal data must be (...) transparent in respect of the individual concerned (...). This does not prevent law enforcement agencies from carrying out activities such as covert surveillance or video monitoring”.

30 It should be borne in mind that Article 1(3) LED does not preclude Member States from providing higher safeguards to protect the rights and freedoms of data subjects.

31 Examples of EU regulations implementing Article 11 LED, may be found in Matthias Hudobník, 'Data protection and the law enforcement directive: a procrustean bed across Europe?' (2020) 21 ERA Forum 21 489.

32 The processing of personal data by competent authorities referred to in the LED encompasses a broad category of operations on data. According to Article 3(2) and Recital 34 of the LED, this includes any operation or set of operations which is performed upon personal data or sets of personal data within the scope of the Directive by automated or non-automated means, including in particular the collection, recording, organisation, storage, adaptation or alteration, retrieval, consultation, use, alignment or combination, restriction of processing, erasure or destruction, as well as the transmission of personal data, which serves the purposes specified in the LED, to recipients who are not subject to it.

33 Article 4(1) LED.

34 Article 4(4) LED.

35 Article 5(1) GDPR.

36 Full transparency could hinder or even frustrate the objectives of the investigation carried out by the competent services (Leiser and Custers (n 27) 371).

In the context of the application of Legal Tech tools within the law enforcement agencies' operations presented in the chapter, one of the most relevant provisions of the LED Directive remains Article 11 on automated decision-making in individual cases³⁷. According to this provision Member States shall ensure that decisions which are based solely on automated processing, including profiling³⁸, and which produce an adverse legal effect for the data subject or significantly affect him/her, shall be prohibited³⁹. An exception to such prohibition shall only be allowed if such automated decisions are permitted by the EU law or a national law of the Member State to which the controller is subject, and at the same time the law provides for suitable safeguards with respect to the rights and freedoms of the data subject, including at least the right to obtain human intervention from the controller⁴⁰. Member States - apart from the right to obtain human intervention imposed by the Directive - are left free to establish ap-

37 This is a similar, but not identical, regulation to Article 22(1) GDPR. An intriguing difference between the LED regulation and the GDPR remains the fact that the prohibition of automated processing in the GDPR applies to decisions that "produce legal effects on the data subject or otherwise materially affect him or her in a similar manner" (cf. Article 22(1) GDPR), while the LED Directive prohibits in principle only decisions that "produce an adverse legal effect on the data subject or seriously affect him or her" (cf. Article 11(1) LED).

38 According to Article 3(4) LED, „profiling” means any form of automated processing of personal data that involves the use of personal data to evaluate certain personal factors relating to an individual, in particular to analyse or predict aspects relating to the individual's work performance, economic situation, health, personal preferences, interests, reliability, behaviour, location or movement. Criminal prediction, discussed earlier in the chapter, relies to a large extent specifically on profiling. It is also worth pointing out that although profiling and automated decision-making may be combined activities within the same process, they can also be carried out separately. There may be cases of automated decisions made with the use of profiling (or without) and profiling taking place without automated decision-making (Article 29 Working Party, Opinion on some key issues of the Law Enforcement Directive (EU) 2016/680, 29 November 2017, 17/PL, WP 258, 14 <https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=610178> accessed 8 February 2021).

39 At the same time, it should be borne in mind that even where the automated processing of personal data by law enforcement agencies does not fall within the scope of Article 11 LED, i.e. where it is not prohibited in principle (primarily because the processing will not be wholly automated or will not produce adverse effects for the data subject), a number of other provisions of the Directive shall apply to it (see Articles 4, 8, 10, 13 - 17 LED).

40 For more on the transposition of the LED provisions into national legal orders see <<https://eur-lex.europa.eu/legal-content/PL/NIM/?uri=CELEX:32016L0680>> accessed 8 February 2021.

propriate safeguards for the automation of decisions. Recital 38 of the LED Directive, however, indicates in this respect – similarly to the provisions of Article 22 and Article 15 of the GDPR – the required safeguards, in addition providing for the following: information obligations towards the data subject and the right to express one's opinion, obtaining an explanation of the decision and a right to contest it⁴¹. Due to the non-binding nature of the preamble, these can only be regarded as guidelines for national legislators⁴².

The prohibition of automated decision-making is even stricter when it comes to the processing of specific categories of data⁴³ which are not uncommon in the course of the services' operations. To the extent indicated, a decision may be automated only if "suitable measures have been implemented to safeguard the data subject's rights, freedoms and legitimate interests"⁴⁴, and in any case no such decision may be made, based on profiling which would result in discrimination against individuals⁴⁵ (in line with the wording of Article 21 of the Charter of Fundamental Rights⁴⁶). The exclusion of the consent as a basis for automation within the police context remains the main difference between the LED Directive and GDPR regulations when it comes to the automated decision making⁴⁷. As recital 35 of the LED Directive rightly indicates, the consent of the data subject should not constitute a legal basis for the processing of personal data by competent authorities for criminal purposes. Indeed, if the data subject has to comply with a legal obligation (which is usually the case regarding the procedural position of persons involved in pre-trial investigations), he/she does not have effective freedom of choice which is the essence of the free consent. As the Working Party rightly points out – Article 29, the clear imbalance between the rights of the data subject and

41 One may reflect on the reasons why the EU legislator did not decide to explicitly include the right to express one's position and the right to contest the decision in the text of Article 11 LED, following the example of the regulation of Article 22(3) GDPR.

42 Compare also: Juraj Sajfert and Teresa Quintel (n 25) 10.

43 This includes personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs or trade-union membership, genetic data, biometric data, data concerning health and data concerning a natural person's sex life or sexual orientation (Article 10 LED).

44 Article 11(2) LED.

45 Article 11(3) LED.

46 Charter of Fundamental Rights of the European Union [2012] OJ C326/391.

47 Compare Article 22(2)(c) and Article 22(4) GDPR.

the rights of the controller (law enforcement agency), rules out the consent as a basis for processing in this regard⁴⁸.

4. Summary

Although the common perception is that new technologies reduce the time spent on cases and free the service employees from some performing some time- and effort -consuming activities, surveys conducted all over the world concerning the use of new technologies within the police operations demonstrate that assessments of the effectiveness of the applied technological solutions are extremely rare; therefore, hard empirical data on whether new technologies within the police operations actually work are very limited⁴⁹. However, research shows that the use of Legal Tech tools within the law enforcement agencies' work is generally welcomed by the uniformed services, although at the same time there are also views that IT tools limit the discretion of human decision-makers⁵⁰. It is not unlikely that the development of Legal Tech 3.0 tools, increasing the level of automation when it comes to the substantive work of the law enforcement agencies, will strengthen the officers' convictions on the reduction of their independence in decision-making processes, at the same time raising concerns about entrusting the tasks excessively to the technological systems. The key to responsible use of advanced Legal Tech solutions by the services thus involves primarily:

- 1) precise identification of areas where automation would bring more benefits than it would generate potential risks,
- 2) appropriate determination of the competence of persons using the technologies (not only technological knowledge, but above all legal and ethical awareness) and
- 3) implementation of well -designed legal solutions in this area.

48 Working Party Article 29, Opinion on some key issues of the Enforcement Directive (EU) 2016/680, 29 November 2017, 17/PL, WP 258, <https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=610178> accessed 8 February 2021.

49 Bart Custers and Bas Vergouw, 'Promising policing technologies: Experiences, obstacles and police needs regarding law enforcement technologies' (2015) 31 Computer Law & Security Review 518.

50 Janet BL Chan, 'Technological Game: How Information Technology is Transforming Police Practice' (2001) 1 Criminal Justice: The International Journal of Policy and Practice 139.

Interestingly, in the studies on the practical functioning of police services, apart from obvious difficulties in the implementation of IT tools in the operations of the services (such as insufficient funds for the purchase of technology or technological deficiencies of the tools themselves), the following factors are mentioned as barriers to the use of Legal Tech: lack of appropriate legal solutions, insufficient clarity thereof and difficulties in the appropriate processing of personal data⁵¹. It seems, therefore, that technological development alone is not the only determinant of the efficient and secured implementation of technological tools within the law enforcement agencies' operations. Legislative efforts⁵², constant education of officers within this field and ongoing monitoring of the effectiveness of the tools used are equally important.

51 *ibid* 523.

52 The idea of certification of AI tools used in the sphere of justice (European Commission for the Efficiency of Justice) deserves recognition in this respect CEPEJ, 'Possible introduction of a mechanism for certifying artificial intelligence tools and services in the sphere of justice and the judiciary: Feasibility Study', 8 December 2020, CEPEJ (2020) 15 Rev).

Smart Contracts, Blockchain and Distributed Ledger Technology (DLT) in the Work of a Lawyer¹

Agnieszka Kubiak-Cyrul, Dariusz Szostek

1. Blockchain, DLT² – a Foundation of LegalTech

A number of tools used within LegalTech 2.0. and 3.0. apply blockchain and distributed ledger technologies³. This is not a new technology, the concept of distributed record keeping is over 50 years old (a memorandum no. RM-340-PR by Paul Baran⁴ from 1964). What is innovative, is its application in a law firm and its adaptation to the needs of lawyers. Blockchain has been around for a number of years (paper by a ‘Satoshi Nakamoto’⁵ from 2008) and has been identified by, among others, the European Union

-
- 1 The chapter was written thanks to financial support from the National Science Center, as part of project No. 2017/27 / B / HS5 / 01376.
 - 2 A detailed description of the matter of blockchain and DLT exceeds the bounds of this monograph. The authors restrict themselves only to pointing out problems at the junction of LegalTech and blockchain technology. For more on the subject of blockchain: Szostek, (n 55); Marcelo Corrales, Mark Fenwick, Helena Haapio (eds), *Legal Tech, Smart Contracts and Blockchain*, (Springer 2019); Makoto Yano, Chris Dai, Kenichi Masuda, Yoshio Kishimoto, ‘Creation of Blockchain and a New Ecosystem’ in Makoto Yano, Chris Dai, Kenichi Masuda, Yoshio Kishimoto (eds) *Blockchain and Crypto Currency*, (Springer 2019); Georgios Dimitropoulos, ‘The Law of Blockchain’ (2020) 1117 *Washington Law Review* 11; European Parliamentary Research Service, ‘Blockchain and the General Data Protection Regulation’, PE 634.445 (2019) 4, <[https://www.europarl.europa.eu/RegData/etudes/STUD/2019/634445/EPRS_STU\(2019\)634445_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2019/634445/EPRS_STU(2019)634445_EN.pdf)> accessed 10 October 2020; Deborah Maxwell, Chris Speed, Larissa Pschetz, ‘Story Blocks: Reimagining Narrative through the Blockchain.’ (2017) 23 *Convergence* 79; Nicholas Roth, ‘An Architectural Assessment of Bitcoin: Using the Systems Modeling Language’ (2015) 44 *Procedia Computer Science* 527.
 - 3 The European Union Blockchain Observatory & Forum, *EU Blockchain Ecosystem Developments*, <https://www.eublockchainforum.eu/sites/default/files/reports/EU%20Blockchain%20Ecosystem%20Report_final_0.pdf> accessed 2 January 2021.
 - 4 Paul Baran, ‘On Distributed Communications: I. Introduction to Distributed Communications Networks’ (1964) RAND Corporation <https://www.rand.org/pubs/research_memoranda/RM3420.html> accessed 1 December 2020.
 - 5 Satoshi Nakamoto, ‘Bitcoin: A Peer-to-Peer Electronic Cash System’ (31 October 2008) <<https://nakamotoinstitute.org/bitcoin/>> accessed 1 December 2020. The

as a technology that is already affecting the way countries, institutions and societies function, and is expected to affect them even more significantly in the future. Both Paul Baran and Satoshi Nakamoto proposed their solutions having in mind the need to keep data safe and secure from any attack, be it physical or electronic.

The security component was also pointed out by Mariya Gabriel (Commissioner for Digital Economy and Society), who stated that “Europe must make more of technological innovation and Blockchain technology is an innovation that Europe cannot afford to miss. At the same time, it is clear that we need strong governance if we want to get the most out of distributed ledger technologies for the general interest, that means for our economy and for our society (...) Why are distributed ledger technologies relevant? The answer relates to a deeply human concept, trust. (...) Trusting the other side to honour their commitments, that is what gives them power and makes them useful. (...) In today's economy, however, there is less and less time to build trust in the way it happened in the past. (...) How can we achieve this? (...) Blockchain achieves this by removing the need to put trust into individual contractual partners. (...) But blockchain technology is not only useful in such familiar settings of individual transactions. There are other areas in which it can help us to establish system-wide trust. (...) However, Distributed Ledger Technologies are about much more than exchanging data in a safe manner. They allow us to rethink entirely existing business processes from scratch. (...) It is in this context that Blockchain and other DLT show their greatest potential: They can fuel new user-centric solutions that put individuals at the centre and give them control over their online identity, their data and their privacy. That is the promise. A technology to lift the decentralisation of the web and of the internet to a new level”⁶.

The law governs social relations. Legal engineering implements the law and codes, while trust is guaranteed by blockchain. It is for that reason the use of the latter within the framework of LegalTech is obvious, in many aspects. In the academic literature, authors distinguish three categories of blockchain⁷: 1.0, 2.0, and 3.0. This classification was introduced having recognised the way in which blockchain is used. Blockchain 1.0,

real first name and surname of the author(s) of that work is not known, it was published under a pseudonym.

6 Speech by Commissioner for Digital Economy and Society Mariya Gabriel on blockchain applications, Brussels 3 April 2019 <https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_19_1973> accessed 2 December 2020.

7 Melanie Swan, *Blockchain - A Blueprint for a New Economy* (O'Reilly 2015) 1 ff.

or "the original blockchain" according to M. Swan, refers exclusively to S. Nakamoto's project and its use in cryptocurrencies. Blockchain 2.0 is used to transfer "value" other than currency. It covers the tokenisation of, inter alia, securities, as well as other assets - such as copyrighted works, real estate, etc. Smart contracts are also recognised in this group. For the purposes of this chapter, Blockchain 3.0 is most important. It includes the applications to the benefit of the judiciary, based on blockchain and using a decentralised IP cloud protection, as well as digital identity verification and authentication. In this way, services provided by central or local government are replaced in whole or in part. Blockchain 3.0 applications offer advantages in terms of scale, efficiency, organisation and coordination in the fields of science, genomics, health, academia and academic publishing, development, aid and culture, where people themselves - instead of the state or public authorities - mutually certify certain facts⁸. This also paves the way for interaction of humans and machines.

Blockchain technology is used at every stage of LegalTech, including both LegalTech 1.0 (eg. blockchain-based registries), LegalTech 2.0 (eg smart contracts, tokenisation of processes, crypto-assets) and finally LegalTech 3.0 (using AI in the judicial system of Estonia⁹).

2. Influence of Blockchain on the New Paperless Approach. Datafication of the Law.

Datafication, which means access to data instead of traditional formatted documents, is a major trend within the new paperless approach. It is also part of the development of LegalTech¹⁰, linked to the promotion of DLT, blockchain and smart contract in Europe. The essence of blockchain is the cryptographic protection of data saved in blocks. Cryptography, as a tool, makes that data immutable and by extension guarantees its veracity. Until now, the guarantors of the authenticity of data (or more broadly - documents) have been individuals representing professions of public trust - such as a judge, notary, lawyer, solicitor. Where blockchain technology comes into play - such guarantors are cryptography and algorithms.

8 ibid 53-68.

9 <<https://e-estonia.com/artificial-intelligence-as-the-new-reality-of-e-justice/>> accessed 1 December 2020.

10 For more on the subject of datafication, see chapter on electronic communication in an organisation.

There are various ways of securing blocks, and thus the security of stored data. The latter depends on the number of nodes and on the type of cryptography securing the nodes. Not all blockchains are deemed equal. Among the blockchains in operation, one can find those impossible to break today (in terms of their cryptographic protection) and those that do not offer such protection. As a result, the immutability of the data entered into a blockchain varies, which should be borne in mind by lawyers when analysing IT systems. Blockchain operates in distributed registers. What is important from a legal point of view, is that the data recorded on each node, regardless of the number of nodes, is the 'original' recorded data and can therefore be uploaded by a court or other authority from any such node. This is an active tool, in opposition to traditional documents – entries occur in a constant manner and in real-time, sometimes even a few hundred thousand entries during a single day.

At the present time, there is no uniform European regulation regarding the relationship between an entry in a blockchain and the legal presumption of the veracity of a fact recorded in a block. Some countries have introduced such regulations. Some of them have done it in a general way, such as Singapore¹¹, while others have decided on specific provisions for certain categories of entries, such as those related to cryptocurrencies¹² or securities. This situation is expected to change in the near future, as work is underway on EU regulations that would link blockchain entry to legal presumptions. Efforts to link entity identification, as well as the Internet of Things (IoT), to the use of attributes entered in blockchain are well advanced. The announced developments are aimed at promoting blockchain and making it more attractive as a tool, including within Legal-Tech. Blockchain is a tool that displaces public trust entities, but also a tool that supports such entities.

3. Using Blockchain in LegalTech

In the 21st century, blockchain is becoming a technological, automated but also democratised tool which is analogous to traditional public trust

11 Evidence Act (Chapter 97) Relevancy of Facts <<https://sso.agc.gov.sg/Act/EA1893>> accessed 25 October 2020.

12 Act No. XXXI of 2018 <<https://mdia.gov.mt/wp-content/uploads/2018/10/MDIA.pdf>> accessed 2 December 2020.

institutions. It does not replace them or their functions, but achieves similar goals, either on its own or by complementing existing institutions.

The speed of data generation, its complexity, datafication and the high frequency of transactions make it impossible to maintain the current classical way of data authentication. Moreover, for many types of data it is unworkable (eg IoT data). For this reason, the use of blockchain in LegalTech is becoming increasingly accepted and, in time, will become common practice. Certain trends are evident for blockchain:

- 1) with regard to legal presumptions:
 - a) as a modern database (without links to legal presumptions),
 - b) as a database which link blockchain entry to legal presumptions,
- 2) with regard to self-reliance:
 - a) functioning as support for a human, with entries made in a traditional manner by a specific person(s),
 - b) functioning in a fully automated manner, for instance through a smart contract, automatic storing of data from IoT etc.,
 - c) hybrid, after acceptance by an authorised person or an authorised institution, an automated entry,
- 3) with regard to manner of use:
 - a) as a component of other, more complicated LegalTech solutions (eg smart contract, durable medium),
 - b) solely as a database,
- 4) with regard to the entity using it:
 - a) public blockchain,
 - b) private blockchain,
 - c) government,
 - d) corporate,
 - e) business-oriented, etc.,
- 5) with regard to its territorial reach:
 - a) local,
 - b) state-wide,
 - c) cross-border,
 - d) aterritorial, where it is impossible (even indirectly) to establish a link with a given territory (eg Bitcoin).

The advantages of using blockchain include the elimination or reduction of the role of traditional intermediaries, the ability to obtain data attestation online without physical contact, unlike in case of traditional public trust institutions, and the auditability of blockchain, which guarantees its transparency and accountability. The application of blockchain in LegalTech is very diverse and subject to rapid development. For instance,

blockchain is used in InsureTech¹³ - insurance (eg through smart contract, but also data analysis from IoT). It is also used in the energy sector, both in the scope of renewable energy projects, its redistribution, in smart energy meters, and in client databases. Smart contracts and crypto-currencies are based on blockchain, yet it is found also in traditional banking, settlement, and in creation of electronic money. Blockchain is used to certify documents, data, and entries (or rather, to guarantee their veracity, without the need of additional certification), in traditional logistics, and in humanitarian aid. It is used in craftworking, dematerialisation of securities, and for trade in such securities. The same may be said for attestation of copyright, patents, and for certification of origin for goods (EUiPO Blockathon). The same can be said of the legislative process monitoring, identity registers, electronic voting, general meetings of company members, managing company affairs solely in blockchain, and permanent data storage. It is further used as a register (for instance, as a company register or a land register), as a tool supporting notaries, the courts and public administration, and in the scope of taxes, control thereof, immutability of transactions, and in many other projects, including those at the intersection of the world of humans and that of machines.

Only for the purposes of providing examples and inspiration, certain models of using LegalTech based on blockchain are presented below. Among them, one of the boldest examples that modify prior legal concepts is found in the formation of the Blockchain-Based Limited Liability Companies (BLLC) which operate only in a virtual manner and in a network, based on DLT and blockchain, with no physical company seat. A BLLC is regulated by the act no. 205 relating to blockchain business development (Vermont, US). Such a company operates solely through algorithmic protocols defining, among other things, consensus rules, while the corporate resolutions passed by the company operate through smart contracts. An entry in blockchain is linked to a legal presumption. A BLLC company is a conventional company carrying out business activities, what is new is the way it is organised and managed (based on LegalTech)¹⁴.

Another example is found in one of the biggest global blockchain projects¹⁵, implemented by Maersk and other carriers (eg Hapag-Lloyd and ONE - respectively - fifth and sixth shipping companies in the world by

13 Pierpalo Marano, Dariusz Szostek, *Smart Contract and Insurance* (Palgrave McMillan 2021).

14 See Dariusz Szostek, *Blockchain and the Law* (1 ed., Nomos 2019) 136 ff.

15 TradeLens Blockchain.

size), within the framework of which there are thousands of entries being made daily¹⁶, with said entries following from smart contract and operations on data. This includes transfer of ownership, the entry of goods into a given legal area, customs, etc. Interesting examples of regulation, and examples of blockchain-based LegalTech solutions, have emerged in the US. A blockchain entry meeting the written form requirement of the document has been proposed (an Act no. HB 1944, Arizona). In California, the entry of data from vital records has been linked with a presumption of veracity, without the need for physical certification (Senate bill no. SB-373 of 2019)¹⁷. Traditionally, law requires certified copies of birth, death, and marriage records be printed on chemically sensitized security paper with specified features, including, among others, watermarks, fluorescent fibers, and intaglio print. New law from 1.1.2022 would authorize a county to issue certified copies of marriage records by means of blockchain technology and would exempt those records from the required physical properties and features described above.

A bill no. SB-184 by the State of Colorado¹⁸ vests a duty in the Colorado Water Institute at the Colorado State University to study potential applications of blockchain technology for managing a database of water rights, to facilitate the establishment or operation of water markets or water banks, and for any other useful purpose in the administration of the institute's powers and duties, and to report the results to the general assembly of that State. In the State of Connecticut, under bill no. HB 5417¹⁹ there are acts taken in order to use blockchain to manage voter registration, mainly to prevent dual registration, while under bill²⁰ no. HB 6062 blockchain is used for online voting. In the State of Illinois, there are statutes being introduced on using blockchain in transactions, procedures, and in public registers²¹, while in Kansas this applies to regulations on company registers that use blockchain. There was a statute passed in the State of

16 At the time of writing this chapter there were over 15 million documents entered <<https://www.tradelens.com/platform>> accessed 8 December 2020.

17 <http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB373> accessed 7 December 2020.

18 <http://leg.colorado.gov/sites/default/files/documents/2019A/bills/2019a_184_01.pdf> accessed 6 December 2020.

19 <<https://www.cga.ct.gov/2019/FC/pdf/2019HB-05417-R000081-FC.PDF>> accessed 7 December 2020.

20 <<https://www.cga.ct.gov/2019/TOB/h/pdf/2019HB-06062-R00-HB.PDF>> accessed 7 December 2020.

21 <http://kslegislature.org/li/b2019_20/measures/documents/hb2039_enrolled.pdf> accessed 7 December 2020.

New York that relates to agreements and electronic signatures entered into blockchain, and to smart contracts²². A similar occurrence came to be in North Dakota²³.

In Europe, central banks and regulatory bodies (as well as the European Central Bank) are deliberating the use of Euro in digital form, based on blockchain. This follows *inter alia* from the growing number of projects on digital currencies in Asia (People's Bank of China vigorously develops Central Bank Digital Currencies)²⁴. The so-called 'stabilcoins' emerge – electronic currencies fixed to state currencies by way of a "currency peg"²⁵. Many states either implement blockchain in registers (eg Estonia, Georgia) or prepare such implementations. Blockchain is seriously considered for use in electronic identification²⁶, including in eIDAS Regulation-related services²⁷, and identification of persons, entities, attributes or IoT equipment. Professional legal associations are reaching for that technology eg notaries²⁸, and other lawyers as well, *inter alia* in the scope of tokenisation of processes. The time of blockchain is upon us.

4. Smart contract - a LegalTech tool in pure form

One of the most advanced LegalTech tools available nowadays, and one that is gaining in popularity, is the *smart contract*. Based on private law, it combines legal engineering and algorithmic codes, translates natural language into codes, and may contain tokens. It is based on DLT and blockchain technology, and, as a consequence, in most cases ensures a high level of cybersecurity and AI can be used as an oracle. It is not a document in the traditional sense, but rather is based on dataisation²⁹. The EU³⁰ is

22 <<https://nyassembly.gov/leg/?bn=A01683&term=2019>> accessed 8 December 2020.

23 <<https://www.legis.nd.gov/assembly/66-2019/documents/19-0127-06000.pdf>> accessed 8 December 2020.

24 <https://www.eublockchainforum.eu/sites/default/files/reports/1st%20EUBOF%20Trend%20Report_December%202020.pdf> accessed 8 December 2020.

25 <https://tlaib.house.gov/sites/tlaib.house.gov/files/STABLE_Act_One_Pager.pdf> accessed 7 December 2020.

26 <https://www.bmwi.de/Redaktion/DE/Publikationen/Digitale-Welt/blockchain-strategie.pdf?__blob=publicationFile&v=8> accessed 6 December 2020; <<https://consensus.net/blockchain-use-cases/digital-identity/>> accessed 6 December 2020.

27 <https://ec.europa.eu/futurium/en/system/files/ged/eidas_supported_ssi_may_2019_0.pdf> accessed 8 December 2020.

28 <<https://7bitcoins.com/french-notaries-launch-their-blockchain/>> ; <<https://www.itone.lu/actualites/luxembourg-notary-blockchain-kickoff-first-europe>> accessed 7 December 2020.

29 See Malta.

30 See (indirectly related to the smart contract and directly to tokens): Proposal for a Regulation of the European Parliament and of the Council on Markets

increasingly taking into account smart contracts in new legislation. This trend will continue to develop, and the use of smart contracts will become standard practice, and in the case of, for example, crypto assets³¹, it has already become the standard.

At the present time, a smart contract is classified as a LegalTech 2.0 tool. The development of AI and the increasingly bolder combination of the smart contract "oracle" with AI will result in the former being reclassified as LegalTech 3.0.³² The LegalTech 2.0 and 3.0 criteria concern the autonomy of decision-making. LegalTech 2.0 smart contracts follow pre-programmed sequences. At the present time, the vast majority of smart contracts fall within this group. On the other hand, the feasibility of a smart contract under LegalTech 3.0 depends on the decisions made by the algorithm after an independent analysis of the facts (at the moment we are at the stage of pilot schemes and small projects).

5. Definition of a smart contract

Both legal treatises on new technologies and EU documents include many publications, studies and monographs devoted to the theme of smart contracts, its principles of operation, definitions, aspects of its functioning, and related legal problems. However, these need not be repeated³³ in this publication. This is because from the perspective of this monograph, we intend to focus on its application in LegalTech as a lawyer's working tool.

in Crypto-assets, and amending Directive (EU) 2019/1937, COM/2020/593 final <[https://eur-lex.europa.eu/legal-content/EN/TXT/?uri= CELEX:52020PC0593](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0593)> accessed 21 January 2021.

31 <<https://www.tradelens.com>> accessed 21 January 2021.

32 See also Markus Hartung, Micha-Manuel Bues, Gernot Halbleib, *Legal Tech. Die Digitalisierung des Rechtsmarkts* (C. H. Beck 2018) 6.

33 See latest publications: Daniel Hellwig, Goran Karlic, Arnd Huchzermeier, *Build Your Own Blockchain* (C. H. Beck 2020) 74 ff; Maria Grazia Vigliotti, Haydn Jones, *The Executive Guide to Blockchain* (Palgrave Macmillan 2020) 133; Eranga Bandara, Wee Keong Ng, Nalin Ranasinghe, Kasun De Zoysa, 'Apos: Smart contract Made Smart' in Zibin Zheng, Hong-Ning Da, Mingdong Tang, Xiangping Chen (eds), *Blockchain and Trustworthy System* (Springer 2020) 431; Robert Wilkens, Richard Falk, *Smart Contracts, Grundlagen, Anwendungsfelder und rechtliche Aspekte* (Springer 2019) 3 ff; Riccardo de Caria, 'Definitions of Smart Contracts: Between Law and Code' in Larry A. DiMatteo, Michel Cannarsa, and Cristina Poncibò (eds) *The Cambridge Handbook of Smart Contracts, Blockchain Technology and Digital Platforms* (Cambridge University Press 2019) 19 ff.

The essence of a smart contract, as described by R. Wilkens and R. Falk³⁴, consists simply in a set of algorithmic codes in a properly prepared computer program, entered and based on data in a blockchain operating on the "if-then" logic. Activating a smart contract constitutes an automatic execution of a predefined legal (eg making a transfer), procedural (eg entry in the register) or purely factual (eg sharing digital content) act, in connection with the occurrence of a predefined event, both events that are factual in form and events bearing the characteristics of a legal transaction. In information terms, a smart contract is an algorithmic code capable of achieving the correct execution of the terms of a contract³⁵. One example of a simple system that we have been familiar with for years, is the simple vending machine. Today's smart contracts in LegalTech 2.0 or 3.0 form are much more complicated and complex. It should be pointed out at the outset that the smart contract, despite its name, is not always a contract in a legal sense. Not only that, but depending on the discipline, it also is understood differently by lawyers, computer scientists and economists.

At the present time, different countries have adopted different approaches to smart contract legislation, ranging from a complete absence of any reference to such contracts (where its operation is based on the principle of freedom of contract) to the implementation of statutes containing descriptive definitions³⁶ (eg of tokens, platforms, etc.) or legal definitions³⁷.

The Maltese definition³⁸ adopted by the Malta Digital Innovation Authority Act³⁹ to explain the essence of a smart contract, deserves special attention. A *Smart contract* is defined here as an algorithm that automatically executes at least part of a contract. The contract itself can be concluded in its entirety in electronic form (we cannot determine by its form

34 Robert Wilkens, Richard Falk, *Smart Contracts, Grundlagen, Anwendungsfelder und rechtliche Aspekte* (Springer 2019) 4.

35 Merit Kölvart, Margus Poola, Addi Rull, 'Smart Contracts' in Tanel Kerikmäe, Addi Rull (eds) *The Future of Law and eTechnologies* (Springer 2016) 134 ff.

36 Singapore - Electronic Transactions Act <<https://sso.agc.gov.sg/Act/ETA2010#P11>> accessed 27 January 2021.

37 See Arizona, Belarus, Malta.

38 Art. 2, para. 2: "A smart contract: means a form of innovative technology arrangement consisting of: (a) a computer protocol; and, or (b) an agreement concluded wholly or partly in an electronic form, which is automatable and enforceable by execution of computer code, although some parts may require human input and control and which may be also enforceable by ordinary legal methods or by a mixture of both."

39 See <<https://parlament.mt/media/95199/act-xxxi-malta-digital-innovation-authority-act.pdf>> accessed 27 January 2021.

whether it is to be concluded on the platform or via e-mail, or entered in a blockchain, etc.) or in traditional form (eg on paper) fully or partly (eg as a framework agreement). It can refer to named, unnamed, and mixed contracts.

In civil law terms, a smart contract is not always a contract. Its performance should take place automatically thanks to the occurrence of predefined facts, while both activating contract performance or execution may require human action (eg by human activation of the algorithm). Contract enforcement may be fully automated, but traditional enforcement must also be acceptable. A contract may operate under one jurisdiction, but very often it operates simultaneously in many. A smart contract agreement may also be governed by various applicable laws (in the absence of a choice of law in the contract, its search is based on classic conflict of laws rules). It can operate as a single-step (performance of a single act), multi-step agreement (the performance of one act triggers another), or, finally, in continuous formats (through continuous interactions and entries in the blockchain). Evidence of the performance of a smart contract is registered in the blockchain, which requires lawyers to acquire new skills in the scope of gathering evidence. For this reason, increasingly legislation is being introduced on an ever more frequent basis aimed at binding an entry to a blockchain with a legal presumption⁴⁰.

6. Examples of the application of the smart contract in LegalTech

In the past, smart contracts were associated almost exclusively with transactions involving bitcoin or other cryptocurrencies. The technology has long since gone beyond this limited scope and is being applied in innovative ways in many sectors of the economy. The number of transactions made daily on the basis of smart contracts in a DLT (distributed ledger technology) environment is growing rapidly. According to data gathered by Dune Analytics, approximately 670,000 smart contracts are executed every month in the Ethereum blockchain alone⁴¹. Although not all smart contracts involving the implementation of legal actions, the above data point to the popularity of this tool and the versatility of its application.

⁴⁰ See the chapter: *Blockchain and DLT the Work of a Lawyer*.

⁴¹ Joshua Mapperson, *Ethereum Smart Contracts up 75 % to Almost 2M in March* <<https://cointelegraph.com/news/ethereum-smart-contracts-up-75-to-almost-2m-in-march>> accessed 27 January 2021.

Initially, most investments in solutions based on distributed ledger technology and smart contracts were carried out in the banking sector. Currently, such investments can be observed in most sectors of the economy.

Recently, Forbes published a list of the 50 largest entities that use blockchain technology and smart contracts in their operations⁴². They included the following giants: *A.P. Moller-Maersk* Denmark (logistics, maritime container shipping - *blockchain: TradeLens, Hyperledger Fabric, IBM Blockchain*), *Ant Group* China (an entity connected with the holding *Alibaba Group*, *blockchain: AntChain, Hyperledger Fabric, Quorum*), *BHP* Australia (mining industry, *blockchain: MineHub, Hyperledger Fabric*), *Boeing* USA aviation transport, *blockchain: Go Direct, Hyperledger Fabric*), *Carrefour* France (supermarket chain, *blockchain: IBM Blockchain, Hyperledger Fabric*), *Credit Suisse* Switzerland (financial services, *blockchain: Enterprise Ethereum, Paxos Settlement Service*), *Daimler* Germany (automotive industry, *blockchain: Hyperledger Indy, Hyperledger Fabric, Corda, Ocean Protocol, Ethereum, MoveX*), *Equinor* Norway (fuel and energy industry, *blockchain: Data Gumbo, Vakt*), *Novartis* Switzerland (pharmaceutical industry, *blockchain: Ethereum, Sovrin, Hyperledger Fabric, Corda, DAML, Quorum*), *Walmart* USA (supermarket chain, *blockchain: Hyperledger Fabric*), *Visa* USA (payment services, *blockchain: Bitcoin, Ethereum*), *Samsung Group* South Korea (electronics industry, *blockchain: Nexledger*)⁴³ etc.

Smart contracts have been used in the insurance services sector for several years now.⁴⁴ In 2018, a consortium comprising EY, Guardtime, Møller-Maersk and Microsoft developed and launched the Insurwave platform. It uses blockchain and smart contracts to automate insurance contracts in maritime transport. This platform collects data on a vessel and its cargo from various sources in real time. The occurrence of events specified in the smart contract, information on which is provided via the Oracle function, triggers, eg the payment of compensation, without the need to

42 Michael del Castillo, *Blockchain 50 2021*, <<https://www.forbes.com/sites/michaeldelcastillo/2021/02/02/blockchain-50/?sh=207076dc231c>> accessed 27 January 2021.

43 Michael del Castillo, *Forbes Blockchain 50 Of 2021: Cashing In On Bitcoin Mania* <<https://www.forbes.com/sites/michaeldelcastillo/2021/02/02/forbes-blockchain-50-corporate-america-cashes-in-on-bitcoin-mania/?sh=1bc729216e01>> accessed 27 January 2021.

44 OECD, *Technology and innovation in the insurance sector* (2017) <<https://www.oecd.org/pensions/Technology-and-innovation-in-the-insurance-sector.pdf>> accessed 27 January 2021; Marano, Noussia (n 13).

prepare any additional documentation. This technology also works well in parametric insurance.

One example of such insurance was Fizzy, a flight delay test insurance scheme marketed by the AXA group⁴⁵. The insurance contract specifies a predetermined amount that will be paid after meeting the condition indicated. The payment obligation is expressed in machine language in the smart contract, which is stored in the Ethereum blockchain. As a result, its activation may result in the automatic payment of compensation without the need to complete any formalities and go through the claim settlement process, if the smart contract algorithm was thus constructed. The construction of such a smart contract features Oracle functions enabling the user to obtain information on the actual times and dates of aircraft take-offs and landings.

Based on the same principle, smart contracts can also be developed for insurance contracts concluded in the event of drought, hurricane, floods, heavy rain, etc. The selected policy conditions (eg price, planned departure time, amount of compensation) will be saved in the form of a smart contract in the blockchain. Changing the terms of such an agreement is not possible once the smart contract has been introduced into the blockchain. The decision-making regarding the payment of compensation has been fully automated and based on transparent rules, which eliminates the risk of potential disputes between the insurer and clients. The dissemination of blockchain technology in the insurance sector may serve as a foundation for specialized insurance products that provide protection against various types of risk, based on external data provided by reliable entities.

Another sector in which blockchain and smart contract technology is rapidly gaining a foothold is energy, in particular the pro-consumer electricity market.⁴⁶ Blockchain is used to build order and contract management systems. It is also useful platform for developing tools for direct sales of

45 See <<https://www.axa.com/en/magazine/axa-goes-blockchain-with-fizzy>> accessed 27 January 2021. The insurance was available to customers during the period from 9.2017 to 11.2019.

46 Joseph Lee, Vere Marie Khan, 'Blockchain and Smart Contract for Peer-to-Peer Energy Trading Platform: Legal Obstacles and Regulatory Solutions' (2020) 19 UIC REV. INTELL. PROP. L. 285 ff; Qiang Wang, Rongrong Li, Lina Zhan, 'Blockchain technology in the energy sector: From basic research to real world applications' (2021) 39 Computer Science Review; Merlinda Andoni, Valentin Robu, David Flynn, Simone Abram, Dale Geach, David Jenkins, Peter McCallum, Andrew Peacock, 'Blockchain technology in the energy sector: A systematic review of challenges and opportunities' (2019) 100 Renewable and Sustainable Energy Reviews.

energy in a peer-to-peer network as well as for improving and developing electric car charging stations. The most advanced activities using blockchain and smart contract technologies are undertaken by the German energy network operator E.ON and the Italian company Enel. In 2017, they introduced blockchain transactions that do not require the participation of intermediaries and are performed in real time, which significantly reduces distribution costs for the end customer. The next step is “energy tokenization”. This requires the conversion of energy into contractual units, i.e., tokens, which can then be sold to recipients via smart contracts based on the same principles governing the operation of prepaid cards. The launch of Enerchain⁴⁷ in 2019 may accelerate the development of new forms of distribution for energy products. This is a trading platform for 44 energy companies based on blockchain technology, which enables the user to trade in various energy and gas products.

Blockchain is also used to create modern systems for registering property titles and real estate transactions. One example of an advanced platform based on blockchain technology and smart contracts is a real estate registry created for Georgia. It was prepared by Bitfury Group in collaboration with the Georgian National Agency of Public Registry (NAPR)⁴⁸. The system provides a new and secure way of registering real estate that at the same time gives owners greater control over their property. Property ownership records are stored in the Exonum blockchain and are additionally secured in the bitcoin blockchain. The legal title to a property is documented by digital certificates supported by cryptographic evidence (a hash). This is a fully decentralized, secure digital system that is more efficient than its traditional counterpart and is corruption proof, thereby ensuring greater levels of trust among citizens. In the event of the sale or transfer of property ownership, the system saves new owners time and costs during the registration of such actions. In addition, it provides a transparent history of transactions and any changes in information regarding a given property. All blockchain processes can easily be audited both in real-time and retrospectively, which is important from the perspective of real estate registers. Work on planned real estate registers using blockchain and smart

47 See <<https://enerchain.ponton.de/index.php/37-enerchain10live>> accessed 27 January 2021.

48 Nino Lazuashvili, Alex Norta, Dirk Draheim, ‘Integration of Blockchain Technology into a Land Registration System for Immutable Traceability: A Casestudy of Georgia’ in Claudio Di Ciccio and others (eds) *Business Process Management: Blockchain and Central and Eastern Europe Forum* (Springer 2019) 72 ff.

contract technologies is also at an advanced stage in a number of other countries, such as Sweden⁴⁹, Great Britain⁵⁰ and India⁵¹.

Very promising innovations based on blockchain and smart contract solutions have been introduced in the area of copyright management, in particular in the form of systems for distributing fees paid to authors for the commercial use of their works. Blockchain-based platforms are beginning to emerge that use smart contracts to provide users with digitized music, such as UJO Music⁵². A pioneer in this regard was the British artist Imogen Heap, whose work *Tiny Human* was first made available to recipients via a smart contract. When the user pays a fee in cryptocurrency or in a digital currency for access to a work, the smart contract automatically pays the sum due to each entitled artist according to an earlier concluded contract included in the distribution algorithm. This is done immediately after the work is shared and without the need for intermediaries. The use of blockchain and smart contracts in this regard naturally requires determining who is entitled to receive royalties. This technology also enables the efficient transfer of fees to copyright collectives. For this reason, in 2017 Spotify, the Swedish global streaming service offering access to music, acquired the start-up Mediachain Lab, which develops blockchain-based projects⁵³. It will be used to create a database of artists and their works in combination with license agreements, which will make it possible both to automate the distribution of works to users as well as

49 For more on this topic: "The Land Registry in the blockchain – testbed. A development project with Lantmäteriet, Landshypotek Bank, SBAB, Telia company, ChromaWay and Kairos Future" <https://chromaway.com/papers/Blockchain_Landregistry_Report_2017.pdf> accessed 27 January 2021; Shefali Anand, *A pioneer in real estate blockchain emerges in Europe*, <<https://www.wsj.com/articles/a-pioneer-in-real-estate-blockchain-emerges-in-europe-1520337601>> accessed 27 January 2021; Molly Jane Zuckerman, *Swedish government land registry soon to conduct first blockchain property transaction* <<https://cointelegraph.com/news/swedish-government-land-registry-soon-to-conduct-first-blockchain-property-transaction>> accessed 27 January 2021.

50 See *HM Land Registry to explore the benefits of blockchain* <<https://www.gov.uk/government/news/hm-land-registry-to-explore-the-benefits-of-blockchain>> accessed 27 January 2021.

51 Vinay Thakur, M.N. Doja, Yogesh K. Dwivedi, Tanvir Ahmad, Ganesh Khadanga, 'Land records on Blockchain for implementation of Land Titling in India' (2020) 52 *International Journal of Information Management*.

52 See <<http://ujomusic.com/>> accessed 27 January 2021.

53 Hugh McIntyre, 'Spotify Has Acquired Blockchain Startup Mediachain' <<https://www.forbes.com/sites/hughmcintyre/2017/04/27/spotify-has-acquired-blockchain-startup-mediachain/?sh=6c9ffaf369ee>> accessed 27 January 2021.

make payments to entitled authors. The core element in this solution is a properly prepared smart contract, one that correctly executes the terms of contracts concluded between artists, entities providing streaming services, and consumers. It is not only commercial entities that nowadays see the benefits of blockchain and smart contracts. In 2020 the World Intellectual Property Organization (WIPO) began developing a system of intellectual property rights registration based on this technology⁵⁴.

The above examples do not give a full picture of the practical applications of blockchain and smart contract technologies. These solutions have enormous potential and are undergoing rapid development. The smart contract should eventually be as ubiquitous in our daily lives as the Internet, Word, e-mails, ZOOM, electronic payments, Facebook etc. Its growing importance should be accompanied by greater awareness of the principles governing the operation of this technology as well as, and even more importantly, its limitations. In particular, it requires lawyers whose clients have the right to expect professional and competent support in matters relating to blockchain and smart contracts. The basic problems concerning the use of smart contracts in contract performance will be presented below.

7. Legal problems connected with the use of smart contracts in LegalTech

The life cycle of smart contracts can be broken down into several phases. From a lawyer's perspective, the most important stage in this cycle is the actual creation of the contract. The interested entity (or entities) formulate the content of the draft agreement, specifying in particular the rights and obligations of the parties. Usually, not all elements of the contract can be automated. It is therefore necessary to specify which parts should be written in the form of a smart contract. Next, coding specialists must create a smart contract algorithm, that is, convert an agreement written in natural language into machine language. The programming languages most widely used for this purpose are Solidity, Go, Kotlin and Java. Databases already exist that contain ready-made code snippets in open source access, which coders use in the same way as lawyers use standard contractual clauses.

54 WIPO Standards Launches Webinar Series with Blockchain for IP <https://www.wipo.int/standards/en/news/2020/news_0001.html> accessed 27 January 2021.

The programming language requires the content of the smart contract to be formulated in an unambiguous way, dispelling any doubts as to the expected result. However, programmers should take care to ensure that the intentions of the parties regarding the contract are executed partially or fully on the basis of the smart contract. This is not an easy task as they lack adequate legal knowledge. As a consequence, in the case of complex legal relationships, there is a concern that the technical limitations of the programming language and the lack of appropriate expertise on the part of the code's creator will result in the non-performance or improper performance of the contract. For this reason, close cooperation between programmers and lawyers is very important at this stage. The success of this collaboration depends on achieving mutual understanding between both sides.

Translating the meaning of certain concepts from legal language into machine language is very difficult in practice, because lawyers and programmers use their languages for very specific (different) purposes. Contracts often contain abstract, ambiguous concepts (eg, responsibility, good faith, due diligence, forthwith), which allow a certain flexibility in the contractual relationship. However, creating a computer program requires precise, clear and unambiguous instructions for the computer. This means that not all contractual terms can be represented in machine language. The literature emphasizes the need to distinguish between different types of clauses in contracts. Not all clauses are equally susceptible to automation or their automation is not always desirable when the interests of the parties are taken into account.

A binary code is compiled on the basis of this version of the smart contract. Special software (a compiler) is used for this purpose. It transcribes the notation used in the language, eg Solidity, into machine instructions expressed in bytecode. This is another way of transforming the parties' intentions expressed at the time of the contract's conclusion. If this software contains bugs or was poorly designed, it may result in significant discrepancies between what the parties intended to achieve and what will be implemented after the smart contract is executed. The designed algorithm should then pass through the implementation and validation phases. In particular, the smart contract should be carefully checked to ensure it does not contain any potential errors or gaps. Unfortunately, this stage requires specialist knowledge, which means that it is not always properly executed. Repeated tests should be performed in an isolated environment, because a smart contract has real consequences that cannot be undone once the blockchain is running. Once the results are correct, the smart contract enters the implementation phase. However, even when appropriate tests

have been carried out, there is no guarantee that the smart contract will not contain errors or gaps that, when introduced into the chain, will have negative results.

The new transaction is transferred to the network together with the proposed fee expressed in GAS units and the indicated currency portfolio from which the fee is to be collected⁵⁵. As a consequence, a certain degree of unpredictability should be expected regarding the commencement date of a smart contract, and thus the performance of the contract itself. Insufficient GAS will result in the transaction being rejected. If the amount of GAS was adequate, the transaction after verification must be packed into a block by miners, and then a new block must be added to the blockchain. This process is beyond the control of the parties to the smart contract. The time required to complete the tasks written in the algorithm is also difficult to predict. Smart contract execution usually entails making changes to the blockchain (eg transfers of cryptocurrencies or digital currencies between the addresses indicated in the smart contract). They are saved and distributed to all nodes in the chain.

The above stage concludes by placing the smart contract on the Ethereum blockchain and assigning it an individual address. From this moment, the smart contract can no longer be modified and is available to all blockchain users. Accessing this address enables the user to visualize certain data, such as the balance and the application binary interface (ABI). Each smart contract is identified by its software code associated with a specific block address, eg 0xbF35fAA9C265bAf50C9CFF8c389C363B05753275. It also has its own name, eg crowdsale, token, or mytoken. However, these names are repeated very often and do not have the power to individualize a given smart contract.

At the smart contract execution stage, problems may arise with the credibility and reliability of the source providing the information required to activate the action stored in the algorithm. This is the case only with

55 In the case of the Ethereum platform, consensus is achieved through the PoW algorithm. The Ether (ETH) cryptocurrency is used to reward miners that approve a transaction. To ensure the independence of the variable value of this cryptocurrency, the GAS unit is used in internal settlements, in which the price for transaction verification is determined. The transaction cost is determined as the product of the maximum amount of GAS units needed to generate the block and the GAS price specified in ETH. A party that wants to run a smart contract declares the payment of a certain amount of GAS in return for confirmation of the transaction (the greater the amount of GAS, the greater the motivation for miners to act). For more on this topic <<https://ethereum.stackexchange.com/questions/27452/how-to-estimate-gas-cost>> accessed 27 January 2021.

those smart contracts that have been programmed in a way that allows them to obtain data from outside the blockchain. The function that developers use to achieve this is called an "oracle". In simple terms, an oracle is a system that provides a smart contract with information from the outside world (eg regarding the temperature, wind strength, share prices, match results, plane landing times, courier deliveries, etc.) In a format which can be processed in a *blockchain* environment. The use of the oracle function requires making a payment to GAS each time. As a result, insufficient amounts of GAS in the indicated portfolio will prevent the acquisition of external data and the implementation of the smart contract. If a smart contract with an oracle function supports the execution of the contract, the parties should at the negotiation stage determine what or who will be a reliable source of the data on which the algorithm will depend. The credibility of this data is not subject to any formal or material verification by network participants. In addition, even if the selected data source is reliable, it may be the case that the external data received by that source was incorrect. Aware of the above consequences, the parties to a smart contract should thus agree on a reliable source of information in their case. This factor is the root of numerous technical and legal problems.

The above brief presentation of the principles governing the operation of a smart contract in a blockchain highlights the key role that technical aspects of this tool play when it is used to perform contractual obligations. By being aware of the limitations of this tool lawyers will be able to ensure that their clients avoid significant problems when acting on the basis of blockchain technology.

8. Summary: Should lawyers be smart?

A smart contract is written in a machine language, which most lawyers regard as a foreign language. Given this fact, how can such lawyers be sufficiently qualified to advise a client on a smart contract if they do not understand it themselves? There are only three options for solving this problem. First, lawyers must work closely with developers on such matters. However, we should be aware of the fact that while an IT specialist will explain what is written in the algorithm, a lawyer will have to imagine the legal consequences of running this algorithm in the blockchain. The second solution assumes that a lawyer will learn the rules of coding to a sufficient standard to be able to understand the content of the smart contract. Over time, further modifications in machine languages should make them much easier to understand. This was the case with operating

systems whose interfaces have become increasingly user-friendly. Finally, the third assumption is that in the future, artificial intelligence will replace lawyers in analysing the functioning of smart contracts. However, this development remains in the distance future. Meanwhile, we should expect to see the emergence of new third party liability insurance products in conjunction with legal services for entities operating on the basis of blockchain and smart contract technologies.

In the future, blockchains will become part of the legal services industry. If this does not happen through the initiative of lawyers themselves, it will result from the pressure exerted by their clients. On the one hand, major business entities, i.e., the biggest clients of law firms, are already carving out new areas of activity based on blockchain and smart contracts or are seeking development opportunities connected with these technologies. They will expect legal support in these areas. It would seem that only lawyers who make an effort to learn about such technology at the algorithm level will be able to provide competent legal assistance. On the other hand, the way law firms and legal departments function will change as blockchains become more commonplace in both public administration and various sectors of the economy. Document registers will be created in blockchain, and this will do away with the need for archives of paper documents, change the way in which contracts are prepared and, as a result, improve many internal processes and reduce operating costs.

Legal Tech vs Data in Organisation

Małgorzata Kurowska

1. Data vs Information

Both data and information are concepts understood intuitively in everyday life and, as experience has shown, also interchangeably, even by lawyers. However, information security management methodologies treat these concepts separately, with such distinction being crucial from the point of view of proper modelling of the information management process in a law firm.

Currently, ISO standards of the 27 000 family of standards (Information Security Management) do not define information. This concept is defined in a slightly different context in the ISO 2832:2015 framework defining key definitions in the field of information technology which takes, as central, the concept of information, understood as:

“Knowledge concerning any objects such as facts, events, things, processes or ideas including concepts that within a certain context have a particular meaning.”¹

The concept of data is derived from information and is defined as:

“A reinterpretable representation of information in a formalized manner suitable for communication, interpretation, or processing”²

Legal scholars and commentators formulate definitions of the above-mentioned concepts on the grounds of legal scholarship and writings generally draw on an analogous distinction, assuming that data are fixed (recorded) signs that – at least for some time – are potentially interpretable³. Viewed as such, **information is the result of data interpretation.**

1 <<https://www.iso.org/obp/ui/#iso:std:iso-iec:2382:ed-1:v1:en>> access 12 January 2021.

2 ibid.

3 D. Szostek, Nowe ujęcie dokumentu w polskim prawie prywatnym ze szczególnym uwzględnieniem dokumentu w postaci elektronicznej (1st edn, Legalis 2012) [New treatment of a document in Polish private law with particular reference to a document in electronic form].

Information is therefore subjective in nature⁴. It cannot therefore be protected as such and, in order to respect legal certainty, we must ensure that data is protected as potentially interpretable.

This results in a number of normative **divisions of data** according to the type of information that can be decoded from such data. Just to mention in passing, it is worth pointing out that such divisions are based on inconsistent nomenclature and do not always take into account the distinction described above between information and data.

From a practical perspective, the most typical divisions that are of relevance to a lawyer, are as follows:

1) **personal data and non-personal data**

The GDPR defines personal data as *any information relating to an identified or identifiable natural person (...)*⁵. As can be seen, the definition itself uses the concepts of data and information interchangeably. In this regard, the prevailing view among legal scholars and commentators⁶ is that personal data is a subjective concept, and that the nature of data as personal data depends on the degree of identifiability of a natural person in light of a reasonable likelihood of such identification (cf. recital 26 of the GDPR).

The definition of non-personal data is even more succinct. The EU Non-Personal Data Regulation⁷ defines data subject to the Regulation simply as data other than personal data as defined in Article 4(1) of Regulation (EU) 2016/679 (Article 3(1)).

Thus, the European legislator assumes a dual division – however, it is difficult to determine at first sight whether this division refers to information (data interpreted as relating to a natural person, i.e. personal data and data which cannot be so interpreted), or to data as such (according to this approach, the non-personal data regulation would refer both to data which cannot be interpreted as personal data (“non-personal information”) and to any data, including data which is not information at all.

4 D. Szostek, (3).

5 General Data Protection Regulation, art. 4(1).

6 P. Litwiński (ed.), Rozporządzenie UE w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i swobodnym przepływem takich danych. EU Regulation on the protection of individuals with regard to the processing of personal data and on the free movement of such data (C. H. Beck 2018) marginal numbers 21-23; cf. also Lee A. Bygrave and Luca Tsoni, ‘Commentary on Article 4’ in Christopher Kuner, Lee A. Bygrave, Christopher Docksey (eds) *The EU General Data Protection Regulation (GDPR). A Commentary* (OUP 2020).

7 Regulation (EU) 2018/1807 of 14 November 2018 on a framework for the free flow of non-personal data in the European Union [2018] OJ L303/59..

Despite the above inconsistency, the latter approach should be supported, and it should be considered that, in light of the objectives of the non-personal data regulation, the intention of the European legislator was to ensure the protection of **data** flows, regardless of whether and under what circumstances they are interpreted in a way that gives them meaning (legal, business, economic or social).

2) **information covered by professional secrecy and information not covered by professional secrecy**

The Code of Conduct for European Lawyers does not define professional secrecy as such. However, it provides a description of the elements that information covered by such secrecy should meet⁸. However, professional secrecy is defined in a number of corporate regulations of EU Member States.

For example, according to the **Polish** Code of Ethics of Attorneys at Law (KERP):

*(...) Attorneys at law shall keep secret all information about the client and their affairs, whether disclosed by the client or obtained in any other manner in connection with the performance of any of their professional duties and regardless of the source of such information or the form and manner of its recording (professional secrecy)*⁹.

Further, KERP specifies that professional secrecy extends to documents and correspondence drafted or exchanged in connection with the provision of legal assistance.

In contrast, the **French regulation** relating to the profession of lawyer (*Règlement Intérieur National de la Profession d'Avocat*, RIN) provides that:

*Professional secrecy covers all matters in connection with the provision of legal advice or defence, whether recorded on a tangible or intangible medium (hard copy, fax, electronic form)*¹⁰. RIN also sets out a broad, open-ended catalogue of information covered by the confidentiality obligation.

Similarly, **the German law on the practice of a legal profession** (BRAO)¹¹ defines professional secrecy as anything learned in the course of the practice of a legal profession (Article 43a(2) BRAO).

8 Chapter 2.3: <https://www.brrp.pl/pdf/Kodeks_Etyki_Prawnik%C3%B3w_Europejskich.pdf> accessed 12 January 2021.

9 Article 15: <<https://kirp.pl/etyka-i-wykonywanie-zawodu/etyka/kodeks-etyki-radcyprawnego/>> accessed 12 January 2021.

10 Art 2: <https://www.cnb.avocat.fr/sites/default/files/rin_2020-11-30_consolidefinal.pdf> accessed 12 January 2021.

11 <<https://www.gesetze-im-internet.de/brao/>> accessed 12 January 2021.

These – and other – legal divisions of information focus on the protective function, while defining the framework for handling information generally at a level other than strictly personal. Establishing to which category or categories the information belongs and, consequently, what legal and ethical requirements a lawyer should meet, is a basic condition for proper information security management¹².

2. Information Classification as an Information Security Tool

Information classification can be based on different criteria, depending on its purpose. In general, information division in an organisation refers to the potential consequences of a breach of information confidentiality (understood as a situation where information is disclosed to an unauthorised person). The consequences of such a potential breach may be, in particular, regulatory (in the sense of legal capacity to continue operations in the event of a breach), financial or reputational¹³.

Information classification in an organisation allows for a structured and accountable application of consistent security policies defined at the organisation level for specific classes of information.

However, the processing of information by the Law Firm involves lawyer's liability in a number of aspects. As regards LegalTech tools, that are generally less recognised and require technical competence on the part of a lawyer, the same is required to exercise utmost care in implementing them and ensuring security of use. As we shall see later in this section, failure to exercise due diligence – corresponding to the professional nature of the activity pursued, and of particular social importance – exposes a lawyer to disciplinary liability. The need to demonstrate due diligence (accountability) may be responded to by a security-by-design (or “secure-by-design”) approach.

12 As per clause A 7.2 of Annex A of ISO 27 001, the purpose of information classification is to *ensure that information receives the appropriate level of protection*. For more details, see section Legal Tech vs Data in Organisation.

13 The ISO 31000 standard provides such examples as financial aspects, impact on safety and hygiene, or environmental impact. From the perspective of practising as an attorney at law / advocate, the consequences for the security of professional secrecy and the continuity of providing legal services may be of significant importance. For more information, see section Legal Tech vs Data in Organisation.

The security-by-design approach is used primarily in the context of designing IT solutions¹⁴ or in the broader sense of Enterprise Security Risks Management¹⁵. The security-by-design approach, viewed as such, is a concept to ensure the ongoing management of security risks that change over time, taking into account the specific aspects of an organisation.

Information security management is modelled on the traditional Deming cycle (Plan-Do-Check-Act)¹⁶. However, security-by-design focuses primarily on the **objectives** of the security solutions implemented rather than on the specific tools that provide them, which naturally follow from the objectives and assumptions adopted¹⁷.

As mentioned, the concept of security-by-design refers to the management of security in an organisation; however, some of its assumptions perfectly reflect the suggestions related to the implementation of new LegalTech solutions in an organisation. These assumptions include in particular:

- **Security culture**

Suggestion that the organisation's management constantly build awareness of the importance of safety (tone from the top) and ensure transparent communication about safety standards and expectations.

- **Designing solutions that do not become obsolete over time**

Demand for designing solutions whose main assumptions and structure remain independent of technical methods of achieving the objective, i.e. solutions that are capable of initiating technical solutions rather than those that depend on the existing solutions.

- **Continuous (ongoing) monitoring and improvement**

Suggestion that the process is not aimed at achieving a certain level of security, but rather at achieving and maintaining it, i.e. activities that require flexible adaptation to ongoing changes in external and internal conditions.

The development of LegalTech solutions, due to the importance of the information processed with their use and the associated responsibilities,

14 Cf. Wikipedia, 'Secure by design' <https://en.wikipedia.org/wiki/Secure_by_design> accessed 13 January 2021.

15 Cf. L. Kent Howard, 'Security by Design' (2019) 12(2) *Journal of Physical Security* 1-13.

16 ISO/IEC 27001:2005.

17 Howard (n 15).

requires lawyers using them to understand how such solutions work and what their limitations are¹⁸. The chapter *Legal Tech vs Data in Organisation* further describes the suggested practical model for ensuring secure – from a legal, organisational and technical perspective – implementation and use of LegalTech solutions.

3. Information Processing via LegalTech Tools

The most common applications of LegalTech¹⁹ today primarily include²⁰:

- **e-discovery solutions**; in this context, it seems that the understanding of the term LegalTech is somewhat expanded to include the automated analysis of legal texts not only in relation to court proceedings, especially on the grounds of precedent law, for which such solutions were originally developed, but also to review of documents while providing services relating to due diligence or audit proceedings;
- solutions to support the creation of **standardised and consistent templates for legal documents**;
- **client support tools** – such as platforms that facilitate the purchase of legal services²¹.

From a legal perspective, the purpose of information processing within a solution is of paramount importance. To a large extent, it is the very purpose of the processing that will determine the admissibility of using a particular tool (legal basis to use information from a particular source for a particular purpose), the scope of information used (e.g. obligation to minimise the personal data processed) or the scope of liability related

18 CCBE, *Considerations on the legal aspects of artificial intelligence*, (2020) <https://www.ccbe.eu/fileadmin/speciality_distribution/public/documents/IT_LAW/ITL_Guides_recommendations/EN_ITL_20200220_CCBE-considerations-on-the-Legal-Aspects-of-AI.pdf> accessed 12 January 2021.

19 Because of the profile, the use of LegalTech tools in court has been omitted; interesting conclusions on the topic are available in the study entitled CCBE (n 18).

20 CCBE Considerations (n 18).

21 Solutions that enable the client-consumer to resolve legal issues on their own (directly), without lawyer's assistance, are sometimes placed outside the concept of LegalTech, and are classified in a separate category: LawTech [cf. Susana Navas, 'LegalTech Services and the Digital Content and Digital Services Directive', 6<https://www.academia.edu/44791640/LegalTech_Services_and_the_Digital_Content_and_Digital_Services_Directive> accessed 12 January 2021.

to the processing (liability regime related to personal data, liability for ensuring the confidentiality of business or professional secrecy).

4. Liability for Data Security

A lawyer's liability for the consequences of an information security breach (in particular, its loss or disclosure to unauthorised persons) may be considered on civil, administrative, criminal and disciplinary grounds.

Civil law and administrative law solutions related to data breaches are relatively uniform across the EU countries since they are governed, to a considerable extent, by a regulation of the Council and the European Parliament. The GDPR provides for both the possibility of imposing financial administrative sanctions by the competent supervisory authority, both financial (Article 83 GDPR) and non-financial sanctions (reprimand, order for specific action – Article 58 GDPR).

In turn, Article 82 GDPR concerns the possibility for an individual who has suffered damage relating to a breach to bring a claim for damages against the data controller or processor. Damage is understood here in a broad sense and includes both material and non-material damage²².

Detailed rules for pursuing claims are governed by national legislation, providing for interesting derogations in certain cases. As an illustration, the French law on information processing, data filing systems and related freedoms²³ provides in its Article 37 the possibility for a class action (*action de groupe*) to be brought by all persons affected by a similar type of damage resulting from the same breach of data protection rules. In turn, the provisions of Polish law explicitly exclude the vast majority of claims for infringement of personal interests from class actions, which will effectively exclude some personal data claims²⁴.

22 Gabriela Zanfır-Fortuna, 'Commentary to Article 82' in Christopher Kuner, Lee A. Bygrave, Christopher Docksey (eds) *The EU General Data Protection Regulation (GDPR). A Commentary* (OUP 2020) 1175.

23 1978, La loi relative à l'informatique, aux fichiers et aux libertés n° 78-17 du 6 janvier 1978, <www.legifrance.gouv.fr/loda/id/JORFTEXT000000886460/2021-01-12/> accessed 12 January 2021.

24 Cf. Article 1(2a), Act on Pursuing Claims in Class Actions, Journal of Laws of 2020, item 446, in conjunction with Article 92, Act on the Protection of Personal Data, i.e. Journal of Laws of 2019, item 1781; it is worth mentioning here that the Polish Supreme Court generally accepts that the protection of personal data and personal interests constitute two separate protection regimes, which, however, may overlap in certain cases (cf. B. Łukańko, Uchybienie przepisom o ochronie

This naturally begs for the question regarding the extent of a lawyer's (Law Firm's) civil liability for damages caused by the use of LegalTech tools.

As it has already been mentioned, currently the most common Legal-Tech solutions used in law firms are tools supporting legal research and simple analytics. Potential damage caused by the malfunction of such tools would therefore be extremely difficult to prove, both in terms of causation and amount.

However, as the complexity of the solutions increases, the issue of liability for such damage will become increasingly important – it is enough to imagine relying on automated solutions for drafting pleadings, deciding on pleading strategy or reviewing a particular judge's decisions.

In this context, leading proposals are currently being identified to regulate the liability regime as either (1) tort liability based on fault or (2) strict liability based on, similar to a dangerous product liability regime²⁵. This issue goes beyond the limits of this paper; however, it is worth bearing in mind that it should be resolved taking into account issues such as a lawyer's duty of care. In the case of a lawyer, such care should extend to the entire process of implementing and using LegalTech solutions, from reviewing and classifying the information processed by their use, through estimating the risk associated with implementing the solution, appropriate training, to deciding how to work with those involved in the information processing.

From the perspective of these considerations, it is also necessary to mention the consequences related to the breach of security of not so much personal data, but rather of information constituting professional secrecy (attorney at law's or advocate's secrecy), consisting in its loss or compromise to its confidentiality or integrity. Given the definition of professional secrecy, which is uniformly extremely broad, the vast majority of personal data breaches generally also amount to breaches of professional secrecy. The data protection regime shall be complementary to the duty of confidentiality²⁶.

Breach of professional secrecy primarily gives rise to a lawyer's disciplinary and criminal liability.

danych osobowych jako naruszenie dobra osobistego – analiza na przykładzie orzecznictwa Sądu Najwyższego (2016) 46 UWM, *Studia Prawnoustrojowe*, .

25 CCBE Considerations (18) 25; cf. Martin Ebers, Susana Navas, *Algorithms and law* (UCL 2020).

26 CCBE Considerations (18) 33.

Professional secrecy is one of the key ethical principles and the essence of a lawyer's activity (cf. section 2.3.1. of the Code of Conduct for European Lawyers) and lies at the core of a lawyer's ethical obligations²⁷. It is accepted that *professional secrecy is an interest in itself, as an element of the proper and ethical exercise of the profession*²⁸, and even that it is an intrinsic condition of the exercise of a legal profession²⁹. The obligation to preserve professional secrecy implies an obligation to apply appropriate security measures in connection with the processing of information subject to it³⁰. Consequently, a breach of professional secrecy (especially involving the unauthorised disclosure of information covered by secrecy) is therefore one of the most serious disciplinary offences.

5. France

Violation of legal and professional rules (including the rules of advocates' code of conduct) may result in disciplinary proceedings³¹. Potential sanctions include, in the first place, a notice, a reprimand, temporary suspension of licence to practise law and, ultimately, disbarment.

Breach of professional secrecy as such is furthermore a criminal offence. Pursuant to 226-13 of the French Criminal Code³², disclosure of information covered by professional secrecy by a person in possession of such information, whether by virtue of a legal provision or their function, is punishable by imprisonment or a fine of up to EUR 15,000. The manner or circumstances in which the secret is disclosed are irrelevant, unless one of the exceptions set out in Article 226-14 of the Code applies.

27 *ibid.*

28 SDI 32/12, Polish Supreme Court judgement of 15 November 2012.

29 <https://actu.dalloz-etudiant.fr/fileadmin/actualites/pdfs/Porteron-AJ_Penal_-04052010.pdf> accessed 27 January 2021.

30 WO-106/19; Judgement of the Polish Higher Disciplinary Court of the National Bar Association of Attorneys at Law of 23 October 2019.

31 Décret n°91-1197 du 27 novembre 1991 organisant la profession d'avocat, <<https://www.legifrance.gouv.fr/loda/id/JORFTEXT000000356568/2021-01-13/>> accessed 13 January 2021, Article 183.

32 Code penal, <<https://www.legifrance.gouv.fr/codes/id/LEGIARTI000006417945/2012-12-11/>> accessed 13 January 2021.

6. Poland

The disciplinary liability of attorneys at law and advocates is set out in the Act on Attorneys at Law³³ and the Act on Advocates³⁴, respectively. The disciplinary court may sanction an attorney at law or an advocate sanctions such as a notice, a reprimand, a fine, as well as suspend their licence to practise law or disbar them.

The Polish Criminal Code addresses the issue in a similar manner, albeit to a broader extent. Article 266 of the Criminal Code provides for a fine, a community sentence or a sentence of imprisonment for a maximum term of two years, both in the case of unauthorised disclosure and **use** of information entrusted in connection with the performance of a function or activity.

7. Germany

The German Act on the Legal Profession provides for disciplinary liability for breach of duties under the Act (Article 113 BRAO). Confidentiality obligations are further underlined in the Rules of Professional Practice (Berufsordnung für Rechtsanwälte, BORA)³⁵, in its Article 2. Potential sanctions for violations of the rules of conduct include, in particular, a notice, a reprimand, a fine, suspension of a licence to practise law and disbarment (Article 114 BRAO).

Finally, the German Criminal Code (Strafgesetzbuch, StGb)³⁶ provides for a sentence of imprisonment for a maximum term of one year or a fine if information entrusted to the holder of a secret is disclosed in connection with his or her function or profession (Article 203 StGb). Lawyers (Rechtsanwälts) are explicitly referred to in the provision as falling within the subjective scope of the legal norm. It is worth noting here that Article 203 StGb clearly excludes sanctions for the disclosure of information covered by the service provider's secrecy if such provider's participation is necessary for the performance of certain professional activities.

33 The Act on Attorneys at Law, Journal of Laws of 2020, item 75, chapter 6.

34 The Act on Advocates, Journal of Laws of 2020, item 1651, chapter VIII.

35 <https://www.ccbe.eu/fileadmin/speciality_distribution/public/documents/National_Regulations/DEON_National_CoC/EN_Germany_BORA_Rules_of_Professional_Practice.pdf> accessed 13 January 2021.

36 <<https://www.gesetze-im-internet.de/stgb>> accessed 13 January 2021.

8. Conclusion

LegalTech tools significantly contribute to making a lawyer's work simpler. When properly applied, they also improve the quality of work and, consequently, of legal services provided to clients.

Implementation of LegalTech technical solutions requires a lawyer to exercise due diligence appropriate to the profession (professional due diligence), including, in particular, to have a good capture of the tool's functionality, risk analysis and identification of risk mitigation methods. These activities should be implemented in a way that ensures accountability at every stage of the process.

Indeed, a lawyer should be mindful of the core values of the profession, i.e. protection of professional secrecy and promotion of trust between client and lawyer. Failure to comply with the fundamental obligations in terms of risk assessment and ensuring the security of processed information, coupled with compromising core values associated with the practice of the profession, may trigger a lawyer's liability – both civil liability for damages and liability under corporate control (disciplinary liability). In certain cases, a lawyer may also be held criminally liable.

LegalTech Insurance¹

Kamil Szpyt

„With great power there must also come great responsibility”
– Stan Lee²

1. Introduction

It is undoubtedly rare to begin considerations in the field of legal sciences with a quotation derived from the world of pop culture. At the same time, this maxim, although somewhat pompous, perfectly complements the thesis underlying this study. Moreover, since almost all of the articles contained in the present paper deal with issues that would have been considered pure science fiction only ten or twenty years ago, a slight reference to the realm of fantasy seems very appropriate here.

Coming of the crux of the matter: an analysis of press releases, popular science texts and even the majority of contemporary scientific publications may sometimes lead to the conclusion that LegalTech is an ointment without even one fly. It is almost always presented in glowing terms, with a long list of benefits that it brings not only to representatives of the legal sector, but also to all entities forced, to a greater or lesser extent, to seek assistance of lawyers³. Thanks to Legal Tech, the work of attorneys, notaries, legal department employees, etc. will ultimately become easier, faster, more efficient, and what is more, its quality will significantly increase.

The chances for the above vision to come true are undoubtedly high. However, one can get the impression that its proponents often completely ignore or disregard all (often serious) risks related to the introduction

-
- 1 The research was financed from the funds earmarked for Statutory Activities of the Faculty WPAiSM/PRAWO/SUB/10/2020.
 - 2 <https://archive.org/details/Amazing_Fantasy_vol1_15_201607/page/n13/mode/2up> accessed 25 April 2021.
 - 3 See Jolanto Ojczyk, ‘LegalTech to nieunikniona przyszłość prawników’ <www.prawo.pl/prawnicy-sady/legaltech-day-podsumowanie,503668.html> accessed 25 April 2021.

of new IT solutions, such as increased risk of data being stolen by hackers from a poorly secured cloud or data loss due to failure of outdated software. There is never a hundred percent certainty that even the best solutions will not fail and the strongest security measures will not be broken. All the more so that LegalTech includes not only products of leading IT companies that meet demanding standards, but also - very often - debuting or even experimental software created by small start-ups or cheaper and more modest substitutes for computer programs offered by larger providers. We should not forget about the weakest link - people. Often untrained, tired and susceptible to manipulation⁴.

According to the research conducted by BlueVoyant, in 2020 there was a surge in hacking attacks on law firms⁵ and it seems that in 2021 this trend will not slow down at all⁶. This should come as no surprise, by the way - the legal sector has been among the top five sectors most attacked by cybercriminals for several years⁷.

And here the question arises: are lawyers prepared for the worst possible scenario? That is, a situation in which, due to a lack of due diligence or as a result of sheer bad luck, confidential data of clients, contractors or the attacked party itself is lost/modified/disclosed, or the entire IT infrastructure of a law firm becomes blocked/destroyed? Undoubtedly, the consequences of such an incident can be truly dramatic: long-term paralysis of the law firm's operations, tarnished reputation that has been built up over the years, as well as enormous financial losses, including the costs of damages and administrative penalties.

4 Mitnick Security, 'The weakest link in safety is still man. Kevin Mitnick showed us how to outsmart us' <www.mitnicksecurity.com/in-the-news/the-weakest-link-in-safety-is-still-man.-kevin-mitnick-showed-us-how-to-outsmart-us> accessed 25 April 2021.

5 Krzysztof Sobczak, 'Coraz więcej cyberataków na firmy prawnicze' <<https://www.prawo.pl/prawnicy-sady/cyberbezpieczenstwo-coraz-wiecej-atakow-na-firmy-prawnicze,505642.html>> accessed 25 April 2021.

6 See Anita Błaszczak, 'Cyberprzestępczość: 2021 będzie rokiem wymuszeń w Internecie' <www.rp.pl/Biznes/201209783-Cyberprzestepczosc-2021-bedzie-rokiem-wymuszen-w-Internecie.html> accessed 25 April 2021.

7 Others are: medical industry, financial services, manufacturing and production, and government institutions; see: Dariusz Włodarczyk, 'Bezpieczny przedsiębiorca' (2018) 6 Miesięcznik Ubezpieczeniowy 87.

One of the basic preventive measures in this situation is taking out an appropriate insurance⁸. Its aim is to transfer the risk of negative financial consequences of the above-mentioned event to a third party, dealing professionally with such risk. The question is, whether the solutions used in this area for years are equally valid in today's reality - in the era of widespread use of new technologies in the legal sector? The present study aims to find an answer to this question

2. Insurance in the Legal Sector - Past, Present and Future

2.1. The Past - Professional Liability Insurance

Starting the consideration on insurance in law firms, it should be noted that it has become somewhat of a standard over the years that the lawyers running their own law firms have limited themselves to purchase only professional liability insurance. This type of insurance is intended for people who perform professions requiring high degree of specialization and carrying a risk of significant damage as a result of performing professional activities (both acts and omissions). This group, of course, includes virtually all legal professions whose representatives associate in self-governing bodies and operate in the free market, such as: attorneys, legal advisors, tax advisors, bailiffs⁹, notaries and patent attorneys. Significantly, in many EU countries there is now an obligation for all or selected members of the a/m professions to take out compulsory professional indemnity insurance as a condition of lawful provision of services¹⁰. This is the case, for example, in

8 See more on the protective function of insurance: Malwina Lemkowska, 'Funkcje ubezpieczeń gospodarczych a zrównoważony rozwój' (2020) 2 Wiadomości Ubezpieczeniowe 50.

9 It seems that in the opinion of some people, the inclusion of the bailiff, who is - de facto - a public official, in the group of legal professions whose representatives operate in the free market, may arouse some controversy. However, looking at the issue from the practical, rather than merely doctrinal, perspective, such classification is - in principle - fully justified (at least in some EU countries, e.g. Poland).

10 Compulsory insurance is required for attorneys practicing in countries such as Italy, Spain, Germany, England, and Wales, among others; see Xymena Dyduch, *Zawód adwokata (abogado) w Hiszpanii*, in Michał Masiór (ed), *Analiza prawnoporównawcza ustroju korporacyjnego wolnych zawodów prawniczych oraz rynku usług prawniczych w wybranych państwach, w kontekście regulacji i rynku w Polsce z uwzględnieniem dostępności obywateli do tych usług* (Instytut Wymiaru Sprawii

Poland, Spain, Germany and Italy. It should also be noted that the Polish legal system does not provide for such an obligation for law graduates who do not belong to any of the above mentioned professional self-governments¹¹.

In practice, the aforementioned insurance serves to protect lawyers from the negative financial consequences of mistakes made at the stage of conducting court cases (e.g. failure to meet the deadline for lodging an appeal) or providing legal advice (e.g. indicating a solution based on outdated legal status)¹² and related to potential liability for damages. Over the years, this model of insurance has worked well, providing both lawyers and their clients with a relative sense of security.

However, with the increasing use of new technologies in the legal sector, especially LegalTech solutions, this situation has begun to change. To indicate its background, it is first necessary to clarify that in the activity of a law firm one can distinguish, so to speak, two areas within which an incident causing damage to a third party may occur:

edliwości 2018) 91 < <https://iws.gov.pl/wp-content/uploads/2018/08/IWS-Masior-M.-i-inni-Wolne-zawody-prawnicze.pdf> accessed 25 April 2021; Michał Masior, *Wolne zawody prawnicze w Anglii i Walii oraz reforma ich regulacji*, 1. w Michał. Masior (ed) *Analiza prawno-porównawcza ustroju korporacyjnego wolnych zawodów prawniczych oraz rynku usług prawniczych w wybranych państwach, w kontekście regulacji i rynku w Polsce z uwzględnieniem dostępności obywateli do tych usług*, (Instytut Wymiaru Sprawiedliwości 2018) <<https://iws.gov.pl/wp-content/uploads/2018/08/IWS-Masior-M.-i-inni-Wolne-zawody-prawnicze.pdf> accessed 25 April 2021 138.

- 11 Therefore, for the sake of clarity, in the following part of the article, when reference is made to law firms, it will only refer to firms run by representatives of one of the indicated professions (attorneys, bailiffs, notaries, etc.), whereas when reference is made to lawyers, it will refer to lawyers associated in one of the indicated professional self-governments, and not to graduates of law schools without professional qualifications. It should also be noted that, in the case of patent attorneys, referring to all members of the profession as lawyers may raise some doubts, since the law allows to practice this profession also persons with other, yet useful, education (economists, administrators, chemists, etc.). Nevertheless, taking into account that these persons are entitled to represent clients both in court proceedings and in administrative proceedings before appropriate state or EU bodies dealing with IP issues, a similar abbreviation seems acceptable.
- 12 For more on the civil liability of professional attorneys see Andrzej Rościszewski, *Odpowiedzialność cywilna adwokatów* (2014) 10 *Palestra* 7; Magdalena Bieluk, *Cywilnoprawna odpowiedzialność profesjonalnego pełnomocnika za błąd* (Uniwersytet w Białymstoku 2019) *passim*, <https://repozytorium.uwb.edu.pl/jspu/bitstream/11320/8734/1/M_Bieluk_Cywilnoprawna_odpowiedzialnosc_profesjonalnego_pelnomocnika_z_blad.pdf accessed 25 April 2021.

- 1) substantive - related to irregularities, already mentioned above, and resulting from the lawyers' negligence or lack of necessary competence in the scope of their legal practice;
- 2) technical¹³ - concerning all kinds of failures in the duty to ensure security of the processed data, including document storage - disclosure of confidential information to an unauthorized third party (e.g. as a result of sending an unencrypted e-mail to the wrong addressee) can be indicated here as an example¹⁴.

As recently as a few or a dozen or so years ago, the predominant risk was that errors would occur in the substantive area. Technical incidents were relatively rare and were usually related to the carelessness of lawyers or their employees, which manifested itself, for example, in losing case files during their relocation. The introduction of new technologies, especially LegalTech solutions, into everyday work in law firms seems to reverse these proportions. On the one hand, lawyers gain new tools to support their competencies and improve the quality of their services: legal information systems equipped with letter templates and case law compasses, computer programs that check the content of a contract, or even systems based on artificial intelligence that can predict the outcome of a future lawsuit. As a result, the number of substantive mistakes will undoubtedly decrease over time. On the other hand, lawyers often lack elementary knowledge of cybersecurity and make cardinal mistakes in this area, e.g., using computers with outdated operating systems, unprotected with anti-virus software, or using commercial email providers' services that are not adapted to the requirements of the legal industry¹⁵. And we are discussing only some basic IT tools. If we couple this with the constant improvement of methods used by hackers to break through security measures, it turns out that in the coming years, the probability of stealing poorly protected client data will be several (dozen / several dozen?) times greater than the

13 See Christian Zimmermann, 'Legal Tech – Vielfalt der Anwendungen und richtige Haftungsversorgung', 815 <<https://anwaltsblatt.anwaltverein.de/files/anwaltsblatt.de/anwaltsblatt-online/2019-815.pdf>> accessed 25 April 2021.

14 Of course, such an outlined division can hardly be considered rigid. In some cases, such as those involving the disclosure of professional secrets, it seems that similar incidents can be classified as both substantive and technical, or their nature changes over time and shifts from one to the other.

15 On the practical aspects of securing data in a law firm see Dariusz Szostek (ed), *Bezpieczeństwo danych i IT w kancelarii prawnej radcowskiej/adwokackiej/notarialnej/komorniczej. Czyli jak bezpiecznie przechowywać dane w kancelarii prawnej* (Wydawnictwo C.H.Beck 2018).

risk of an attorney at law bringing an action based on a legal basis that is no longer valid. We should also add the risk of a long-term downtime in the law firm's operations due to IT system interference, or even the need to recreate the collected data in case of encryption thereof¹⁶.

In the light of the foregoing, the question arises whether traditional professional liability insurances are able to protect law firms from the negative consequences of such attacks. Some of them are, to a certain limited extent. For example, professional liability insurance offered by AXA Ubezpieczenia Towarzystwo Ubezpieczeń i Reasekuracji S.A. covers, among others, damage caused by improper edition of documents, as well as loss, distortion, damage and improper transmission of information (including by electronic means), as well as damage resulting from hacking into the insured entity's computer system by a third party¹⁷. However, in general insurance terms and conditions of a similar product offered by Aviva Towarzystwo Ubezpieczeń Ogólnych S.A., there is an exclusion stating that the insurer is not liable for data loss¹⁸. In other words, protection against the aforementioned damages is by no means an obligatory element of such insurance and its provision will always depend on the content of a specific agreement as well as general insurance terms and conditions.

Incidentally, it is worth mentioning that the situation will be no better for any entities established by (and associating) lawyers who do not belong to any of the above-mentioned self-governments. Similar entities, most often functioning in the form of limited liability companies (e.g. insurance claim and debt collection law firms), in practice usually take out liability

16 Of course, it is important to mention that not all incidents of a technical nature will be the responsibility of the law firm and its affiliated lawyers. One should not forget about mistakes made by IT entities providing services to the law firm, e.g. in the form of a cloud solution. In such a situation, they will be held liable, possibly - in their place - the insurer. It is worth mentioning that representatives of the aforementioned industry usually use IT liability insurance dedicated to them.

17 Paragraph 1 Section 3 'Warunki Ubezpieczenia. Ubezpieczenie odpowiedzialności cywilnej zawodowej' <www.uniqa.pl/fileadmin/produkty/centrum_klienta/dokumenty/540_WU.pdf> accessed 25 April 2021; currently AXA Ubezpieczenia Towarzystwo Ubezpieczeń i Reasekuracji S.A. merged with UNIQA Towarzystwo Ubezpieczeń S.A.

18 Pkt 10.5 'Ogólne Warunki Ubezpieczenia odpowiedzialności cywilnej z tytułu wykonywania zawodu' <<https://www.aviva.pl/ubezpieczenia-dla-firm/ubezpieczenia-korporacyjne/ubezpieczenia-OC-zawodowe/ubezpieczenie-OC-zawodowe>> accessed 25 April 2021.

insurance for the conducted business activity. As a rule, it does not provide for the possibility of covering the risk of data loss or hacking attack¹⁹.

However, returning to the issue of professional liability insurance: in view of the findings to date, it is undoubtedly necessary to increase the awareness of lawyers, so that when taking out professional liability insurance, they would choose those policies which also cover the above-mentioned damages²⁰. At the same time, it is difficult to hide the fact that even this solution will be insufficient. Civil liability insurance, by its nature, covers only damage suffered by third parties, not the entities insured themselves. Therefore it does not cover such negative consequences as the need for a law firm to restore lost data, secure the system or pay administrative fines. The costs of these activities may also exceed the law firm's financial capabilities. Thus, it can be assumed that, although professional liability insurance is an indispensable element of any lawyer's business, it should be complemented by insurance that provides protection also for the damages incurred by the law firm itself.

And here comes the key issue: what kind of insurance should it be? Even a cursory analysis of the market will show that there is no insurance dedicated to LegalTech solutions. At least - for the time being. It is another matter whether it is really needed when its role is played by so called cyber risk insurance. And it is cyber risk insurance that will be discussed in the next subchapter.

2.2. The Present - Cyber Risk Insurance

Cyber risk insurance is also often referred to as cyber insurance²¹ or data insurance²². The latter term is inaccurate, as these insurance policies some-

19 'Cyber ubezpieczenia a inne polisy' <<https://broker.andiw.pl/cyber-ubezpieczenie-broker-ubezpieczeniowy-ubezpieczenie-cybernetyczne/>> accessed 25 April 2021.

20 This is assuming, of course, that they have a say in the matter. For it may be that in a particular state or law corporation, insurance for lawyers affiliated with the self-regulatory body is negotiated and purchased by its governing body.

21 See Christian Zimmermann (13) 816.

22 Sometimes they are even colloquially referred to as GDPR "insurance" or "GDPR risk insurance", which is supposed to refer to GDPR. This should not come as a surprise as the coming into force of the aforementioned legal act was undoubtedly a strong impulse for cyber risk insurance market development. Therefore, even in the offers of some insurers, one may come across "special treatment" of personal data issues. As an example, we can mention the "CYBER GUARD" insurance of Colonnade Insurance S.A. (admittedly described in the general conditions of in-

times cover incidents that have little to do with data breaches, such as the publication of material on a website infringing a third party's copyright²³.

Consideration on the subject of insurance should begin with an explanation of what this “cyber risk” really is. Contrary to appearances, it is not that simple. This is because at the current stage the term “cyber risk” has neither legal, nor a commonly accepted definition²⁴. Among the many definitions present in the literature, the one proposed by The Geneva Association is worth mentioning, according to which the a/m term means any risk resulting from the use of information and communication technologies, which assumes confidentiality, availability and integrity of data or services²⁵.

The source of loss in the aforementioned insurances can be primarily:

- 1) an intentional external attack (e.g. hacking into an IT system by a hacker);
- 2) intentional internal attack (e.g. transfer of data by disloyal employee);
- 3) accidental losses (e.g. human error - mistaken deletion of data, loss or destruction of data carrier)²⁶.

surance as “liability insurance for incorrect handling of information”, but actually being insurance against cyber risks). The product in question is available in two variants: a broader one (covering the full catalog of cyber risks) and a narrower one (covering only the issue of personal data law breach - “RODO GUARD”). This clearly proves that in the opinion of the insurance company the second issue may be much more important for the clients and therefore it is justified to purchase insurance variant limited only to it; see ‘CYBER GUARD. Ogólne warunki ubezpieczenia odpowiedzialności za nieprawidłowe postępowanie z informacją’ <https://colonnade.pl/files/file_items/Og%C3%B3lne%20warunki%20ubezpieczenia%20CYBER%20GUARD%2025.05.18_0.pdf> accessed 25 April 2021 and ‘RODO GUARD. Ogólne warunki ubezpieczenia odpowiedzialności za dane osobowe’ <https://colonnade.pl/files/file_items/Og%C3%B3lne%20warunki%20ubezpieczenia%20RODO%20GUARD%2017.06.19.pdf> accessed 25 April 2021.

23 ‘Cyber ubezpieczenia a inne polisy’ <<https://broker.andiwi.pl/cyber-ubezpieczenie-broker-ubezpieczeniowy-ubezpieczenie-cybernetyczne/>> accessed 25 April 2021.

24 See Katarzyna Malinowska, ‘Aspekty prawne ubezpieczenia cyber ryzyk’ (2018) 2 Prawo Asekuracyjne 16.

25 The Geneva Association, ‘Ten key questions on Cyber Risk and Cyber Risk Insurance’, 12, <https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public/cyber-risk-10_key_questions.pdf> accessed 25 April 2021.

26 Simon Cooper, *Cyber Insurance*, w: Peter Rogan (ed.), *The Insurance and Reinsurance Law Review* (Law Business Research Ltd 2020), <<https://thelawreviews.co.uk/title/the-insurance-and-reinsurance-law-review/editors-preface>> accessed 25 April 2021; another common, dichotomous division is: by source (external

The literature indicates that for a long time the protection against cyber risks was partly provided by other types of insurance: property insurance²⁷, business interruption insurance²⁸, general liability insurance and professional liability insurance. However, as the aforementioned insurances were not constructed strictly in order to protect against the negative effects of cyber risk, despite some substantive compatibility, their scope was not adjusted to the specificity of the risk, which resulted in exclusion of the insurer's liability in case of the most critical episodes²⁹. As a result, even now the scope of cyber risk insurance may overlap with other types of insurance, but it will concern only small parts³⁰.

Cyber risk insurance as a separate product in many countries (including Poland) is still developing and trying to gain more popularity. In other countries it has been appreciated and used more widely for years (e.g. USA)³¹. Cyber risk insurance should undoubtedly be classified as property insurance, however, it is not possible at the moment to point out one main model of its construction. Although some unification is taking place, it is still quite a diverse insurance of a complex nature. In more general terms it can be stated that the protection covers both civil liability as well as own costs incurred by the insured in connection with an incident. To be more specific, cyber risk insurance usually consists of several segments/sections, among which the following can be pointed out as the most important ones:

- 1) civil liability related to violation of the right to privacy and personal data - including, in particular, the costs of damages and compensation for the disclosure or loss of personal data, as well as other forms of violations of privacy³². In addition to this, the said section should also

and internal) and by cause (intentional attack and negligence of the insured/his employee).

27 On property insurance see Bartosz Kucharski, *Świadczenie ubezpieczyciela w umowie ubezpieczenia mienia* (Wolters Kluwer 2019).

28 On business interruption insurance see Jerzy Sawicki, 'Ubezpieczenie Business Interruption (BI) jako zabezpieczenie przyszłych dochodów przedsiębiorstwa' (2008) 7 *Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania*. 37–48; Agnieszka Szewczuk, 'Business interruption: ewolucja kompleksowego programu ubezpieczeniowego dla sektora małych i średnich przedsiębiorstw' (2010) 50 *Ekonomiczne Problemy Usług* 521–528.

29 Malinowska (n 24) 22.

30 Cyber ubezpieczenia a inne polisy' (n 23).

31 Michał Mołęda, 'Cyber is the new black' (2018) 6 *Miesięcznik Ubezpieczeniowy* 80.

32 ibid 81.

include, among other things, the costs of notifying the affected persons of the incident, removing their data from the network and the costs of restoring the removed data³³;

- 2) administrative penalties - one of the most important and highest rated elements of this type of insurance. As you can easily guess, it will be applied mainly to administrative penalties imposed for violation of data protection regulations. Therefore, as it was already mentioned in the footnote, in practice the market offers products that are a “sliver” of the full cyber risk insurance and cover only the above mentioned area (e.g. “CYBER GUARD Colonnade Insurance S.A.”);
- 3) the costs of IT incident handling activities - these costs usually refer to acting on three levels and providing assistance in three different areas: IT, legal and public relations. The insurance may either cover the costs of using specialist service in these areas chosen by the insured or provide assistance of entities cooperating with the insurer on a permanent basis³⁴. This section is extremely important as it is often both very difficult and expensive for the insured to find similar ad hoc assistance. The IT team may be requested, for example, to analyze whether the encrypted data can be recovered, or whether it is “worth” recovering, or whether it would be cheaper to pay the ransom. When it comes to the legal team, the question may arise whether law firms will actually be interested in using “external” lawyers. After all, they should have their own employees with the necessary expertise in this area. That is, by all means, a major fallacy, which can be supported by three arguments. Namely: the support provided by such teams provides an appropriate distance to the conducted case (due to the fact that it does not concern the lawyers personally), specialist knowledge (since the attack could have taken place, for example, on a law firm specialized in tax or family law, whose representatives do not have the slightest knowledge of the potential legal consequences of cyberattacks), as well as own equipment, i.e. computers, legal programs, etc. (this is especially important when the attack took place on a law firm specialized in

33 *ibid.*

34 Of course, this is not a closed catalog. Some insurances (e.g. Cyber ERM 2 offered by Chubb Limited) provide, for example, the assistance of an investigator or a credit specialist (usually - for a specified period of time), who is to advise no longer the insured person himself, but individuals whose data has been disclosed as a result of a cyber-attack; see 3.17 Letter G Ogólne warunki ubezpieczenia <www.chubb.com/content/dam/chubb-sites/chubb-com/pl-pl/products/cyber/documents/pdf/owu-cyber.pdf> accessed 25 April 2021.

tax law). This is particularly important when a law firm's IT system has been hacked and locked/encrypted);

- 4) civil liability related to the operation of an IT system - theoretically, the scope of this segment coincides with that of section 1); in practice, however, it may concern damages reaching far beyond the sheer data leakage. As an example, a client's or contracting party's computer may be infected with incoming files, which may result in incurring costs of using an IT specialist (which will no longer be the law firm's self-inflicted damage, but third party's)³⁵;
- 5) multimedia liability - this segment deals with liability coverage for publications through electronic means (e.g., websites, social media or intranet)³⁶;
- 6) ransomware costs in case of cyber extortion - the insurer's ability to cover ransomware costs is usually subject to the insurer's prior approval. This is usually preceded by a process of analysis of a specific situation by the already mentioned IT team, which verifies whether in a given case an "honourable" hacker group is behind the attack (i.e. a group which, having received the demanded money, will provide a program to decode data) or not (i.e. a group which will not fulfill its part of the "agreement" and the money spent on the ransom will be wasted). Usually, the payment of the ransom is realized in one of the cryptocurrencies³⁷;
- 7) costs of data restoration and downtime costs - in this case we are no longer talking about the data of third parties (e.g. clients), but the data of the law firm itself. Moreover, the said section also covers downtime costs related to the fact that e.g. malware overloaded the servers³⁸.

Of course, this type of insurance does not cover all damages. As almost every type of insurance, it involves a number of exclusions. The most common exclusions are usually related to the negligence of the insured entity in applying appropriate information system protection rules (principles):

35 Michał Molęda (n 23) 82.

36 *ibid.*

37 More about the issue of cryptocurrencies and related legal issues see Paweł Opilek, 'Kryptowaluty jako przedmiot zabezpieczenia i poręczenia majątkowego' (2017) 6 *Prokuratura i Prawo* 36–59; Krzysztof Markowski, 'Kryptowaluty. Powstanie-typologia-charakterystyka' (2019) 3 *Civitas et Lex* 69–82

38 See the similar systematics proposed by Michał Molęda (Michał Molęda (n 31) 81).

- 1) failure to encrypt data that has been lost;
- 2) storing data on a device that was not equipped with appropriate security software (especially anti-virus software);
- 3) lack of care for infrastructure, i.e., use of outdated devices, improperly enabled/connected;
- 4) lack of software updates³⁹.

The exclusion most often will also cover data loss resulting from cyber-terrorist activities⁴⁰.

In the light of the above considerations, it should be said that the pandemic and the associated progressive digitization as well as transfer of activities to the network will undoubtedly increase the interest in cyber risk insurance in all industries. At the same time, it is the legal industry, so keen to move with the times and use LegalTech solutions in its business, that should be among the first to become interested in cyber risk insurance. This solution may bring numerous benefits. First and foremost, it allows for faster engagement of appropriate financial means and substantive support, which - perhaps - would not be immediately available to a particular law firm, and which will allow to minimize or completely eliminate the negative effects of a cyber incident⁴¹. Additionally, and also noteworthy, the insurance itself to some extent also increases the security of data in a law firm. In many cases, the policyholder will have to meet a number of strict conditions regarding, among others, data security, employee training, etc. in order to be able to enter into the agreement and - in the event of an incident - benefit from the insurance. This forces the policyholder to be extra diligent in this regard⁴².

To sum up: it seems that cyber risk insurance should become an obligatory element of "equipment" for law firms that want to use LegalTech solutions in a really responsible and professional way.

39 See Paragraph 9 Section 7 'Ogólne Warunki Ubezpieczenia od Ryzyk Cybernetycznych' - insurance offered by Sopockie Towarzystwo Ubezpieczeń ERGO Hestia S.A <<http://cyberochrona.ergohestia.pl/wp-content/uploads/2015/10/OG%C3%93LNE-WARUNKI-UBEZPIECZENIA-OD-RYZYK-CYBERNETYCZNYCH2.pdf>> accessed 25th April 2021.

40 See Jacek Zębała, 'Wybrane problemy ubezpieczeń cyber risk' (2018) 6 Monitor Ubezpieczeniowy 85.

41 *ibid.*

42 We are dealing with an analogous situation, e.g. in the case of car insurance, in which one of the conditions for the payment of compensation for a stolen vehicle may be the proof of parking the car in a guarded parking lot.

2.3. The Future - Civil Liability Insurance of Artificial Intelligence System Operator

A certain part of LegalTech solutions is based on - more or less - advanced artificial intelligence systems. Therefore, when writing about insurance in LegalTech, one cannot fail to mention the planned introduction of a new, mandatory civil liability insurance provided for artificial intelligence (AI) operators. The enactment of this type of insurance is stipulated by the draft regulation annexed to the Resolution of the European Parliament of 20.10.2020 with recommendations to the Commission on the system of civil liability for artificial intelligence [2020/2014(INL)]⁴³. This act, entitled Regulation of the European Parliament and of the Council on liability for the operation of Artificial Intelligence-systems, would be intended to unify the rules of liability and insurance of AI within the EU. For the purposes of the a/m act, the European Parliament provided a new definition of an AI system, according to which it is a system that is based on software (possibly embedded in a device), that exhibits behavior simulating intelligence (i.a. by collecting and processing data, analyzing and drawing conclusions regarding the environment) and takes actions which are autonomous to a certain extent, aiming to achieve a specific goal.

The draft regulation distinguishes between two types of AI systems: high-risk and high-risk-free. “High risk” is understood as “a significant potential in an autonomously operating AI-system to cause harm or damage to one or more persons in a manner that is random and goes beyond what can reasonably be expected”, whereby “the significance of the potential depends on the interplay between the severity of possible harm or damage, the degree of autonomy of decision-making, the likelihood that the risk materializes and the manner and the context in which the AI-system is being used”⁴⁴.

According to the draft regulation, the operator of a high-risk AI system should be liable on a strict liability basis for any damage caused by a physical or virtual operation, a physical or virtual operation of a device, or a physical or virtual process using an artificial intelligence system, while an operator of an AI system that is not a high-risk system should be held liable on the basis of presumed guilt.

43 <https://www.europarl.europa.eu/doceo/document/TA-9-2020-0276_EN.html> accessed 25 April 2021.

44 Article 3 Letter c draft Regulation of the European Parliament and of the Council on liability for the operation of Artificial Intelligence-systems.

With the above in mind, there is a question of clarifying the term “operator”. The draft regulation indicates that both frontend and backend operators will be considered operators. The former term refers to a natural or legal person who controls the risks associated with the operation of an artificial intelligence system to some extent and benefits therefrom, while the latter one should be understood as referring to “natural or legal person who, on a continuous basis, defines the features of the technology and provides data and an essential backend support service and therefore also exercises a degree of control over the risk connected with the operation and functioning of the AI-system”⁴⁵.

The EP believes that one of the conditions for AI to succeed in the future is to guarantee coverage for liabilities related to the damages and losses caused thereby. This guarantee can be achieved by introducing mandatory civil liability insurance for the operators of high-risk AI systems. In the case of a front-end operator, the liability insurance would cover the operation of the AI system, and in the case of a back-end operator, the insurance for the activity or product should cover services offered by that product⁴⁶.

Ultimately, all high-risk systems would be included in an exhaustive list in an appendix to the envisaged regulation. The list would be reviewed and modified every six months to respond as quickly as possible to the technological developments and the introduction of new products approved for the market. In order to provide the entrepreneurs and research organizations with a sense of certainty in planning and investment process, changes to the list of critical industries should only be made every twelve months.

The regulation also specifies the maximum amounts of compensation, which undoubtedly translated into the amount of cover in the insurance taken out. Namely, the operator of a high-risk artificial intelligence system is liable for the following damages:

- 1) up to a maximum amount of two million euros in the event of death, injury or mutilation of a person as a result of the operation of a high-risk artificial intelligence system;
- 2) up to a maximum amount of one million euros in the case of serious intangible damage resulting in verifiable economic loss or damage to property, including the destruction of several objects belonging to the

45 Article 3 Letter d-f draft Regulation of the European Parliament and of the Council on liability for the operation of Artificial Intelligence-systems.

46 Article 4 Section 4 draft Regulation of the European Parliament and of the Council on liability for the operation of Artificial Intelligence-systems.

victim as a result of a single operation of a one high-risk artificial intelligence system; where under the contract the aggrieved party also has a right to claim against the operator, no compensation will be payable under the future regulation if the total value of the destroyed property or serious intangible damage does not exceed five hundred euros.

The above solution should undoubtedly be considered as raising a lot of doubts and creating significant complications for the insurance industry (related, among others, to risk estimation⁴⁷). Detailed analysis of these complications goes beyond the framework of this research paper. The issue that should be noted, however, is the lack of exclusions for specific industries, including the legal sector. As a result, it should be recognized that the above regulations will also apply to LegalTech solutions whose operation is based on artificial intelligence. In some cases, this will necessitate the purchase of additional insurance.

It is also worth pointing out that the described situation may also result in lawyers attempting to attribute certain actions to themselves, even though these actions were carried out by artificial intelligence. For example, software used to estimate optimal compensation and punitive damages and to draft lawsuits in medical cases. Even if it was not considered a high-risk AI system, it would still give rise to liability on the basis of presumed guilt, that is, less favorably than in case of liability for the actions of a “real” lawyer (for in the latter case, the liability is established on the basis of guilt). Hence, the average lawyer would often prefer to point out that he himself is the author of the solutions in question, particularly if he had not previously taken out AI operator liability insurance (which is not supposed to be compulsory in the case of AI systems other than high-risk systems).

3. Summary

The main conclusions that can be derived from the above considerations are as follows: professional liability insurance for lawyers should not be

47 See Grzegorz Dybała and Kamil Szpyt, ‘Odpowiedzialność odszkodowawcza za sztuczną inteligencję’ (2021) 5 *Gazeta Ubezpieczeniowa* 19; Marcin Amrosz, ‘Sztuczna inteligencja z obowiązkowym ubezpieczeniem OC?’ (2021) 5 *Miesięcznik Ubezpieczeniowy* 52–53; more general comments about AI insurance see: Dariusz Smolón, Oskar Sokoliński and Gustaw Szarek, ‘Polisa od sztucznej inteligencji’ (2018) 10 *Miesięcznik Ubezpieczeniowy* 34–36.

considered a sufficient solution for law firms wishing to use LegalTech solutions on a larger scale. The extent of damages that can be suffered by both the insured, as well as his clients and contractors, goes well beyond the scope of protection provided by this type of insurance. Searching for an answer to the question how to fill this gap, it should be stated that for the moment there is no insurance policy intended specifically for LegalTech solutions available on the market and, moreover, there is no need for it to be introduced. This role is being successfully performed by Cyber risk insurance and it seems reasonable to popularize and recommend its wider use. Ultimately, it could be a good supplement to the mandatory professional insurance taken out by attorneys, notaries, patent attorneys, bailiffs and tax advisers. On the other hand, the introduction of a new compulsory civil liability insurance for AI system operators is likely to cause a lot of confusion. The provisions presented in the draft raise considerable doubts, which will be increased by the risk of duplication of protection offered by these provisions with that guaranteed by professional liability insurance and cyber risk liability insurance.

To sum up the whole discussion so far, it is worth recalling once again the opening quotation of this research paper: "with great power there must also come great responsibility". In the context of the considerations presented so far, it may be understood both literally, as a warning against the risk of inflicting considerable damage to the client, which may then result in a law firm being sued, as well as metaphorically - as a reminder of the lawyers' responsibility for their clients who entrusted them with their secrets. In either case, however, it is hard to ignore the message of the aforementioned quotation.

Basic Principles for the Effective Use of Legal Tech Tools

Tomasz Zalewski

1. Introduction

The use of technology in the provision of legal services is not a new topic. The use of technology in legal services (*LegalTech*) have begun with the spread of computers and software. As early as in the 1970s, there were attempts to use computers for, among other things, analysing case law, calculating taxes, gathering evidence in court proceedings or preparing documents¹.

In the US, the *International Legal Technology Association*² (ILTA) was founded in 1980 to address the use of technology by lawyers. It currently has 1358 members, mainly law firms³.

A turning point in the development of *LegalTech* was the appearance of the first IBM PCs⁴ on the market in 1981. Along with them, dedicated office software also appeared on the market. In 1990, such computers were used by 59 % of small law firms in the US, and in 1995, already by 87 % of such firms⁵. Another turning point was the emergence of the Internet and the spread of e-mail.

Such processes have been taking place all over the world. Law firms began to use IT tools as standard in their operations and this continues to this day. The market of software producers responded to the law firms' interest in IT tools by starting to develop specialised programmes intended only for lawyers, such as law firm management software. Publishers of legal publications have also begun to prepare their legal information databases in electronic form.

1 Robert P. Bigelow, 'The Use of Computers in the Law' (1973) 24, 4 *Hastings Law Journal* <https://repository.uchastings.edu/hastings_law_journal/vol24/iss4/4> access: 17 March 2021.

2 <<https://www.iltanet.org/home?ssopc=1>> accessed 17 March 2021.

3 <<https://www.iltanet.org/about>> accessed 17 March 2021.

4 Robert Ambrogi, 'A Chronology of Legal Technology 1842-1995' <<https://www.lawsitesblog.com/2010/02/chronology-of-legal-technology-1842.html>> access 17 March 2021.

5 *ibid*.

As a result, the market for *LegalTech* tools emerged. However, it initially developed mainly in the US and the UK - countries with the largest law firms forming the market for such solutions. In other countries the offer was much more modest. It was not until the development of *cloud computing* technology, enabling access to many solutions that previously required one's own server infrastructure, that the *LegalTech* market really took off almost worldwide. Today, estimates of the number of companies that develop *LegalTech* tools range from 1200⁶ to over 5000⁷.

More and more financial investors are interested in ventures in the *LegalTech* industry. There are many such investments and their scale⁸ is increasing. Financial investments in the development of technologies for the legal services industry should therefore soon result in more *LegalTech* solutions.

However, to date, the vast majority of IT tools used by law firms are primarily a package of standard office software in the form of programs for preparing documents and sending them by e-mail. It is usually enriched by an electronic legal information database, typically accessible via the Internet, and, in the case of law firms with at least a few staff, a law firm management program. These are tools that should be classified as *LegalTech* 1.0, i.e. technology supporting the activity of lawyers as professionals. The catalogue of such tools is subject to change all the time, as market offerings change, and also in result of influence of external factors such as the COVID-19 pandemic, which has brought into widespread use a number of online services for remote working, such as videoconferencing.

However, all these tools are mainly used in a traditional way, i.e. they do not fundamentally change the operating model of lawyers and their law firms. These tools allow the implementation of the same business processes that were carried out without their use, only in a digitalised form.

2. Examples of Typical *LegalTech* 1.0 Products and Services

Most law firms use typical IT solutions that are not particularly different from those used by other businesses, regardless of their industry. These are

6 <<https://www.crunchbase.com/hub/legal-tech-companies>> accessed 17 March 2021.

7 <<https://www.legalpioneer.org/>> accessed 17 March 2021.

8 Robert Ambrogi, 'At \$1.2 Billion, 2019 Is A Record Year for Legal Tech Investments - And It's Only September' <<https://www.lawsitesblog.com/2019/09/at-1-1-billion-2019-is-a-record-year-for-legal-tech-investments-and-its-only-september.html>> access: 17 March 2021;

solutions enabling the production of documents in electronic form (office suite), their storage and management (computer disk, server), printing and copying and electronic communication (e-mail).

Producers of LegalTech solutions offer additional tools to this set, specific to the legal services sector⁹. These may include:

- 1) law firm or legal department management software - allows for efficient organisation of work on individual client cases, especially in a team of several people;
- 2) time recording programmes for lawyers - allow time to be recorded and allocated to individual cases and clients, which facilitates billing to clients;
- 3) virtual data rooms - allow a set of documents for analysis to be placed on a server that can be accessed by the buyer's legal advisors, thus allowing the legal due diligence review of the company to be organised efficiently during the transaction;
- 4) software for patent attorneys - facilitates the management of industrial property rights by, for example, reminding of any renewal deadlines or faster verification of registrability.

3. What Is LegalTech 1.0 Used For?

Classic *LegalTech* tools - such as those mentioned above - are technology that supports the legal profession. It works in the background of the lawyer-client relationship, it does not change the way legal advice is performed, but only improves it, replacing traditional ways of working with use of computers, software and the Internet.

Preparing a contract using word processing software and then sending it by e-mail is simply a more convenient and faster way of editing documents and sending correspondence than handwriting or typing and sending by post. At the same time, however, it is still the same business process, only digitised.

Therefore, irrespective of the *LegalTech* 1.0 technological solutions used and their "modernity", legal advice is, in principle, performed in the same way as before - it is advice performed in a "craftsman" manner, where the most important thing is the work of a particular lawyer and his skills.

⁹ More in Part III, Chapter 4.

LegalTech 1.0 tools are usually implemented in a way that takes into account or even directly results from external pressure. Communication by email is due to the fact that such communication is expected by clients. The presentation of budgets in spreadsheet form is most often the result of a client requirement. Therefore, the basic impetus for the implementation and use of such solutions is the digitisation of the economy, in particular the digitisation of the courts and judicial system.

LegalTech 1.0 tools are thus implemented in the rhythm of new products appearing on the market or as improved versions of these products become available, as well as in response to requirements arising from legislative changes or customer demands.

4. How to Implement and Use *LegalTech* 1.0 Tools?

Lawyers usually have no doubt that using technology brings them many benefits. In particular, they point to increased productivity and automation of repetitive tasks¹⁰.

Among *LegalTech* 1.0 tools, the most important are:

- 1) electronic document management software - the so-called DMS (*Document Management System*);
- 2) electronic legal information databases;
- 3) case management software - allows to create individual assignments and assign documents and correspondence to them, and to settle them.

Among these tools, it is worth noting the electronic legal information databases, which are slowly turning from ordinary databases into a comprehensive system for analysing the legal system with many additional options like facilitating the editing of documents using the content contained in the database.

Implementing *LegalTech* 1.0 tools, in most cases, is not fundamentally different from implementing other IT solutions. Each such implementation is a project in which technical, as well as organisational, financial and human considerations must be taken into account. The ultimate success of the implementation is influenced by all these factors.

10 See Diagnosis of lawyers' needs regarding the use of IT tools in legal services, Fundacja LegalTech Polska Politechnika Warszawska, 2018) <https://legaltechpolska.pl/wp-content/uploads/2018/06/2018.06.25_Raport_LegalTech_ost.pdf> accessed 17 March 2021.

The first and basic element of such a project is to define the specific problems that the tool is supposed to solve. This usually involves analysing the lawyers' current way of working and assessing the possibility of improving it by implementing a technological solution.

Many lawyers are reluctant to change their way of working. When implementing software, they want to replicate their habits, e.g. with regard to document workflows, in a digital environment. This often leads to the need to introduce many modifications to standard software, which lengthens the implementation process and increases its costs. It is also not always the best solution from the point of view of efficiency - transferring an inefficient paper document workflow procedure to an electronic form will not bring the expected benefits.

Many smaller law firms in such cases rely on software vendors who include in the standard configuration of the software the average needs of their other clients - law firms. Accepting a standard configuration may therefore not only be the simplest solution, but also an adaptation to market standards in terms of work organisation.

The best solution, however, is always to analyse organisational processes within a specific law firm, as well as to improve and simplify them before implementation, and only then to implement a technological solution that will allow, for example, more effective realisation of either entire processes or their most critical stages. This involves choosing either a comprehensive solution or a set of separate tools supporting specific activities¹¹.

Other factors important in implementing *LegalTech* 1.0 tools in a law firm are proper internal communication and involvement of lawyers in the project, taking care of integration with other systems in use, and choosing the program based on defined needs.

However, implementation of such solutions is becoming increasingly easy, especially when the solution is offered in the *Software as a Service* (SaaS) model, which significantly reduces implementation time and usually does not require changes to the law firm's own IT infrastructure¹².

11 Ryszard Sowiński, Bartłomiej Majrzak, 'Programy do zarządzania kancelarią prawną. Jak wybrać i wdrożyć najlepszy program dla Twojej kancelarii?' <<https://kirp.pl/raport-programy-do-zarzadzania-kancelaria-prawna-juz-dostepny/>> accessed 17 March 2021.

12 Yara Nardi, 'Cloud computing and the use of legal technology in the cloud' (Legal Insights Europe 7 August 2020) <<https://blogs.thomsonreuters.com/legal-uk/2020/08/07/cloud-computing-and-the-use-of-legal-technology-in-the-cloud/>> accessed 17 March 2021.

Finally, it is worth mentioning that many lawyers do not see the potential and all the functionalities embed in already implemented tools. This applies especially to office suites, which are currently offered in the form of SaaS and are enriched with a number of add-ons that allow for simple automation or even the creation of algorithms without the need to know programming languages (the so-called *no-code* technology). Therefore, it is worth taking a look at least the possibilities that are built in the office software you already own. A spreadsheet is a powerful tool that can be used in many new ways, e.g. to create a schedule of events for a court case, or to create a handy database, while a mail program has many possibilities of automating notifications, automatic replies or forwarding messages¹³.

The COVID-19 pandemic popularised the use of video conferencing tools, which also began to be used for training and webinars, and even for court hearings. The popularity of *Microsoft Teams*, initially used only for videoconferencing, has led many lawyers to discover its other capabilities and the benefits of team collaboration and communication beyond *email*.

5. *LegalTech 2.0 - a Breakthrough in the Way We Think*

Several years ago, it began to be recognised that technology was not only making lawyers' jobs easier, but was also enabling a shift in the way legal advice was delivered. The breakthrough in the way we think about technology in the context of legal services can be attributed to R. Susskind, who in 2008 published a book entitled "The end of the world of lawyers?"¹⁴. He indicated that the legal advice industry would be changed in the near future under the influence of two factors: the commoditisation of legal services and the development of information technology. Among the technologies that were expected to impact the legal industry, R. Susskind mentioned automation of document creation, interactive self-service systems for legal advice, and online systems for dispute resolution. It is worth noting that these predictions, as indicated, were made in 2008 and that R. Susskind did not take into account the rapid development of tools based on artificial intelligence. However, these predictions have proven to be accurate. Many of the current *LegalTech* trends fit in, although not all are yet being used on a large scale. This is facilitated by the progressive

13 See also the analysis in Part III, Chapter 4.

14 Richard Susskind, *The End of Lawyers? Rethinking the Nature of Legal Services*, (Oxford 2010).

digitalisation of the economy and social life, which to some extent even makes it impossible to practise the legal profession as before.

Digitisation means for lawyers an increasing amount of data that they have to consider and analyse in order to provide legal advice. This data consists of both client data (and its quantity only increases in the age of electronic communication), as well as data in the form of judicial decisions and legal literature. These data are often so extensive that it is no longer possible to analyse them in a completely manual manner. The use of technological solutions for data analysis not only speeds up the analysis, but also enables analysis in a way that changes the quality and manner of the legal services provided. Advanced document analysis allows for the detection of many problems or issues that are impossible to spot when reviewing documents in a traditional manner. No one is able to notice, for example, small differences in standard contractual provisions, if the database contains several thousand similar contracts. It is also difficult to fully analyse the variation in jurisprudence on similar issues if thousands of rulings by courts of different instances are available.

In addition to providing information that has often been overlooked so far, these solutions also enable the omission of a number of manual and time-consuming activities performed by lawyers. For example, a lawyer can quickly obtain satisfactory results of analysing case law or collections of a large number of documents on his own, eliminating a stage of work usually performed by the youngest lawyers - the legal research and document analysis as part of transactional analyses.

As a result, *LegalTech 2.0* tools can eliminate many of the repetitive tasks traditionally assigned to humans, but their impact on the way lawyers perform their work is potentially even greater in another respect.

Today, the value of a lawyer and his or her work derives (leaving aside the problem of skills or talent) both from knowledge of the law and from experience in advising on the application of the law. Experience is a special combination of knowledge of the law and the practical situations when the law is applied with a pragmatism which makes it possible to assess the risks involved in a given situation. Gaining experience takes time and is difficult to transfer. Young lawyers need a longer period of working with an experienced lawyer to acquire similar skills. For example, experience in contract negotiation requires participation in the negotiation of many contracts, observation of other negotiators, and analysis of key issues related to the execution of such contracts, which over time allows for easy identification of relevant issues based on their similarity to other contracts negotiated in the past. Experience also enables the lawyer to identify those

provisions that are within normal industry practice and those that deviate from such standards.

Meanwhile, *LegalTech* 2.0 tools now make it possible to compare the contract under analysis with collections of other contracts, making it easier for a lawyer even without significant experience to assess the risks associated with specific provisions. If such an analysis is carried out taking into account the templates used by the company which is a party of the contract, contracts signed in the past and collections of similar contracts concluded by other companies, the lawyer will obtain knowledge that both speeds up his analysis and facilitates his decision as to the recommendation to the client, even if the lawyer in question has no experience in negotiating contracts of a given type or in a given sector¹⁵.

Another consequence of this use of technology to process large data sets is that the *know-how* contained in documents created by lawyers can be at least partially retained, even after they have left the law firm in question.

Thus, *LegalTech* 2.0 solutions allow not only to automate the work of lawyers, but also to accelerate the acquisition of experience and knowledge and to make better use of already generated *know-how*. An additional advantage of *LegalTech* 2.0 solutions is the adaptation of the law firm's offer to the real needs of clients. Not all cases or tasks entrusted to the law firm by clients require "tailor-made" services. Some tasks can be performed more efficiently and cheaply if the lawyer is assisted by technological tools, while some can be automated and operate only under supervision - either by the law firm or directly by the client.

6. How to Implement and Use LegalTech 2.0 Tools?

In case of *LegalTech* 1.0 tools, the goal of their implementation is to perform tasks within law firms more efficiently, faster or cheaper. Because these solutions are designed to support lawyers in their traditional, well-defined duties, lawyers usually know what kind of solution they need and how to use it.

In case of *LegalTech* 2.0 tools, the situation is different. These solutions introduce methods of performing certain activities or services in a comple-

15 Tim Pullan, 'Experience: the Critical Commodity in Deal Negotiation + Star-Studded Careers' (Artificial Lawyer, 12 February 2021) <<https://www.artificiallawyer.com/2021/02/12/experience-the-critical-commodity-in-deal-negotiation-star-studded-careers/>> access 17 March 2021.

tely different way than previously adopted by law firms. Their implementation is therefore usually the result of either noticing a new product that introduces such new solutions or the effect of innovation on the part of lawyers who want to perform their services in a new way and are then looking for appropriate tools.

Lawyers and law firms wishing to introduce *LegalTech* 2.0 tools should therefore follow, usually simultaneously, two paths: on one hand, they should observe new products offered on the market (which - due to the above-mentioned dynamic development - offers more and more), and on the other hand, they should develop an innovative attitude, looking for new ways to use technology to provide legal advice. This is best done in parallel, as knowledge of new tools allows to see new opportunities in the provision of legal advice, while an innovative mindset allows for sometimes non-obvious applications of available tools.

LegalTech 2.0 solutions can be divided into two basic categories: tools that solve a specific problem (e.g. online contract negotiation, contract signing, document management during transactional research) and tools that lawyers can use to create their own solution.

This second category includes a range of tools that allow lawyers to design and build legal advice solutions themselves. Typically, these are applications that allow lawyers to independently implement IT projects using so-called *no-code* platforms, i.e. platforms that allow users to create applications without any programming knowledge. Using ready-to-use components, even people without technical knowledge can design more or less complex IT solutions and thus implement their ideas for business improvements.

There are many *no-code* platforms on the market that can be used by lawyers, but there are also *no-code solutions* dedicated only to them¹⁶. *No-code* solutions are usually used to build legal knowledge bases, which can be used on a self-service basis, it is also possible to prepare standard documents or contracts using them, as well as to verify whether in a given situation specific provisions of law can be applied¹⁷.

A specific type of *no-code platforms* are chatbots that allow information to be collected or shared using a dialogue with the user. Chatbots are

16 Adriana Peterson, 'NoCode And Lawyers' (NoCode Journal, 12 May 2020) <<https://www.nocodejournal.com/posts/nocode-and-lawyers>> accessed 17 March 2021.

17 Examples of applications built using *no-code* platforms include Neota Logic and Bryter, see <<https://www.neotalogic.com/neota-logics-client-app-gallery/>; <https://bryter.io/use-cases/>> accessed 17 March 2021.

particularly useful in providing legal assistance to consumers, allowing, for example, an initial verification whether legal assistance is possible in a specific factual situation¹⁸.

Robotic Process Automation (RPA) solutions are also becoming increasingly popular. RPA is business process automation software that operates at the user interface level - it handles various programs just like humans do. RPA software makes it possible to handle repetitive actions usually performed by humans with the use of various programmes (e.g. scan a document, save it in a specific directory, send the saved file as an attachment to the addressee). Implementation of such solutions does not require modifications to the existing IT systems or reconstruction of business processes in the office, which is their significant advantage. More and more often RPA solutions are equipped with some machine learning mechanisms, which significantly broadens the scope of their application.

It is worth noting that the functionalities included in standard office software packages can also be used to create the above described *no-code* or RPA solutions, e.g. allowing to create surveys in which the questions asked depend on the fulfilment of certain logical conditions, e.g. answering in a specific way to previous questions or creating simple data exchange processes between applications from the office package.

Another noteworthy division of *LegalTech* 2.0 solutions is between tools that the law firm uses within its own organisational structure; tools that are used to provide legal assistance to the client and tools that the law firm passes on to the client for its own use.

Tools used within the firm's own organisational structure are a natural extension of *LegalTech* 1.0 level tools. These are solutions that support lawyers in their tasks and often have an impact on many aspects of the firm's operations, including staffing level or its structure, but from the point of view of the client of the firm they do not change much in the firm-client relationship. These tools usually lead to improvements in the speed of service delivery and often in the quality of service, which together increase client satisfaction with the law firm's services. However, it is still legal advice provided in the traditional way.

The introduction of technology solutions for the direct delivery of legal services is already a step that requires a change of habits on both the law

18 An example is the *chatbot* providing advice on so-called loans in Swiss francs, which won the competition for a legal chatbot organised by Fundacja LegalTech Polska, <<https://legaltechpolska.pl/konkurs-na-prawniczego-chatbota-wyniki/>> access 17 March 2021.

firm and client side. These include, for example, legal project management solutions that allow progress to be monitored both on the side of the law firm and the client or other parties involved in the project. In this case, the client has to accept the new way of communication or that draft documents are submitted to him for approval on an electronic platform.

Such solutions are not always possible to implement. While in case of solutions used within the firm's own organisational structure, the problem lies in the lawyers' habits, in this case the client may often have problems with accepting the solutions proposed. An additional difficulty may also be the need to adapt a given solution to the requirements of the client's IT department, which often exclude the possibility of storing client data in third-party IT systems other than the law firm's.

The use of such solutions also creates a new level of lawyer's responsibility towards the client. Providing legal aid with the use of technological tools means the necessity to assume responsibility not only for the substantive value of the advice, but also for the risks inherent in the technology, such as the risk of violation of professional secrecy, or the risk of improper provision of legal assistance due to failure of the technology used (e.g. failure to meet a procedural deadline or a deadline agreed with the client).

Another risk is related to the use of artificial intelligence techniques and approaches in the LegalTech tools built by the law firms or proposed by them to the clients. The first EU proposal of legal regulations for artificial intelligence¹⁹ aims to regulate not only AI solutions based on machines learning but also systems using logic- and knowledge-based approaches, including expert systems, what may include the vast majority of LegalTech tools. The regulation target mainly so-called high-risk AI solutions and this category includes, among others, AI systems intended to assist a judicial authority in researching and interpreting facts and the law and in applying the law to a concrete set of facts. The production and use of AI systems, especially high-risk systems, would require meeting several compliance requirements.

The use of technological solutions for the direct provision of legal services consequently requires lawyers to take steps to review these solutions for risks, their severity and how to mitigate them²⁰ as well as general

19 European Commission's Proposal for a Regulation laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) published on 21 April 2021 (<<https://digital-strategy.ec.europa.eu/en/library/proposal-regulation-laying-down-harmonised-rules-artificial-intelligence-artificial-intelligence>> accessed 17 March 2021).

20 More on risk assessment and management methodologies in Part V.

regulatory compliance. The main risk is usually the threat to professional confidentiality of information.

The initiative for using such tools sometimes comes from the client and the law firm then usually starts using them, which often results in starting to use them also in other projects, including with other clients.

It is worth noting that in such a case, the law firm does not bear the risk associated with the choice and use of a given tool - the risk is borne by the client who proposes (or requires) the use of this solution for the provision of legal assistance by the law firm. This is one of the main reasons why lawyers are more likely to use solutions proposed by clients than to offer them themselves to their clients. However, even where the initiative to use the tool comes from the client, this does not relieve the lawyer of the duty to exercise care to protect professional confidentiality - therefore, even then, the lawyer should - as a minimum - analyse the risks associated with the use of the tool and inform the client about them.

The most difficult to implement *LegalTech* 2.0 solutions are tools designed for self-use by clients. This is a form of legal self-service using tools provided by the law firm. These may be, for example, document generators or a database of *know-how* allowing for quick access to legal information on a given topic. Often such tools have the character of a so-called decision tree or conversational chatbots. A significant number of solutions of this type are offered in the area of *compliance* consulting, e.g. for the recognition and correct classification of tax schemes or for compliance with GDPR. Such tools can be developed in-house from scratch, created on behalf of a law firm by an external software house or created using the *no-code* platform discussed above.

Such tools completely change the way legal advice is provided. However, it also means changing the way legal services are offered to clients. Selling such solutions is more similar to selling software than to selling legal services. It also changes the way a law firm operates - the products delivered to the client must be updated both in terms of content and technology (i.e. the software used to present content), and the law firm is also responsible for providing technical support. As a result, law firms offering such products either have to set up their own technical team to support these products or offer such solutions through specially established entities, often in *joint ventures* with technology providers, what brings such products closely to classic products offered on the *LegalTech* software market.

In this case, the above-mentioned problem of responsibility not only for the merits of the advice, but also for the risks inherent in the technology used, is particularly pronounced. Therefore, law firms offering such soluti-

ons usually use software provided by specialised third parties who assume the technological risks or offer it through separate entities - companies owned by the law firm or the law firm together with the technology provider. As a result, a law firm implementing such solutions usually starts to operate in a kind of capital group model, in which the law firm provides traditional advisory services and offers its clients additional services in the *LegalTech 2.0* model through subsidiaries.

Another important classification of *LegalTech 2.0* tools is how they are produced. While *LegalTech 1.0* tools are offered by software vendors or publishers, many *LegalTech 2.0* tools are offered directly by or with participation of a law firm. The development of technology and the emergence of a favourable climate for innovation in legal services has led many lawyers and law firms to see an opportunity for themselves in creating *LegalTech 2.0* solutions.

Law firms that have not found the solutions they need on the market have taken various actions. Some have started producing their own software solutions, others have used *no-code* platforms, still others have started working with external entities to jointly prepare *LegalTech* solutions. Incubators for *LegalTech* start-ups organised by law firms have also appeared on the market to support *LegalTech* start-ups in the development of their products²¹. Many lawyers have decided to leave their careers in law firms to start *LegalTech* solutions²².

7. How to Find an Area to Use LegalTech 2.0 Tools?

The basic direction of analysis for implementing *LegalTech 2.0* tools should be the possibility of introducing automation and replacing people in routine activities.

21 Mark A. Cohen, 'The Rise of Legal Tech Incubators and Why Allen & Overy's 'Fuse' Has the Right Stuff' (Forbes 12 February 2018) <<https://www.forbes.com/sites/markcohen1/2018/02/12/the-rise-of-legal-tech-incubators-and-why-allen-overys-fuse-has-the-right-stuff/#10482014494d>> accessed 17 March 2021.

22 An example is *Mariana Hagstrom* from Estonia, founder of *Avokaado*, see The Legal Technologist, 'An interview with Mariana Hagström – From Managing Partner to Legaltech Founder' (The Legal Technologist 12 August 2020) <<https://www.legaltechnologist.co.uk/an-interview-with-mariana-hagstrom-from-managing-partner-to-legaltech-founder/>> accessed 17 March 2021.

As many studies have shown, lawyers point to a number of activities that they consider routine or administrative²³. Introducing automation in these areas may be relatively easy as it should not encounter resistance even from those lawyers who are generally reluctant to change.

To this end, it is worth performing a comprehensive analysis of each stage of legal services, from acquiring a client, through providing him with advice, to issuing an invoice and receiving payment. Very often such an analysis reveals numerous possibilities of process improvement, even without the use of any technology. After the analysis, it is worth comparing the results with available IT solutions. Even for many experienced professionals, it may come as a surprise how many possibilities are in new tools and how much they can facilitate the work of lawyers.

Automation does not have to cover the entire process of providing legal assistance. The greatest potential for development lies in tools automating some elements of process, e.g. collecting information from a potential client in order to determine the type of his/her case and directing to the appropriate lawyer in the office or digitising and describing incoming correspondence.

A rewarding area of automation is management of contracts - from their creation using templates and data through their negotiation and circulation between different people to their signing and archiving. All standard business processes, such as debt collection, can also be automated. Legal consultancy of a recurrent nature may also be automated - this category includes, for example, replying to typical queries on a given subject. Using technology, these legal queries can be made more precise by specifying their scope, redirecting them to a database of previous answers and only then directing them to a lawyer if the database does not contain the right answer.

However, the automation will be successful only if the scale of the automated problem is sufficient. Automating the creation of a contract that is signed only several times a year will probably consume more time and resources than it would pay off in a few years. It is therefore necessary to select those stages of legal services which occur in almost every case, regardless of the type of matter. It is relatively easy to identify such areas in a specialist law firm which naturally deals with specialised types of cases. Technology can significantly change the service delivery model in such law firms. The same is true in legal in-house departments - which provide their in-house client with advice closely related to the specifics of the business.

23 See Diagnosis of the needs of lawyers for the use of IT tools, 10-15.

To visualise the impact of *LegalTech* 2.0 tools on the provision of legal services, one only needs to look at the personal data protection advice market. To a large extent, such services are not provided by law firms, but by consulting or IT companies that create tools allowing for partial automation of many elements related to data protection compliance. Law firms dealing with debt collection have previously gone down a similar path.

Technology allows not only for improvements of the existing market for legal services. One of its benefits is also opening up entirely new markets and new clients for legal services. Online platforms connecting lawyers with clients have already begun to really shape the market for legal advice to consumers, enabling many law firms to go beyond their local territory. Consumers have also become well accustomed to the online availability of simple legal knowledge, as well as to solutions based on automation and online access.

Technology also makes it possible to realistically arm people who want to find themselves a solution to their legal problem with tools that will allow them to deal with such situations effectively. More and more solutions are emerging that allow, for example, to semi-automatically pursue claims against air carriers for flight delays, to generate an appeal against a parking ticket or to join a collective dispute. Collective disputes are also an example of cases which, without the use of even simple technologies for collective communication and data processing, would be difficult to be handled efficiently and cost-effectively.

LegalTech 2.0 has a lot of potential to really activate citizens and consumers, who will be able to exercise their rights against the state or businesses. This is also a factor of change in the legal services market, which poses new challenges for lawyers and law firms.

8. LegalTech 2.0 and the Expectations of Lawyers and Clients

The potential for using information technology for the delivery of legal services, and in particular the opportunities associated with automation, have been quickly recognised on the legal market.

However, often the mere awareness of the possibility of change is not enough to bring the change. Lawyers need an incentive to change. Interest in applying technological solutions in legal advice can be motivated, on one hand, by the digitalisation of public services, from the digitalisation of court proceedings to the digitalisation of public procurement, and on the other, by changing client expectations.

Before buying a new solution, especially one that requires commitment on the client to use it, it is therefore worth asking ourselves what expectations clients have. And lawyers' clients do not always expect to be offered technological solutions. Rather, they expect effective ways to solve their legal problems. Therefore, it will be easier to implement solutions that address internal law firm processes than solutions that involve clients.

In addition, both lawyers and clients are not always prepared to use technologically advanced products. The basic expectation of a client is an easy relationship with a lawyer that does not require too much commitment or effort on his/her part. Lawyers are usually only one of the service providers to the client, so clients will not be willing to undertake an effort of getting used to a new communication system used by a law firm just because it is more modern and offers a range of new facilities. This is one of the main reasons why e-mail communication still remains the most important means of communication despite the passage of years²⁴.

In implementing *LegalTech* 2.0 solutions, law firms should therefore not focus on inventing new tools to replace those currently in use. Rather, their energy should be focused on finding ways to use the tools that their clients also use as effectively as possible, and new tools should be used where existing solutions clearly fail. Automation should focus on areas that have a real mass appeal, and the primary way to increase efficiency should be through the use of electronic information flows and digitalised business processes.

This was clearly demonstrated in the subsequent months of the COVID-19 pandemic: when companies are under pressure, they opt for solutions that work here and now and are easy to implement. The greatest value in a hastily digitised world has proven to be not in specialised tools, but in versatile tools and platforms that can be easily adapted to changing needs. The COVID-19 pandemic and the digitalisation processes accelerated by it have also provided many new lessons on the effectiveness of implementing digital solutions in business organisations. It turned out that it is not enough to have the technological tools, you still need to have properly prepared data that can be processed and used within these tools. The use of videoconferencing platforms is not much different from the use of a standard teleconference if the meeting participants do not have remote access to their documents and cannot work on them together in a shared environment.

24 Number of e-mail users worldwide from 2017 to 2024, <<https://www.statista.com/statistics/255080/number-of-e-mail-users-worldwide/>> accessed 17 March 2021.

The biggest challenge for the development of *LegalTech* tools in the near future will be to create a framework for collecting data that can be used to improve these tools. It is particularly clear in the case of solutions using machine learning mechanisms. This is because many *LegalTech* 2.0 projects using artificial intelligence stall when the data necessary to achieve a sufficient level of accuracy is missing. Producers of these solutions need real data contained in real contracts and other legal documents, which are covered by professional confidentiality duty in law firms and are relatively rare in public circulation (although the situation varies in this regard in different countries).

For many years *LegalTech* was reduced to the introduction of technological solutions in law firms in the form of mainly computer programs. These solutions worked within the law firms and were used for the internal needs of the lawyers. The new wave of *LegalTech* solutions goes beyond this pattern.

LegalTech 2.0 or *LegalTech* 3.0 are solutions that need data and collaboration beyond the confines of a single law firm in order to work. Especially the full use of the potential of artificial intelligence requires such an approach. The currently offered tools in the field of natural language processing using machine learning mechanisms (e.g. *for due diligence*) require a lot of work to "train" them and, moreover, they give good results only when applied to large sets of repetitive documents of the same type (e.g. only to lease or licence agreements).

The challenge for both producers and law firms will be to create solutions enabling collection and sharing of data to be used for e.g. setting market standards as to the content of contractual provisions or the amount of contractual penalties, while respecting the principles of professional confidentiality. Overcoming these limitations may bring a quantum leap in the number of useful tools that will allow lawyers to significantly increase the efficiency and effectiveness of their services.

9. Unstoppable Trend

Information technology has begun to make a real difference to the delivery of legal services in many areas. However, no breakthrough has yet been achieved. New solutions are increasingly being tested and used, but the scale of their use does not allow to speak about a radical change in the way the entire legal services market operates.

This change will occur, but its pace will be driven both by changes in the socio-economic environment, including the digitalisation of the

economy and public life, and by advances resulting from experiments with *LegalTech* tools being conducted around the world.

Clients, at least for now, are not going to hire robot lawyers, but this does not mean that lawyers can afford for passive waiting for change.

SECTION FOUR.
**Possibilities of Applying AI-based LegalTech Tools
in Legal Practice**

AI and the Work of Lawyers in the Light of the Council of Europe Guidelines

Marek Świerczyński

1. Introduction

The ambitious goal of AI-based technologies is to equip computers with the functions of the human mind, i.e. the ability to learn, recognize and reason. The ability to understand natural language and to think independently from humans is key to the further development of AI-based technologies¹. AI-based systems perform increasingly complex and important tasks with reduced human control (or even no supervision at all). They can change initial algorithms by processing external data collected during their activity².

As long as machines act as mere executors of human will, their actions should be normatively attributed to a natural person. Although AI systems are often viewed as operating autonomously, they typically just support humans and automate routine tasks³. Once the individuals operating AI systems have been identified, the extent of their liability should be proportionate to the actual level of instruction given to the AI systems.

As in case of many other disruptive innovations, AI-based tools pose legal risks. They can be characterized by limited predictability. This phenomenon is intensifying with the rise of machine learning technologies and the development of quantum computers⁴. AI algorithms can be defec-

1 Habib Hadj-Mabrouk, 'Contribution of Artificial Intelligence to Risk Assessment of Railway Accidents' (2019) 5(2) Urban Rail Transit 107.

2 Expert Group on Liability and New Technologies New Technologies Formation, Liability for Artificial Intelligence and other emerging digital technologies, 'Report' (European Union 2019) 33, hereinafter as "AI Liability Report (2019)".

3 See further in the report: Center Information Policy Leadership 'Artificial Intelligence and Data Protection: Delivering Sustainable AI Accountability in Practice. First. Report: Artificial Intelligence and Data Protection in Tension' (2018) 6 <https://www.informationpolicycentre.com/uploads/5/7/1/0/57104281/cipl_ai_first_report_-_artificial_intelligence_and_data_protection_in_te....pdf> . accessed 8 April 2021.

4 AI Liability Report (2019) 43.

tive. The data bases used for AI training may be inadequate or contain inaccurate data⁵. This could lead to decisions, predictions or analyses made by AI systems being undermined, cause harm and result in legal liability for certain individuals, including their users and manufacturers⁶. The negative aspects of AI tools are now widely recognized, including the "black box" problem (to be further explained in this chapter)⁷. For these reasons, lawyers therefore need clear guidelines for the use of AI tools in the judicial systems. Such guidelines have been already prepared by the Council of Europe.

2 Definition of Artificial Intelligence

Artificial intelligence lacks uniform legal definition. Diverse definitions are presented in international documents (EU, Council of Europe, OECD, UNESCO). However, adoption of a uniform legal definition is a key issue. When discussing the topic of artificial intelligence, we tacitly assume that we all understand this concept in the same way. In fact, the proposed definitions are far different⁸.

As a scientific discipline, AI encompasses a variety of approaches and techniques, such as machine learning (of which deep learning and reinforcement learning are specific examples), machine reasoning (involving planning, action programming, knowledge representation and reasoning, search, and optimization), and robotics (involving control, perception, sensors, and actuators, as well as the integration of all other techniques in cyber-physical systems). Since in this chapter we present the guidelines of the Council of Europe, it is necessary first to address the definition used for the purposes of this international organization. The AI definition can be found in the European Ethical Charter on the use of artificial intelligence in judicial systems and their environment, adopted by the European Commission CEPEJ⁹. It states that "artificial intelligence" or

5 See further Thomas H. Coormen, *Algorithms Unlocked* (MIT Press 2013).

6 Virginia Dignum, *Responsible Artificial Intelligence, How to Develop and Use. AI in a Responsible Way* (Springer 2019) 99.

7 Rosario Girasa, *Artificial Intelligence as a Disruptive Technology. Economic Transformation and Government Regulation* (Palgrave Macmillan 2020), 4.

8 Tomasz Zalewski 'Definicja sztucznej inteligencji' in Luigi Lai and Marek Świerczyński (eds), *Prawo sztucznej inteligencji* (C. H. Beck 2020).

9 See further European Ethical Charter on the use of artificial intelligence in judicial systems and their environment, Council of Europe, Commission for the Efficiency

"AI" refers to a set of scientific methods, theories and techniques that aim to replicate human cognitive abilities by a machine. The Charter sets out 5 principles to which the development of AI tools in European judicial systems should be subjected. These 5 principles are also fully reflected in the 2021 Guidelines for Digitization of the Judiciary, which will be presented in the later section of this chapter.

The guidelines implement also the initial definition of AI proposed in the EC Communication on AI, subsequently expanded by the independent high-level expert group on AI that was convened by the EC¹⁰, as well as the definition of AI system in the OECD Council Recommendation on AI adopted in 2019¹¹. The latter applies to AI systems and it states that: "An AI system is a device-based system that can, with respect to a specific set of human-defined goals, make predictions, recommendations, or decisions that affect real or virtual environments. AI systems are designed to operate with varying degrees of autonomy". As we see, both CoE and OECD definitions are simpler and clearer than the recent vague definition of the AI system presented by the EU in the draft regulation on AI (published on 21.04.2021).

3. The "Black Box" Problem in AI Decision Making Process

A key legal issue for practical applications of AI tools by the lawyers is the so-called "black box" problem¹². This term refers to algorithms whose implementation and usage is opaque, and in result it is difficult to under-

of Justice (CEPEJ), <<https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c>> accessed 8 April 2021.

10 See further The European Commission's high-level expert group on artificial intelligence, 'A Definition of AI: Main Capabilities and Scientific Disciplines. Definition developed for the purpose of the deliverables of the High-Level Expert Group on AI Brussels': <<https://ec.europa.eu/digital-single-market/en/news/definition-artificial-intelligence-main-capabilities-and-scientific-disciplines>> accessed 8 April 2021 and <<https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai>> accessed 8 April 2021.

11 Recommendation of the OECD Council on Artificial Intelligence, 'OECD/LEGAL/0449' <<https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>> accessed 8 April 2021.

12 See further Manuel Carabantes, 'Black-box artificial intelligence: an epistemological and critical analysis' (2019) 35 AI & Society.

stand the internal workings of the method¹³. The problem of explainability of decisions made with AI tools occupies a central place at the interface between AI and law. Explainability is an important legal category not only in respect to data protection law, but also in case of law of obligations. Contract and tort law (rather than data protection law itself) may impose legal requirements to use machine learning models that are capable of being explained¹⁴. Explainability has become a key consideration for AI tools from both a technical and legal perspective.

As an example, we can mention the use of AI tools in the justice system. When using complex algorithms leading to the effect of the so-called black box, it is impossible to analyse the decision-making process. This leads to the conclusion that the evaluation of cases submitted to the court, except those of a routine and formal nature, must be always carried out by a human judge. Otherwise, the civilizational and cultural foundation of the judiciary, which is the independence of the courts and the independence of judges, would be disturbed¹⁵.

Paragraph 41 of the conclusions of the Council of the European Union entitled: "Access to justice - seizing the opportunities of digitization" accurately points out that: "The results of the reasoning of artificial intelligence systems based on machine learning cannot be reproduced, leading to a black box effect that prevents proper and necessary accountability and makes it impossible to verify how the result was reached and whether it complies with the relevant rules. This lack of transparency can undermine the ability to effectively challenge decisions based on such results and thus violate the right to due process and an effective remedy, and limit the areas in which these systems can be legitimately used"¹⁶.

In this context the warning of the Council of European Judges (CJEU) present in Opinion No. 14 of 2011 remains valid. It states that: "the introduction of IT in courts in Europe should not endanger the human and symbolic face of justice. (...) Justice is and should remain human, because it is primarily about people and their disputes". Also, the EC points out

13 Andrzej Krasuski, *Status prawny sztucznego agenta, Podstawy prawne zastosowania sztucznej inteligencji* (C. H. Beck 2020) 153.

14 Philipp Hacker, Ralf Krestel, Stefan Grundmann, Felix Naumann, 'Explainable AI under contract and tort law: legal incentives and technical challenges' (2020) 28 *Artificial Intelligence and Law*, 416.

15 Aleksandra Partyk 'Legitim 2.0., czyli o robocie przyszłości... rozstrzygającym spory zachowkowe' (2019) 2(25) *Studia Prawnicze* 38.

16 <<https://sip.lex.pl/akty-prawne/dzienniki-UE/konkluzje-rady-dostep-do-wymiaru-sprawiedliwosci-wykorzystanie-mozliwosci-69365245>> accessed 8 April 2021.

in the AI White Paper that: "the specific characteristics of many AI technologies, including opacity ('black box effect'), complexity, unpredictability and partially autonomous behaviour, may make it difficult to verify compliance with the provisions of existing EU law aimed at protecting fundamental rights and impede their effective enforcement"¹⁷.

4. Council of Europe Work on Artificial Intelligence

The Council of Europe is currently playing a key role in ensuring that AI is developed in line with human rights protection standards. The organization supports also other international AI initiatives in this area, including those of the OECD, EU, UNESCO¹⁸. Cooperation is carried out in the direction of seeking synergies of activities and avoiding duplication of work. The Council of Europe's activities in the field of AI law are rich and varied¹⁹. The resulting achievements can be divided into four areas:

- 1) Recommendations, guidelines and other instruments issued by Council of Europe bodies or established AI committees²⁰;
- 2) Studies, reports and conclusions from key events (such as conferences and expert sessions)²¹;

17 European Commission, White Paper On Artificial Intelligence - A European approach to excellence and trust. , Brussels, COM (2020) 65 *final*, 12, <https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf>.

18 See further: <<https://www.oecd.org/going-digital/ai/>> access 17 March 2021, <<https://ec.europa.eu/digital-single-market/en/artificial-intelligence>> access 17 March 2021; and <<https://en.unesco.org/artificial-intelligence>> access 17 March 2021.

19 See further: <<https://www.coe.int/en/web/artificial-intelligence/work-in-progress>> access 17 March 2021.

20 Recommendation of the Committee of Ministers to member States on the human rights impacts of algorithmic systems, Recommendation on developing and promoting digital citizenship education, Declaration of the Committee of Ministers on the manipulative capabilities of algorithmic processes, European Ethical Charter on the use of artificial intelligence (AI) in judicial systems and their environment, Recommendation of the Parliamentary Assembly of the Council of Europe about Technological convergence, artificial intelligence and human rights, <https://search.coe.int/cm/pages/result_details.aspx?objectid=09000016809e1154> (accessed 8 September 2021).

21 Such as: Feasibility study on the establishment of a certification mechanism for artificial intelligence tools and services (2020); Artificial intelligence in the audio-visual industry – Summary of the workshop (2019); Artificial intelligence and its

- 3) Reports of the Parliamentary Assembly of the Council of Europe²²;
- 4) Other initiatives²³.

The importance of the work on AI is highlighted by the creation withing the Council of Europe of the Ad hoc Committee on Artificial Intelligence (CAHAI)²⁴. CAHAI aims to analyse, on the basis of broad consultation and collaboration with different stakeholders, the issue of possible global regulation of artificial intelligence (AI) on the basis of the Council of Europe's promoted standards for human rights, democracy and the rule of law²⁵.

impact on young people – Seminar report (2019); Proceedings of the Roundtable on Artificial Intelligence and the Future of democracy (2019) CDDG-Bu(2019, 17);, Conclusions from the Conference “Governing the Game Changer – Impacts of artificial intelligence development on human rights, democracy and the rule of law” (2019).

- 22 Such as the following reports: artificial intelligence and labour markets: friend or foe?; Report on Artificial intelligence in health care: medical, legal and ethical challenges ahead; Report on Justice by algorithm (the role of artificial intelligence in policing and criminal justice systems); Report on preventing discrimination caused by the use of artificial intelligence; Report on the need for democratic governance of artificial intelligence.
- 23 Concept note: Artificial intelligence and criminal law responsibility in Council of Europe member states – the case of automated vehicles, Development of Recommendation and Study on the impacts of digital technologies on freedom of expression, Youth policy standards and other institutional responses to newly emergent issues affecting young people's rights and transition to adulthood, including AI, Report on AI in the audiovisual industry, Draft Declaration of the Committee of Ministers of the Council of Europe on the risks of computer-assisted or artificial-intelligence-enabled decision making in the field of the social safety net.
- 24 See <<https://rm.coe.int/cahai-2020-2021-rev-en-pdf/16809fc157>> accessed 17 March 2021.
- 25 The CAHAI is composed of representatives of the 47 member states, appointed by their governments, who have recognized expertise in digital governance and the legal implications of various forms of AI; representatives of observer states (such as Canada, Vatican, Israel, Japan, Mexico, USA); representatives of other Council of Europe bodies, in particular the Secretariat of the Parliamentary Assembly, the Office of the Commissioner for Human Rights, and intergovernmental commissions dealing with AI issues. Human Rights, and intergovernmental commissions dealing with AI issues; representatives of other international and regional organizations working in the field of artificial intelligence, such as the EU, the UN (in particular UNESCO), OECD, OSCE; representatives of the private sector, including companies and associations with which the Council of Europe has exchanged letters in the framework of its partnership with digital enterprises; representatives of civil society, research and academic institutions who have been

One may well ask what justification there is for the Council of Europe to undertake legislative work fundamental to the international legal order on the use of AI in the legal sector. It is undoubtedly an experienced international organization that has acted quickly and efficiently in the past and provided strong legal reaction to disturbing new technologies. The Data Protection Convention No. 108 and the Cybercrime Convention created by the Council of Europe set global standards for legal protection. Through the European Convention on Human Rights and other legal instruments, the Council of Europe is in a strong position to define the international legal framework for artificial intelligence²⁶. It was also the Council of Europe that was the first international organization to create a legal framework for biomedicines. To this day, the Oviedo Convention²⁷, opened for signature in 1997, remains the only binding international legal instrument for the protection of human rights in the field of biomedicine. It incorporates the principles provided for in the European Convention on Human Rights. The same assumptions based on the protection of human rights should be applied to the use of artificial intelligence technologies in legal systems²⁸. AI tools should not be introduced without establishing clear international rules to protect against the risk of discrimination, privacy or security breaches, establishing clear liability rules and key legal aspects²⁹.

admitted by CAHAI as observers; see further: <<https://www.coe.int/en/web/artificial-intelligence/cahai#%7B%2266693418%22%3A%5B%5D%7D%3E>> access 17 March 2021 and <<https://rm.coe.int/list-of-cahai-members-web/16809e7f8d>> accessed 17 March 2021.

- 26 Human Rights in the Era of AI - Europe as international Standard Setter for Artificial Intelligence, Conference Conclusions: <<https://www.coe.int/en/web/artificial-intelligence/human-rights-in-the-era-of-ai>> accessed 17 March 2021.
- 27 The Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine (ETS No 164), open for signature on 4.4.1997 r. in Oviedo (Spain).
- 28 Filippo A. Raso. Hannah Hilligoss. Vivek Krishnamurthy. Christopher Bavitz, 'Artificial Intelligence & Human Rights: Opportunities & Risks, Berkman Klein Center for Internet & Society' (Harvard University 2018) 6, <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3259344> accessed 17 March 2021.
- 29 See further Karen Yeung, A study of the implications of advanced digital technologies (including AI systems) for the concept of responsibility within a human rights framework, <<https://rm.coe.int/a-study-of-the-implications-of-advanced-digital-technologies-including/168096bdab>> accessed 17 March 2021.

5. Council of Europe Guidelines on Common Courts Digitalisation

The most recent document developed by the Council of Europe are the guidelines on the online dispute resolution (ODR) mechanisms that aim to ensure compatibility with Article 6 (right to a fair trial) and Article 13 (right to an effective remedy) of the European Convention on Human Rights (ECHR). They have been prepared by the CDCJ (European Committee for Legal Affairs) of the Council of Europe. The guidelines were completed on 24.11.2020 and are to be adopted by the Committee of Ministers of the Council of Europe on May 2021. The guidelines set the current standard of documents regulating the digitization of justice. They also provide a model for further soft - law instruments, to be prepared by the Council of Europe.

A comprehensive background to the guidelines on the use of AI tools in the justice sector emerges from the official commentary (Explanatory Memorandum) to the guidelines. It indicates that the introduction of AI tools into civil and administrative proceedings enables automated decision-making³⁰. It also leads to faster proceedings and allows for more predictable and fairer outcomes³¹. Moreover, many states are already using AI tools to anonymize court decisions or translate documents and plan to use them more extensively in judicial proceedings (e.g in the remote hearings). New AI tools can assist judges in other activities, such as advanced data analytics, among others³². In some states, the possible replacement of the judge (human) with an information system for data processing and analysis is being considered³³. In result the increasing use of AI tools in the courts should be addressed in basic procedural rules³⁴. This is the subject of current work of the Council of Europe bodies, such as CDCJ.

The guidelines in question address various problems of using AI tools by the courts.

30 Davide Carneiro, Paulo Novais, Francisco Andrade, John Zeleznikow and José Neves, 'ODR: an Artificial Intelligence Perspective' (2014) 41 Artificial Intelligence Review, 211-240.

31 Maxi Scherer, 'Artificial Intelligence and Legal Decision-Making: The Wide Open?' (2019) 36 Journal of International Arbitration, No. 5, 539 - 574.

32 Sofia Samoilil and others, 'AI Watch. Defining Artificial Intelligence. Towards an operational definition and taxonomy of artificial intelligence, EUR 30117 EN, Publications Office of the European Union' (2020), 7-8.

33 Jacek Gołaczyński, 'e-Sąd przyszłości' (2019) 2 Monitor Prawniczy, 97.

34 See further Ephraim Nissan, 'Digital technologies and artificial intelligence's present and foreseeable impact on lawyering, judging, policing and law enforcement' (2017) 32 AI & Society, 539 - 574.

Firstly, parties should be notified of the intention to process their case using an AI tool (Guideline 6). Parties to proceedings have the right to be informed about the AI-based processing operations that are applied. This information also includes the consequences of the AI tool being used³⁵. This is a transparency requirement that is formulated by numerous international organizations. It is stipulated in the recommendations, codes of ethics and guidelines that establish ethical standards for the design, use and application of artificial intelligence, enacted by Council of Europe, UN, EU, OECD and other international institutions. These standards must be adhered to by designers and suppliers as well as administrators of AI systems for their use in the courts.

Secondly, Guideline No. 18 requires that sufficient justification must be provided to the parties of the court proceedings for court decisions based on digital tools, such as AI systems. The wording of the guideline means that the Council of Europe does not oppose the use of artificial intelligence in the judicial decision making. The purpose of the guideline is to set limits on its use in accordance with principles under the ECHR and other human rights instruments. This guideline is intended to promote transparent judicial decision-making. Decisions that make it impossible to see how a result was achieved are as much a threat to transparency and the principle of due process as decisions that do not contain a statement of reasons at all³⁶. Parties are entitled to an explanation of the processing operations applied to them. This should include the consequences of such reasoning. If, due to the nature of the AI tool used, no information can be provided (i.e. “black box” problem), courts should refrain from issuing decisions made with AI whose reasoning results cannot be reproduced.

Thirdly, Guideline No. 20 provides for the right to review adjudications based on AI tools. This issue was particularly controversial during the *travaux préparatoires* of the guideline. This is because the wording of this guideline suggests that the Council of Europe permits member states to replace human judge with the AI system. One can ask if this is in line with the ECHR? In the case of EU, the authorities already issued resolutions opposing fully automated decision-making in the judiciary. In the previously quoted conclusions of the Council of the European Union we read

35 Jenna Burrell, ‘How the Machine ‘Thinks’: Understanding Opacity in Machine Learning Algorithms’ (2016), 3(1) Big Data & Society, <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2660674> accessed 8 September 2021.

36 Wojciech Samek, Thomas Wiegand and Klaus-Robert Müller, ‘Explainable Artificial Intelligence: Understanding, Visualizing and Interpreting Deep Learning Models’ (2017), 1 ITU Journal: ICT Discoveries, 1 - 10.

that: "the use of artificial intelligence tools must not interfere with the decision-making powers of judges or the independence of the courts. The decision of the court must always be made by a human being and must not be delegated to an artificial intelligence tool.". We see that Council of Europe adopt more flexible approach in this respect.

6. *Summary and Conclusions*

The Council of Europe guidelines address the current needs of lawyers resulting from the use of AI tools in their judicial practice³⁷. The condition for the proper development of AI tools in the legal system is directly linked to effective processing of data and digitalisation of documents³⁸. When it comes to court proceedings, it is important to give clear instruction to what extent AI tools can be used in court practice, including the replacement of the judge. Such solution requires a detailed legal analysis whether in such a case we would still be dealing with a court within the meaning of the ECHR.

The Council of Europe guidelines relating to artificial intelligence, as an instrument of so-called soft law, are suitable for easy changes and additions as technology advances. The Council of Europe Strategy for future was presented at the Council of Europe Conference of 20.1.2021. Its main purpose was to present the work to date of CAHAI (the ad hoc committee on artificial intelligence), which is preparing principles of global legal framework for artificial intelligence. The feasibility study conducted by CAHAI identifies gaps in the current legal framework with respect to the challenges associated with the design, development and use of artificial intelligence. It also concludes that limiting the Council of Europe's future work to soft - law instruments is not sufficient due to the excessive limitations of this method of regulation. Thus, it seems that the adoption of an international Council of Europe convention on artificial intelligence is only a matter of time.

The claim that legal regulation of artificial intelligence hinders the progress of innovation is wrong. The exact opposite is true. Clear, sensible and risk-management based regulation provides legal certainty³⁹. National

37 Gołaczyński (n 33) 98.

38 *ibid.*

39 See the speech of Christian Kastrop during the CoE conference 'Human Rights in the Era of AI – Europe as International Standard Setter for Artificial Intelligence'

regulation is not sufficient. Technologies based on artificial intelligence are global in nature. Therefore, multilateral cooperation among countries is needed to establish uniform international standards and the Council of Europe is in the best position to create such standards.

(2021), <<https://www.coe.int/en/web/artificial-intelligence/human-rights-in-the-era-of-ai>> accessed 17 March 2021.

AI In Law Firms

Gabriela Wiktorzak

1. Introduction

Over the past five years, investment in the technology sector has increased significantly, and thanks to the diverse potential of artificial intelligence (AI) and blockchain, new means of solving current problems are emerging in a more efficient way. New sub-sectors of used technologies are also being created, such as: AgriTech, HealthTech, CleanTech, LegalTech, which, despite significant differences, have common features: they put the end user first, improve data flow and automate processes.

Innovations in law firms are not a new topic, as information technologies appeared in legal services much earlier. The 1970s are considered to be the beginning of the computer revolution in law firms, when Lexis-Nexis introduced UBIQ, a red computer terminal that allowed lawyers to search for case law in a database¹. The revolution quickly progressed from document search to document creation, when Wang Laboratories introduced a computer with a new functionality – a word processor. The Wang systems entry into the market was a breakthrough for large law firms, because this new technology allowed them to store documents in a centralised manner and allow all their employees to edit texts². Around the same time companies started buying fax machines too. In 1992, Microsoft Corporation released Version 3.1 of Windows³, which eventually replaced DOS, and Microsoft subsequent platforms successfully monopolized the PC market,

1 David Smetana, 'The Future of Legal Technology: 3 Emerging Trends' (5 August 2020) <<https://www.chalkline.tech/blog/future-of-legal-technology-3-trends>> accessed 30 September 2020.

2 See: Rob Hosier, 'Evolution of the Law Firm: Why Clients Demand that You Embrace New Technology' (*Legal Futures*, 28 October 2020) <www.legalfutures.co.uk/features/evolution-of-the-law-firm-why-clients-demand-that-you-embrace-new-technology> accessed 16 November 2020.

3 Maciej Gajewski, 'To były czasy. Kiedy po raz pierwszy uruchomiłem system z graficznym interfejsem i nie rozumiałem, co widzę' (*Spider's Web*, 7 December 2018) <www.spidersweb.pl/2018/12/microsoft-windows-3-1.html> accessed 20 May 2020.

causing a massive migration of law firms to Windows systems. Due to the growing demand, conditioned by the needs of customers and the changing market of services, lawyers had to tame and familiarise themselves with the Internet. Ignoring changing technological trends became impossible, even for such a conservative environment as lawyers, who were forced to make at least basic investments in the IT infrastructure of their law firms. Interest in innovation increased significantly, when LegalTech tools started to be enhanced with the AI element, even if all the confusion around AI sometimes seems to be based on an unrealistic vision of the possibilities of current technology⁴, a hypothetical machine that exhibits behaviour at least as skilful and sophisticated as the one of associated with a human. Nonetheless, today what is accessible to us is a "weak" or "narrow" AI that focuses on a single, specific task and can only be used in a limited context⁵.

However, regardless of its narrow scope, AI is transforming the way legal services are provided, predominantly in six main areas – litigation; automation of expertise; legal analysis; contract analysis; generating contractual and judicial documents; predictive analytics⁶. Artificial Intelligence in law firms today constitutes a digital system specifically designed for lawyers to help them do their job, and which integration has the potential to create a comprehensive solution for legal teams. Such tools were created in cooperation with lawyers who have the necessary knowledge that technology companies need to develop the most useful and optimal tools to provided services to their clients. Owing to machine learning, the system begins to make decisions with minimal programming. Instead of manually writing rules for a computer's interpretation of a dataset, machine learning algorithms (i.e. set of instructions which needs to be performed to solve a problem) allow the computer to specify the rules themselves. Such statistical techniques can be used for a wide range of activities – image analysis,

4 Andrew Ng, 'What Artificial Intelligence Can and Can't Do Right Now' (Harvard Business Review, 9 November 2016) <www.hbr.org/2016/11/what-artificial-intelligence-can-and-cant-do-right-now> accessed 21 November 2020.

5 Michael Bues, 'What AI in Law Can and Can't Do' (European Legal Tech Association) <www.europe-legaltech.org/what-ai-in-law-can-and-cant-do/> accessed 2 February 2021.

6 Anthony E. Davis, 'The Future of Law Firms (and Lawyers) in the Age of Artificial Intelligence' (*American Bar Association*, 2 October 2020) <www.americanbar.org/groups/professional_responsibility/publications/professional_lawyer/27/1/the-future-law-firms-and-lawyers-the-age-artificial-intelligence/?q=&wt=json&start=0> accessed 30 November 2020.

fraud detection, price prediction and even NLP⁷, i.e. natural language processing technology. The next step in digital initiation is deep learning, which uses more advanced algorithms to perform more abstract tasks, such as image recognition⁸. Due to the fact that art of practicing law relies in large part on document analysis, the ability to read text using the right software, which at the same time gathers useful insights, is an advantageous attribute and the end result is impressive.

Example:

In a landmark study, which took place in February 2018⁹, American lawyers with years of experience in corporate law confronted the AI algorithm to detect problems in five non-disclosure agreements (NDA). After extensive testing, the AI accuracy rate averaged at 94 %, while lawyers achieved an average of 85 %. The lawyers' average time to complete the NDA analysis was 92 minutes. Artificial Intelligence only needed 26 seconds to do so.¹⁰

2. AI i rozwój praktyki prawa

Gottfried Wilhelm Leibniz, a famous lawyer, mathematician and 17th century polyhistor, once said: „It is unworthy of excellent men to lose hours like slaves in the labour of calculation which could safely be relegated to anyone else if machines were used.¹¹”. The dilemmas of the German philosopher were and are still current to the present day. Three hundred years later, we are once closer to answering Leibniz's questions.

7 See: 'Natural Language Processing vs. Machine Learning vs. Deep Learning' (24 June 2020) <sigmoidal.io/natural-language-processing-vs-machine-learning-vs-deep-learning/> accessed 15 December 2020.

8 Khalid Al-Kofahi, 'Cognitive Computing: Transforming Knowledge Work, Transforming Knowledge Work' (27 January 2017) <www.blogs.thomsonreuters.com/answerson/cognitive-computing-transforming-knowledge-work/> accessed 15 December 2020.

9 See: 'Comparing the Performance of Artificial Intelligence to Human Lawyers in the Review of Standard Business Contracts' (Law Geex Paper 2018) <www.images.law.com/contrib/content/uploads/documents/397/5408/lawgeex.pdf> accessed 30 November 2020.

10 *ibid.*

11 See biographical note: <www.math.dartmouth.edu/~m3cod/LeibnizWheelBig.htm> accessed 30 September 2020.

There are many solutions available on the market, created for individual, small and medium-sized law firms respectively, the functionalities of which can be adapted to clearly defined needs of users. A client can choose the right software solution, which fits one's needs (desktop application, client-server application or web application)¹². Over the past few years, more and more organizations have started to abandon on-premises server-based software for cloud-hosted services. Despite the risks associated with such a change, law firms, as well as the in-house legal teams through such a transformation, have the opportunity to benefit from seamless remote access, availability assurance and significant long-term cost savings. The cloud has popularized Software as a Service (SaaS) solutions, and many law firm management tools are delivered using software-as-a-service model, where a manufacturer provides both the operating system, server space, and the application. Regardless of the software model chosen, law firm management systems have basic functions such as document management, customer relationship management (CRM), ability to build case management procedures and work cycle, synchronization with an e-mail inbox. With the available applications, you can create electronic files, and in them a case plan - templates, dedicated to the relevant legal proceedings, which automatically set all tasks, questions, deadlines and actions that will take place during the conduct of the case or litigation.

A practical complement to such a system is the document management function (DMS), which allows you to model a number of different processes for the purpose of document circulation. Back in 2018, a significant trend in document management software was to ensure increased document functionality. Therefore, companies that created such solutions, rather than just allowing online storage and document organization, have begun adding additional features to their products that allow users to create, annotate, and collaborate on legal documents. For example, document collaboration and sharing features are available on some platforms, which greatly facilitates secure collaboration on documents with customers, colleagues, experts. Another feature included in some software products is the conversion of scanned documents to an optical character recognition

12 Majchrzak and Sowiński, <<https://www.oirpwarzawa.pl/wp-content/uploads/2020/10/programy-do-zarzadzania-kancelaria-prawna-jak-wybrac-i-wdrozyc-najlepszy-program-dla-twojej-kancelarii.pdf>> accessed 30 November 2020.

format that creates searchable, indexed PDFs. Other useful features include annotation tools, electronic signatures, and customized security features¹³.

3. AI for legal in-house teams and law firms

John Grisham, an American bestselling author and lawyer by profession, stated in his first book *Time to Kill*, that what a good lawyer is worth if he can't find an important document in thirty seconds¹⁴. The fictional characters in Grisham's novel were aware of the important aspect of access to information, analysis of documents and their proper organization, which indissolubly embedded within the reality of this profession. In the work of a lawyer, the provision of objective advice is their bread and butter, and the final results they deliver must be based on detailed and reliable data. AI tools can support the legal departments and law firms by offering the insightful and fast analysis that demanding customers need.

Today, the most prevalent AI are those legal technologies that deal with repetitive work and manage large amounts of documents more effectively, while minimizing the risk of legal errors.¹⁵ Some of these technologies will be analysed below.

3.1. Document analysis – Document Review and E-discovery

Many legal tasks require the knowledge of lawyers and a thorough understanding of the various legal documents. It takes a long time to find and understand the collection of gathered evidence, even for lawyers.¹⁶ Software that uses NLP can be deployed to read legal documents and to extract useful information, often at the clause level or when key data is

13 Nicole Black, 'The Latest on Legal Document Management Software' (ABA Journal, 27 April 2020) <www.abajournal.com/web/article/the-latest-on-legal-document-management-software> accessed 29 May 2020.

14 John Grisham, *A Time to Kill* (Delta 2004) 369.

15 Rasminna Roslin, 'Legal Technology and In-house Counsels Today' (Staranise, 1 June 2020) <www.staranise.com.hk/knowledge-hub/articles/legal-technology-in-house-counsels.html> accessed 30 September 2020.

16 Haoxi Zhong, Chaojun Xiao, Cunchao and others, 'How Does NLP Benefit Legal System: A Summary of Legal Artificial Intelligence' (Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics, on-line, July 2020) 5218-5230 <www.aclweb.org/anthology/2020.acl-main.466.pdf> accessed 1 July 2020.

stored within clauses. This technology presents an expedient way to deal with due diligence in mergers and acquisitions and is valuable in terms of extracting leasing data for large-scale real estate transactions.

E-discovery is the process of obtaining and exchanging evidence or electronically stored information (ESI) that could potentially become evidence in litigation. The first stage of *E-discovery* is the collection of data that can be used in legal proceedings or investigations. In addition, forensic IT programs¹⁷, enable organizations to accurately collect and preserve potentially relevant (responsive) data, both on-premises and in cloud. The parties to the proceedings often disagree as to which method of identifying potentially responsive electronically stored information is best. In particular, the method of using keywords compared to Technology Assisted Review (TAR) is usually a topic of long debates¹⁸. Technology Assisted Review is a method, which can be deployed during the document review phase that uses algorithms to identify and mark potentially responsive documents based on keywords and other metadata. The advantage of TAR is that it can help significantly accelerate the document review process.¹⁹ During a disclosure process, when evidence is shared with the requesting party, such documented evidence is converted to a different format, such as TIFF or PDF, which allows the editing and redacting of privileged and irrelevant information.²⁰ Using TAR (or computer assisted review, CAR), predictive encoding in combination with analytics software for *E-discovery*, reduces the number of documents required for review and allows the legal team to prioritize the analysis accordingly. Narrowing the scope of documentary review in such a way, reduces hours and thus costs. The ultimate purpose of *E-discovery* is to provide the essential amount of evidence for litigation in a defensive manner.

The future of *E-discovery* with the capabilities of TAR seems quite revolutionary thanks to so-called legal ontology, which represent a new structure for aggregating and organizing information in such a way that it

17 Russell Chozick, 'The Major Differences Between Digital Forensics and E-discovery' (Flashback Data, 30 June 2017) <www.flashbackdata.com/digital-forensics-vs-ediscovery/> accessed 20 January 2021.

18 Kathryn Cole, 'Judges Make the Case for TAR' (Farrell Fritz, 17 February 2021) <www.allaboutediscovery.com/2021/02/judges-make-the-case-for-tar/> accessed 24 February 2021.

19 See: 'What Is Technology-Assisted Review or TAR?' <www.zapproved.com/blog/what-is-technology-assisted-review-tar/> accessed 24 February 2021.

20 Kathryn Cole, 'In What Format Should I Make My Production? And, Does Format Matter?' (JD Supra, 3 June 2019) <www.jdsupra.com/legalnews/in-what-format-should-i-make-my-61643/> accessed 24 February 2021.

can be understood and processed by machines. Their principal advantage is that they consist of concepts, relations, instances, and axioms, as opposed to ordinary keywords. This allows professionals to streamline their work by looking for legal concepts or precedents instead of just keywords²¹.

3.2. *Contract review/management software*

Lawyers are often involved in contract negotiations, and their role is to advise whether the proposed contract reflects the client's intentions and expectations, or whether it requires appropriate changes, improved terms and conditions. Some agreements can be relatively simple, e.g. previously mentioned non-disclosure agreements (NDA), in contrast to very complex contracts that often extend over hundreds of pages. Automated contract analysis systems can be used to review documents that are relatively standardized and predictable in terms of the type of content they contain²². This process involves dividing the contract into individual terms or clauses, and then evaluating each of these elements, in order to extract key information or compare it with a certain standard, which is based on the information collected and examples of contracts contained in the company's database. Such a structured contract review system may indicate which provisions are missing from the contract and which are relevant to the customer, or indicate that the clauses covering the change in the rates in force during the term of the contract do not set a cap on the percentage increase in charges. It can then provide an example wording as an alternative based on how such a clause is usually formulated, according to company standards.

The contract automation described above is only one aspect of the wide range of functionalities offered by available contract lifecycle management AI platforms, because modern contract management systems are able to support the entire process, from contract creation, through negotiation and review of terms, electronic signatures, to monitoring the performance

-
- 21 Harry F. Karoussos, 'Law & The Digital Disruption: The Impact of ICT and AI on the Legal Profession' (2017) American College of Greece Research Paper <www.researchgate.net/publication/321527178_Law_The_Digital_Disruption_The_Impact_of_ICT_and_AI_on_the_Legal_Profession> accessed 25 February 2021.
 - 22 Robert Dale, 'Law and Word Order: NLP in Legal Tech' (*Towards Data Science*, 15 December 2018) <www.towardsdatascience.com/law-and-word-order-nlp-in-legal-tech-bd14257ebd06> accessed 4 January 2020.

of contractual obligations of the parties to the contract and analysis of the commercial relationship²³. In 2020, there was a clear trend in contract management software on the market. It transpired that everyone is observing and looking for ways how to exploit and use data to generate immediate value, and how to prepare for a future, where AI is likely to replace today's simple automation. While basic features such as electronic signature have become a necessity, current trends favour advanced systems that support the entire contract lifecycle management²⁴.

3.3. *Legal information systems and predictive analytics*

Based on the UBIQ concept, many similar databases for court decisions and legal acts have been created, without which most modern lawyers cannot imagine functioning in their profession. The applications that are currently available on the market are an improved version of legal research software, enriched today with NLP. This natural language processing add-on enables more complex and improved searches, allowing you to identify entire segments of text, not just keywords. This extended approach to creating more effective tools for lawyer work is based on the assumption that a given problem, which becomes the subject of legal analysis, is more easily solved using different techniques (such as indexes and legal commentary table of contents), as opposed to clearly defined phrases for which search algorithms are used.²⁵ It has become obvious that the quality of search results depends significantly on the right queries raised. Therefore, many of the solutions currently available on the market provide interfaces that allow you to find related materials by uploading a fragment or even the entire text that provides the search context, and as a result supporting “query by document”. Apart from reducing the time spent on sufficiently detailed

23 Mikkel Boris, ‘Top Trends in Contract Management 2020’ (Contractbook, 31 August 2020) <www.contractbook.com/legaltechinstitute/top-trends-in-contract-management-2020> accessed 3 September 2020.

24 *ibid.*

25 Paul Callister, ‘Law, Artificial Intelligence, and Natural Language Processing: A Funny Thing Happened on the Way to My Search Results’ (2020) 112 *Law Library Journal* 161-212 <www.papers.ssrn.com/sol3/papers.cfm?abstract_id=3712306> accessed 24 February 2021.

search queries, the likelihood of finding additional relevant material that would not be found using typical queries has also increased²⁶.

As part of going a step further, some legal information systems have an additional predictive analytics function that uses some form of NLP and machine learning to ensure enhanced searching and better understanding of legal issues, especially case law and legal precedents. This specific realm also includes systems for analysing behaviour for the purposes of litigation, such as anticipating the behaviour of judges and jury²⁷. These systems have been trained to detect certain types of language, and by analysing historical data, the user receives a statistical assessment of whether the judge will respond and rule in the same way to a new but similar case.

4. Compliance. Risk management

One of the reasons for the global financial crisis of 2007-2008 was the mismanagement of risk data and the unawareness of regulators about the accumulated systemic risks arising from contractual obligations. To avoid repeating the same mistakes, today's institutions need to be active in data management, on compliance²⁸, and they are supported by appropriate innovative solutions that assist them with apprehending and facilitating advanced risk management in a given sector of the economy. These systems use NLP, among other things, to verify that the contracts concluded by a company comply with the laws and policies of the organization. Such technology has gained great popularity with regard to the GDPR. Artificial intelligence for compliance consists primarily of rigidly coded legal knowledge and rules, and when the law cannot be encoded, with alerting mechanisms. As a result, some notification and alert techniques may help an organization with meeting its relevant legal requirements²⁹.

26 Robert Dale, 'Law and Word Order: NLP in Legal Tech'(2019) 25(1) Natural Language Engineering .

27 See: 'Legal Research + Analytics' (*Artificial Lawyer*) <www.artificiallawyer.com/al-100-directory/legal-research-analytics/> accessed 24 February 2021.

28 See: 'LegalTech + RegTech = Tools for an Increasingly Complex World' (*Planet Compliance*) <www.planetcompliance.com/legaltech-regtech-tools-for-an-increasingly-complex-world/> accessed 23 January 2021.

29 Marcelo Corrales , Paulius Jurčys, George Kousiouris, 'Smart Contracts and Smart Disclosure: Coding a GDPR Compliance Framework' (2018) SSRN Electronic Journal <www.researchgate.net/publication/323625892_Smart_Contracts_and_Smart_Disclosure_Coding_a_GDPR_Compliance_Framework> accessed 30 November 2020.

This is done by training algorithms accordingly, by marking each alert as a "true negative" or as a "false positive"³⁰. The system will continue to identify patterns while receiving an opinion on the AI model and thus learn through decision-making experience, on the basis of statistical data, what should be notified to the organisation. Improved AI models will allow lawyers to focus on investigative work to understand the context of potentially risky employee activity.

5. Summary

The pace of the technological revolution in law firms is relatively slow, which is mainly due to the accepted model of fee earning, based on the hours worked – any increase in productivity offered by AI tools means less remuneration for lawyers. Moreover, the available budget has always been the prevalent barrier to technological innovation, and the skills gap continues to effectively halt a possible change. Artificial Intelligence, for the in-house teams too, is slowly evolving and legal departments seem to be lagging behind other functions in the use of new technologies. Nevertheless, there are many factors that affect not only attitudes but also the transformation of companies in the market. More and more companies are choosing to hire in-house lawyers, who constantly create new model contract templates, and update and introduce new procedures, as well as internal policies. For them, completing projects as soon as possible is crucial to be able to focus on the tasks they perform on a daily basis and to meet the requirements of their employer. Another circumstance that motivated the market to reflect at least on the current model of service provision was the COVID-19 virus pandemic. Coronavirus, which spread around the world in 2020, has forced many organisations to revise their plans, strategies, targets, and re-examine risk management processes and their approach to growth and technological transformation³¹. While until recently in-house legal teams were not considered to be leaders in modernization and automation, the pandemic reduced staff budgets and at the

30 Jordan Domash, 'AI and its Impact on the Future of Regulatory Compliance' (*A-Team Insight*, 9 September 2020) <www.a-teaminsight.com/ai-and-its-impact-on-the-future-of-regulatory-compliance/?brand=ati> accessed 30 September 2020.

31 See: 'Looking Glass Report. The Role of the General Counsel in Navigating the Global Risk Landscape' (Clyde&Co) <www.clydeco.com/en/looking-glass-report> accessed 3 December 2020.

same time increased the legal burden; new technologies have become the most obvious solution for many legal departments³².

The reality seems to be conducive to the implementation and further improvement of AI products available on the market, which was worth \$17.32 billion in 2019³³. However, perhaps due to the number of options available, small and medium-sized law firms as well as in-house lawyers often find it difficult to identify the most practical technology from their perspective. Technology that can be effectively implemented in your organization while changing the way you provide services to improve efficiency and manage your customers more efficiently. As soon as the identified objectives can be achieved, managing the ever-increasing pressures of today's business environment can be much painless and result in the possibility of using increased data not only to streamline internal processes, but also to better understand trends and make decisions based on reliable information. Change is inevitable, transformational technologies will become more important as customers want to spend less and work more on their own³⁴.

According to the "Future Ready Lawyer" study³⁵ law firms are undergoing a significant transformation, especially in the context of how services are provided, and the biggest changes that can be expected in the near future are primarily:

- 1) wider use of technology to improve efficiency;
- 2) greater specialisation of services;
- 3) focus on innovation.

32 Rob Van der Meulen, '5 Legal Technology Trends Changing In-House Legal Departments' (*Gartner*, 9 February 2021) <www.gartner.com/smarterwithgartner/5-legal-technology-trends-changing-in-house-legal-departments/> accessed 24 February 2021.

33 Thomas Alsop, 'Legal Tech Market Revenue Worldwide from 2019 to 2025, by Business Type' (*Statista*, 26 January 2021) <www.statista.com/statistics/1168096/legal-tech-market-revenue-by-business-type-worldwide/> accessed 30 January 2021.

34 See: Report: 'Future Ready Lawyer. Czynniki efektywności' ('Future Ready Lawyer. The Efficiency Factors') Wolters Kluwer 2020 <www.lrpoland.wolterskluwer.com/Future-Ready-Lawyer-2020?utm_source=mail_klienci&utm_medium=organic&utm_campaign=WKPL_LEG_ACQ_LEX-EBO-FRL2020-06-20-TOFU_LFM/PRW0520014_CIN002&utm_term=mai_klienci&utm_content=klienci> accessed 15 February 2021.

35 *ibid.*

*Gartner*³⁶, on the other hand, lists five *LegalTech* trends that will shape in-house legal departments over the next few years::

- 1) the spend on legal technology will increase threefold;
- 2) 20 % of generalist lawyers will be replaced with nonlawyer staff, who have other skills or experience than those, which are normally developed by lawyers;
- 3) automating 50 % of legal work related to major corporate transactions;
- 4) only 30 % of the potential benefit of their contract life cycle management investments will be captured by corporate legal departments.
- 5) at least 25 % of spending on corporate legal applications will go to non-specialist technology providers.

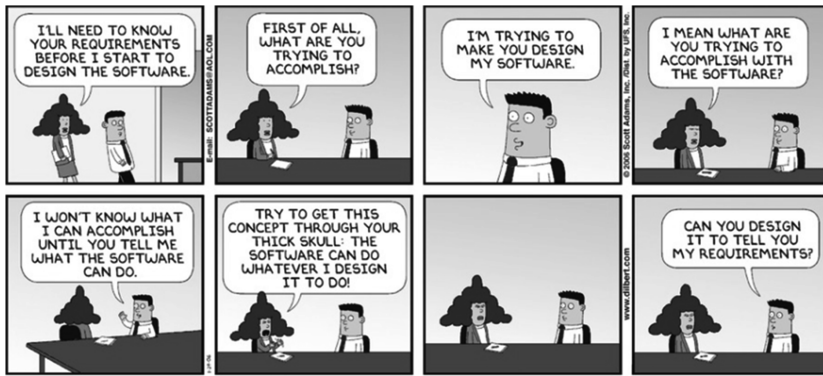
There are also opinions that soon the element of the lawyer's intellectual work will disappear³⁷, however, the vast majority of experts consider that the impact of AI on activities such as drafting opinions, advising clients or representing them will not be significant³⁸. AI is supposed to unleash the potential of a lawyer, who is looking for a place in a competitive market, giving him/her the opportunity to focus on what he or she does best by giving clients bespoke advice and handling non-standard aspects of transactions.

36 Rob Van der Meulen, '5 Legal Technology Trends Changing In-House Legal Departments'.

37 See: 'Digital Transformation: Assessing the Impact of Digitalisation on Ireland's Workforce' (2018) Expert Group on Future Skills Needs Report <www.skillsireland.ie/all-publications/2018/digital-transformation-assessing-the-impact-of-digitalisation-on-ireland-s-workforce.html> accessed 7 August 2020.

38 Rónán Kennedy, 'Algorithms, Big Data and Artificial Intelligence in the Irish Legal Services Market' Oireachtas Library & Research Service, 2021 <www.data.oireachtas.ie/ie/oireachtas/libraryResearch/2021/2021-02-18_spotlight-algorithms-big-data-and-artificial-intelligence-in-the-irish-legal-services-market_en.pdf> accessed 24 February 2021.

Figure 14. *The process of determining specification requirements and frequently encountered difficulties*



Source: Dilbert by Scott Adams, 29 January 2006 <www.dilbert.com/strip/2006-01-29> accessed 24 February 2021

While it is important to know the tools that are currently available, the priority for each organisation should be primarily to be aware of its position in the market and the role it plays or wants to play. It is of utmost importance to understand the data that a law firm or in-house legal department produces. The information contained in structured data sets can have an immeasurable impact not only on the quality of the services provided, but also on the efficiency of their implementation. Any implementation of the new system should be pre-planned with focusing on a careful analysis of existing processes and circumscribing essential needs. A detailed analysis of the legal aspects of AI will become paramount in order to develop an analytical framework that can serve as a checklist of identified legal areas to be taken into account for individual AI projects³⁹. In an era of zetabytes and the likelihood of more pandemics, agile management skills and the ability to adapt quickly are crucial for any business, including lawyers.

39 See: Chris Kemp, 'Legal Aspects of Artificial Intelligence (v.3.0)', (2021) Kemp IT Law White Paper <www.kempitlaw.com/legal-aspects-of-artificial-intelligence-v3-0/> accessed 24 February 2021.

Artificial Intelligence in the Law Firm of the Future

Gabriela Bar

1. Introduction

The future belongs to the rapidly evolving technology, and the most fascinating and capable of revolutionising any industry is *Artificial Intelligence* (AI). This technology will also be the main driver of changes in the legal profession. Today, many law firms are still trying to resist changes or wait them out, but soon clients of the law firm will not need, but also will not want, lawyers to work in the way they worked in the 20th or even at the beginning of the 21st century¹. Traditional law firms will soon disappear from the market, just like video cassette rentals.

We can already talk about advanced automation of many activities. *LegalTech* tools can replace lawyers in performing routine and repetitive activities (e-discovery, document analysis and generation, due diligence, document management, task inventory, working time and invoicing). Recommendation systems that use predictive analytics will gain an importance and in the near future also advanced systems that take partially or fully autonomous actions that can cooperate with human lawyers will be more and more popular.

The role and way the lawyers work will change dramatically also because the knowledge of the applicable law will be more often "embedded" in various types of devices (e.g. autonomous vehicles, intelligent buildings, computers) and a user will not be allowed performing any activity inconsistent with legal or ethical requirements². Thanks to the *distributed ledger technology* (DLT) and the wider use of the so-called *smart contracts* we will not need lawyers to draft many types of contracts and supervise their execution or help with their enforcement³.

Jurisprudence may decide about the need for a wider use of AI-based solutions in the lawyers work. Already in February 2012 the United States

1 Richard Susskind, *Tomorrow's Lawyers. An Introduction to Your Future* (Oxford University Press 2nd edn, 2017).

2 *ibid.*, 73.

3 On this subject: Dariusz Szostek, *Blockchain and the Law* (1 ed., Nomos 2019).

District Court (S.D. New York) in the case of *Da Silva Moore v Publicis Groupe*⁴ found that computer-aided review of large amounts of documents and data has advantages over traditional methods (and is more beneficial to the client). In late 2018, the Ontario Superior Court of Justice ruled to reduce the party's claim for trial costs by \$ 11,400 (including questioning in full the amount of lawyers' fees for analysing data and documents in the case, calculated on the basis of hourly rates), accusing the party's attorneys of not using *LegalTech* tools, including AI, to conduct legal research, which unnecessarily overstated the costs of legal assistance⁵. The court found that lawyers should use algorithmic solutions, including AI, to shorten the preparation time for the trial. It seems that we will soon function in a reality in which failure to use *LegalTech* tools may constitute an improper performance of the legal service, and thus - not only civil liability, but also disciplinary liability of the lawyer. Therefore, lawyers of the future should be aware of the possibilities of AI and each time take into account the need to use it in their cases⁶.

The precursors of the implementation of AI systems are and will probably remain large international law and consulting companies, which are able to bear the high costs of designing dedicated solutions or purchasing ready-made software and integrating it with their own systems⁷. The pioneers group also includes modern domestic law firms operating in the technology industry (with flexible, innovative customer-oriented approach and need of cost reduction) and the so-called boutique law firms specializing in a narrow field of law (e.g. intellectual and industrial property, pharmaceutical law), for which the implementation of modern solutions based on AI means the possibility of significantly expanding the volume of cases without expanding the law firm itself and increasing employment.

4 The full text of the judgment is available at: <scholar.google.com/scholar_case?case=6856971937505165396&q=da+silva+moore+v.+publicis+groupe&hl=en&as_sdt=40000006&as_vis=1> accessed: 11 January 2021. See also: Maura R. Grosman, Gordon V. Cormack, 'Inconsistent Responsiveness Determination in Document Review: Difference of Opinion or Human Error' (2012) 32 Pace L. Rev., 267ff.

5 The text of the judgment is available on the website of the *Canadian Legal Information Institute*, <www.canlii.org/en/on/onsc/doc/2018/2018onsc6959/2018onsc6959.html> accessed 6 January 2021.

6 Robert Ambrogi, 'Judge Penalizes Lawyers For Not Using Artificial Intelligence'. <abovethelaw.com/2019/01/judge-penalizes-lawyers-for-not-using-artificial-intelligence/>, accessed: 13 January 2021.

7 John Armour, Richard Parnham and Mari Sako, 'Augmented Lawyering' (2020) 558 European Corporate Governance Institute - Law Working Paper.

2. Robo-assistant: Support for the Lawyers and Client Advisor

Artificial Intelligence, which - thanks to deep learning - is making remarkable progress in recognizing images and understanding natural language, will undoubtedly replace - in the foreseeable future - younger lawyers who perform assistant and support functions in law firms⁸. It will replace them not only in the way we know today (due diligence, verification of standard contracts or contract templates, data analysis, automatic document creation, establishing the jurisprudence in a given category of cases), but will become a virtual assistant of an legal advisor attorney with specialist knowledge and the ability to communicate also with a law firm's clients. The tasks of robo-assistants will also include activities related to office management, such as answering phone calls, arranging meetings, keeping a calendar of courts hearings, managing incoming and outgoing correspondence, settling customers and handling procurement.

Advanced *Legal Expert Systems* (LES) - using machine learning algorithms, which offer the best solutions for a given problem, helping to make a final decision by a human lawyer - in the near future⁹ will communicate with users in natural language, explain the legitimacy of the proposed solution, answer the questions asked, and modify their recommendations after discussing the matter with a human. Today already, at least some of these competences are possessed by Watson IBM - it understands a legal problem presented in a natural language, is able to analyse and classify the information and then draw conclusions and provide legal advice, also presenting it in a computer simulated "human" voice¹⁰.

8 Dan Mangan, 'Lawyers could be the next profession to be replaced by computers' (CNBC 13 February 2017) <www.cnbc.com/2017/02/17/lawyers-could-be-replaced-by-artificial-intelligence.html> accessed 20 January 2021. See also: Carl Benedikt Frey, Michael A. Osborne, *The Future Of Employment: How Susceptible Are Jobs To Computerisation?*, <oxfordmartin.ox.ac.uk/publications/the-future-of-employment/>, accessed: 20 January 2021; <willrobotstakemyjob.com/23-2011-para-legals-and-legal-assistants/>, accessed 20 January 2021.

9 Jordan Furlong, *The evolution of the legal services market*, <law21.ca/2012/11/the-evolution-of-the-legal-services-market-stage-1/>, <law21.ca/2012/11/the-evolution-of-the-legal-services-market-stage-2/> accessed: 13 March 2021., <law21.ca/2012/11/the-evolution-of-the-legal-services-market-stage-3/>, accessed: 13 March 2021. See also: Kai-Fu Lee, *Inteligencja Sztuczna Rewolucja Prawdziwa. Chiny, USA i przyszłość świata* (Media Rodzina 2019).

10 Susskind, (n 1) 77. See also: Daryl Pereira, 'How Watson helps lawyers find answers in legal research' (Medium January 2017), <medium.com/@darylper/how-watson-helps-lawyers-find-answers-in-legal-research-672ea028dfb8>, accessed: 20 January 2021.

Virtual assistants will create structured data and documents from unstructured files of any format, extracting thousands of different pieces of information¹¹. They will be able to make automated transcription of a person's voice captured on video or in real time, combining this with sentiment analysis¹². Future robo-assistants will constitute a perceptual AI, and therefore will have the ability to "see", "hear" and understand gestures and sounds received by the "senses"¹³, they will also be able to place them in the context of a given situation (e.g. how many times during the testimony a witness makes a mistake repeating their version of events or what can be deduced from the contractor's body language during difficult negotiations)¹⁴.

As a lawyer, AI will also provide direct services to the law firm's clients¹⁵. The trend on the legal services market is the mass democratisation of specialised services and making them available to people who previously could not afford them¹⁶. Maintaining revenues at the current level will require lawyers of the future to use AI to contact clients and provide comprehensive service for their cases that can be standardised. It will become common to offer legal aid in the so-called *legal advice kiosks* where - for a reasonable fee - an interested party will be able to talk to a robo-lawyer about their legal situation, seek advice on the sale or purchase of a property, divorce, writing a will, ask for an analysis of documents or preparation of a contract.

11 Cf., inter alia the PROSAR-AIDA tool, described in the Report of the European Commission: European Commission, 'Study on the use of innovative technologies in the justice field. Final report' (Publication Office European Union 2020) 25.

12 See: Shubham Gupta, 'Sentiment Analysis: Concept, Analysis and Applications' <owardsdatascience.com/sentiment-analysis-concept-analysis-and-applications-6c94d6f58c17>, accessed: 12 March 2021.

13 Lee, (n 9) 2384 ff.

14 Cf. the tool for automated voice transcription and translation, developed by the British company VoiceScript Technologies Ltd., in conjunction with the capabilities of Artificial Intelligence in the analysis of sentiment, content significance, co-reference and correlation, described in the EC Report, (Study on the use) 34.

15 There are already "prototypes" of robo-lawyers, described, among others, by Igor Bosilkovsky, 'Stanford Grad Who Created The World's First 'Robot Lawyer' Raises \$ 12 Million In Series A' (Forbes 23 June 2020), <www.forbes.com/sites/igorbosilkovski/2020/06/23/stanford-grad-who-created-the-worlds-first-robot-lawyer-raises-12-million-in-series-a/?sh=1f6b03d03309> accessed 7 January 2021. See also: <https://robotlawyerlisa.com/> accessed 14 January 2021; or <https://robotlawyer.weebly.com/>, accessed: 14 January 2021.

16 Susskind, (n 1) 25ff.

Systems for e-negotiation and e-mediation as well as *Online Dispute Resolution* (ODR) will also become available to a greater extent, where only AI will be an advisor, mediator or arbitrator¹⁷. There will also be no obstacles for such an electronic lawyer to appear in court in simple cases, e.g., for payment, when courts will become fully virtual, when they will be more of a "public service" than a place to go for settling the case¹⁸.

3. Augmented Intelligence: Centaurs and Cyborgs

Just as the mythological centaur was half-human, half-horse, the first AI centaurs were half-human, half-AI teams, and played chess much better than the computer itself (they appeared in 1998 when Garry Kasparov led the world's first game of "Centaur Chess" - also called *advanced chess* or *cyborg chess* - after his defeat with IBM Deep Blue)¹⁹.

In the future, in many professions, including the legal one, centaur AI will be the best combination of the machine's ability to remember, verify a huge number of possible scenarios, analyse and detect problems, and human intuition to evaluate or make decisions based on AI performance.

Lawyers of the future, instead of focusing on AI replacing humans²⁰, should seek to cooperate with it²¹. The future may bring highly efficient cooperation, not competition²². AI will be the best at processing data: millions of numbers, information, images and instantly analysing an unimaginable amount of possible solutions, looking for hidden correlations that elude the human eye and mind, in choosing the best answers. Humans,

17 More on this subject: *ibid*, 121 ff.

18 *ibid*, 131 ff.

19 Nicky Case, 'How To Become A Centaur' (2018) *Journal of Design and Science* MIT Media Lab <jods.mitpress.mit.edu/pub/issue3-case/release/6>, accessed 14 January 2021; H. G. Escajeda, 'The Vitruvian Lawyer: How to Thrive in an Era of AI and Quantum Technologies' (2020) *XXIX Kansas J. of Law & Pub. Pol'y* 421-521, , 463, <<https://ssrn.com/abstract=3534683>>, accessed 14 January 2021.

20 See forecasts included in the World Economic Forum report "Jobs of Tomorrow. Mapping Opportunity in the New Economy" (January 2020); the report of Deakin University (Australia) and Ford Motor Company Australia Limited, "100 Jobs of the Future" (2019). See also the forecasts presented in the book by Kai-Fu Lee (n 9) 2924ff.

21 William Vorhies, 'An Argument in Favor of Centaur AI' <www.datasciencecentral.com/profiles/blogs/an-argument-in-favor-of-centaur-ai>, accessed: 15 January 2021.

22 Cf. Armour, Parnham, Sako, (n 7).

on the other hand, are likely to be better at asking questions²³. It is particularly important in the lawyer's work: questioning well-established patterns, formulating hypotheses, searching for new, non-obvious solutions. In the case of legal AI centaurs, man will pose these "questions" in the form of setting goals and pointing to limitations or exceptions. Meanwhile, AI will search data, analyse dependencies, examine many scenarios and present the most appropriate answers, showing alternative possibilities and their consequences - all in real time, in a conversation with a human partner. This is not all - a lawyer may question AI's answers by asking more complex questions, pointing to additional dependencies that are only noticeable to humans thanks to empathy and intuition²⁴. Thus, the AI centaur will be able to work out the best possible solution in a relatively short time.

Augmented Intelligence is not only the one that will be the result of close cooperation between human and AI, as in the case of centaurs. There is increasing trend of improving human intelligence through cyborgisation by embedding implants into the human body or wearing devices that increase the capabilities and computing power of the human brain (the so-called *Internet of Body*, *IoB*). The lawyer of the future may be then a cyborg, connected to huge resources of knowledge accumulated in computing clouds, able to read hundreds of information stored in electronic case files using modified eyes or - thanks to a special implant in the brain - analyse possible strategies within seconds during difficult negotiations. Sounds like science fiction? Perhaps. Nevertheless DARPA²⁵ (including in the N3: *Next-Generation Non-Surgical Neurotechnology Program*), Neuralink²⁶ and many other organisations conduct advanced research in this direction²⁷.

23 Case (n 19).

24 More on the division of roles between humans and AI: Escajeda (n 19) 464-465; Daniel Araya, *3 Things You Need To Know About Augmented Intelligence*, (Forbes 22/01/2019), <forbes.com/sites/danielaraya/2019/01/22/3-things-you-need-to-know-about-augmented-intelligence/?sh=4cda84bd3fdc>, accessed 10 January 2021. See also: Patryk Zakrzewski, *Sztuczna inteligencja rozsądza ramy, w których funkcjonowaliśmy do tej pory – interview with A. Przegląska* <culture.pl/pl/artykul/aleksandra-przegalska-sztuczna-inteligencja-rozsadza-ramy-w-ktorych-funkcjonowalismy-do-tej-pory-wywiad> accessed: 14 March 2021.

25 *Defense Advanced Research Projects Agency* - US government agency dealing with the development of military technology.

26 *Neuralink Corporation* – American neurotechnology company founded, among others by Elon Musk, dealing with the creation of implantable brain-machine interfaces.

27 Magda Gacyk, *Zabawy w Boga. Ludzie o magnetycznych palcach* (Agora 2020) 1901; Cheyenne Macdonald, *Pentagon working to develop technology that would let troops*

Today, no one is surprised by a pacemaker or a bionic limb prosthesis. Soon the effects of implants embedded in a brain that delay the progress of Parkinson's disease or eliminate the negative effects of other neurological diseases will no longer be something unusual²⁸. In a dozen years, a lawyer who uses learning opportunities to increase their cognitive abilities, and thus work efficiency, will also become the norm. There are many technological start-ups in the world that intend to accelerate the evolution of *homo sapiens*, and *transhumanism* is also increasingly mentioned in the business context²⁹.

4. Artificial Lawyer

The question remains whether it is possible to create an AI that is human-like or surpassing human intelligence (*Artificial General Intelligence*, AGI), and if so, when will it be created. There are as many sceptics among the scientists involved in AI research as there are believers in this "Holy Grail" of AI. Despite the seemingly speculative nature of the AGI, research and development work on its creation is already underway³⁰. In his new book,

control machines with their MINDS (Daily Mail 17 July 2018), <[dailymail.co.uk/sciencetech/article-5963803/Pentagon-working-develop-technology-let-troops-control-machines-MINDS.html?ns_mchannel=rss&ito=1490&ns_campaign=1490](https://www.dailymail.co.uk/sciencetech/article-5963803/Pentagon-working-develop-technology-let-troops-control-machines-MINDS.html?ns_mchannel=rss&ito=1490&ns_campaign=1490)> accessed 18 January 2021.

- 28 Such operations are performed at Stanford University (USA); depression and post-traumatic stress disorder are also treated in the same way. Microsoft is conducting research on brain implants that can restore fitness to people, for example paralyzed, blind or suffering from cerebral palsy. More: Gacyk (n 856) 1936. Also on this topic: *I am a human* – documentary, dir. E. Gaby, T. Southern, USA 2019.
- 29 Gacyk (n 856) 1951 The Alcor Foundation in Scottsdale, Arizona conducts research on hibernation and performs (of course for a fee) cryopreservation of the bodies or brains of the deceased in order to revive them in the future in a way that allows the recovery of lost information (and possibly the recovery of bodily damage if the cryopreservation affects the entire body), an example by implementing the "content" of the brain into a computer or android. See: <alcor.org/AboutAlcor/membershipstats.html> accessed 18 January 2021. More on this topic: Mateusz Kulawiński, 'Transhumanizm, cyborgizacja, ulepszanie człowieka' <researchgate.net/publication/334448348_Transhumanizm_cyborgizacja_ulepszanie_czlowieka>, accessed: 13 January 2021.
- 30 A study by the Global Catastrophic Risk Institute identified 45 research and development projects carried out in 30 countries on 6 continents, many of which are carried out in large corporations and academic institutions. See Seth Baum, "A Survey of Artificial General Intelligence Projects for Ethics, Risk, and Policy" (Global Catastrophic Risk Institute Working Paper 17 January 2017) 29 <[https://](https://www.globalcatastrophicriskinstitute.org/working-paper-17-january-2017)

“Architects of Intelligence”³¹, writer and futurist Martin Ford interviewed twenty-three of the world's most prominent AI scientists, including DeepMind CEO Demis Hassabis, Google AI chief Jeff Dean, and Stanford AI director Fei-Fei Li. In an informal study, they were asked to indicate when the chances of building an AGI would be at least 50 %. The most extreme answers were given by: Ray Kurzweil - an American computer scientist, writer, futurologist and promoter of the idea of *transhumanism*, who suggested that there was a chance to build AGI by 2029 and Rodney Brooks - a member of the Australian Academy of Sciences, a robotics specialist and co-founder of iRobot, which indicated that it would be the year 2200. The remaining votes were split between these two extremes, with an average for the year 2099. In other words, AGI is an undefined future, but it is possible that both the author and the readers of this text will be still alive to see AGI as a lawyer in the law firm of the future. Will such a lawyer of the future have an android form, sensually experiencing the world, entering into social relations, feeling the emotions associated with having a body? Or will it be an extremely advanced computer program, with access to all resources of the Internet and the ability to self-improve, self-replicate and - perhaps - being aware (like the *Techno Centrum* from Dan Simmons' books³²)?

It cannot be ruled out that AGI will be created as *Distributed Artificial Intelligence* through the integration of Multi-Agent Systems or the so-called Swarm Intelligence with Artificial Neural Networks, Deep Learning, including Reinforcement Learning, as well as with other technologies, e.g. Blockchain³³. Such advanced intelligent systems - capable of exchanging knowledge, experiences, memories, skills and radically modifying their

papers.ssrn.com/sol3/papers.cfm?abstract_id=3070741> accessed 4 August 2021. Some consider OpenAI's GPT-3 as a precursor to AGI. See: John Thornhill, 'Is AI finally closing in on human intelligence' (Financial Times, 12 November 2020) <<https://www.ft.com/content/512cef1d-233b-4dd8-96a4-0af07bb9ff60>>, accessed 13 November 2020.

31 Martin Ford, *Architects of Intelligence: The truth about AI from the people building it* (Packt Publishing, November 2018).

32 The *Hyperion* Cantos - a series of science fiction novels by Dan Simmons.

33 Francesco Corea, 'Distributed Artificial Intelligence. A primer on Multi-Agent Systems, Agent-Based Modeling, and Swarm Intelligence' (Medium, March 2019), <francesco-ai.medium.com/distributed-artificial-intelligence-3e3491e0771c>, accessed on 14 January 2020.

own structure - may be more like a swarm of bees than "persons"³⁴. They will also be incomparably more effective in solving problems and finding optimal solutions in a given situation than human lawyers.

Regardless of what form AGI will take - in order to be able to participate in social relations, including legal ones, and practice the legal profession (as an employee, associate or partner in a future law firm) - it must acquire the status of a legal entity. Contrary to many fears and controversies related to this idea, the AGI may become such an "artificial person", without prejudice to what constitutes the content of the legal personality of a person or a corporation. The society of the future should separate the legal personhood from the question of being human or acting by human beings. If we assume that the content of legal personality is the abstract ability to participate in legal relations, then in order to give a specific being the status of a legal person, it is only necessary for the legislator to make such a decision, constructing an appropriate provision allowing it to participate in legal relations, and thus - social life.³⁵ It seems that a sufficient condition for the creation of a new category of legal person - an "artificial person" - would be to grant AI some (even very limited) characteristics of the legal person³⁶, such as:

- 1) the right to dispose of specific resources (property) and to make property dispositions, including the conclusion of civil law contracts (with the possibility of limiting the rights in this respect, as in the case of management boards in companies);
- 2) the right to have legally protected personal rights, such as e.g. name, renown, secrecy of correspondence, as well as other specific for the substrate of a given AI;
- 3) the right to be protected against loss of integrity, that is, against "switching off", deleting or significantly modifying its memory (these issues should be assessed in court proceedings);
- 4) the obligation to be subject to third party liability insurance;
- 5) the right to sue and be sued in civil cases;

34 Cf. Nick. Borstrom, *Superinteligencja. Scenariusze, strategie, zagrożenia*, (Helion Gliwice 2016) 1998; Aleksander. Chłopecki, *Sztuczna inteligencja: szkice prawnicze i futurologiczne* (C. H. Beck 2018), 99ff.

35 More on this topic: Gabriela Bar, 'Robot personhood, czyli po co nam antropocentryczna Sztuczna Inteligencja' in Luigi Lai and Marek Świerczyński (eds.), *Prawo Sztucznej Inteligencji* (C. H. Beck 2020).

36 Cf. Visa A. J. Kurki, 'Why Things Can Hold Rights: Reconceptualizing the Legal Person' in Visa A. J. Kurki, Tomasz Pietrzykowski (eds) *Legal Personhood: Animals, Artificial Intelligence and the Unborn* (Springer 2017) 85.

- 6) the possibility of incurring criminal liability (including being subject to the so-called "kill switch" understood rather as a mechanism for temporary exclusion of AI, instead of its complete annihilation, which is a "penalty" for AI's actions contrary to the law³⁷).

Having the above-mentioned rights and obligations, a future lawyer who is an AGI could (at least to some extent) be independently responsible for its actions or omissions, which would certainly be a strong argument for "employing" such an "artificial person" in the office or accepting it as a partner.

It is possible that a new legal profession will be created: *Artificial Lawyer*. Its "implementation" will require an entry in an appropriate register, allowing the identification of a given AI. The possibility of practicing this profession should be also dependent on passing the conformity assessment procedure and obtaining a certificate. The EU is already proposing some ideas on future AI regulation, inter alia, in the resolutions of the European Parliament of 20/10/2020³⁸. The resolutions provide for the establishment of supervisory authorities responsible for ensuring compliance with the EU regulatory framework for AI development, implementation and application of *high-risk AI*, robotics and related technologies. Such bodies would be responsible mainly for a coherent EU approach and preventing fragmentation of the single market in the context of AI, conducting AI compliance assessments and awarding the *European certification of ethical compliance*. Perhaps the next step would be to create the possibility of entering AI in the register of "artificial (legal) persons". This would require codifying the criteria, the fulfilment of which would make it possible to

37 A temporary switch-off would also be a good solution because it would not raise so many ethical questions about the complete elimination of the conscious mind, and also because it would allow us to investigate the causes of the "malfunction" of AI and perhaps remove the cause of the problem. Moreover, punishing AI in this way would correspond to one of the goals of punishment in the human administration of justice, namely the reform of the individual. More on this topic: Jacob Turner, *Robot Rules. Regulating Artificial Intelligence* (Springer 2019), 360-361.

38 Cf. European Parliament resolutions of 20/10/2020: on a framework for the ethical aspects of AI, robotics and related technologies (2020/2012 (INL)) and on a civil liability regime for artificial intelligence (2020/2014 (INL)). The newest UE regulation proposal on AI: Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain union legislative acts, Brussels, 21.4.2021 COM(2021) 206 final, <eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0206>, accessed: 4 August 2021.

acquire the status of such a "person" (it should probably be granted only to the AGI).

This vision of the future may raise a well-founded fear that AGI in the role of a lawyer will be superior to humans in every aspect, and therefore human lawyers will become simply redundant. On the other hand, if empathy, intuition, and relativism are still reserved for people, then for many clients - both in counselling and in court representation - this "human factor" will speak in favour of the human being rather than the cool morality of an artificial mind³⁹.

5. Instead of a Summary: Why Changes to Natural Intelligence Are Necessary

It is a truism to say that the law does not keep up with technology, but it is equally obvious nowadays to say that the human mentality, in particular the attitude to rapidly occurring changes, also "does not keep up" with technological development. The necessary features of a lawyer of the future should therefore be: open mind, creativity, interdisciplinary approach to the profession, acquiring at least basic knowledge in such areas as information technology, machine learning, ethics, philosophy, psychology and neurobiology. Also essential are the ability to adapt to changing conditions and constant learning. Lawyers of the future will need to demonstrate emotional intelligence and a deep understanding of how technology can help achieve their clients' goals. These qualities and skills will certainly be more valuable than formal knowledge⁴⁰.

Regardless of which AI solutions the future lawyers will use, this profession will require digital skills that include knowledge of IT technologies to a level much more advanced than the use of MS Office, as well as the ability to use AI-based *LegalTech* tools or even to provide legal assistance in cooperation with a highly autonomous AI. Lawyers of the future may not need to be able to programme, but it will undoubtedly be necessary for them to understand the technical aspects of the algorithms and functionality of AI solutions in order to effectively advise clients. In particular, future lawyers will need to know how to assess the strengths and weaknesses of individual solutions, their compliance with the law and ethical princi-

39 Ian McEwan, *Maszyny takie jak ja*, (Albatros 2019) 3852, 4410 .

40 Anthony E. Davis, 'The Future of Law Firms (and Lawyers) in the Age of Artificial Intelligence' (American Bar Association, 2 October 2020) <https://www.researchgate.net/publication/340322409_The_Future_of_Law_Firms_and_Lawyers_in_the_Age_of_Artificial_Intelligence> accessed 4 August 2021.

ples.⁴¹ Probably many lawyers will remain only technology consumers, but this may not be enough. Ultimately, it will be necessary to find new roles, adequate to the market needs, with specialisations such as law engineering, legal project management and creating *LegalTech* tools.⁴²

The way a law firm is managed will also change. Using *LegalTech* solutions is not without risks, so it will be necessary to provide the so-called *assured-AI*. The AI systems that the lawyers of the future will use must be designed and constantly verified in terms of reliable operation and cybersecurity. In addition, it is imperative that they will be fully predictable, controllable and at the same time seamlessly integrated with the IT systems used so far. The challenges of choosing tools or systems to ensure such compliance will be one of the important tasks for the managing partners of the law firm of the future⁴³.

Ethical and regulatory issues related to risk management in the provision of legal services with the use of AI cannot be overlooked. In the context of compliance with the principles of professional ethics and professional responsibility, one should take into account such issues as algorithmic bias of AI systems, the lack of transparency and explainability of algorithms⁴⁴, carrying out audits of algorithms, the lawyer's responsibility for autonomous decisions AI "employed" in the law firm or the lawyer's failure to apply the recommendations of the AI system and ensuring that the use of AI solutions does not pose a threat to the obligation of profes-

41 Cf. the certificate of ethical compliance proposed in the EP Resolution of October 20, 2020 on a framework for the ethical aspects of artificial intelligence, robotics and related technologies (2020/2012 (INL)).

42 Armour, Parnham, Sako (n 7) 65.

43 In this context, it is important to develop an AI certification system. The American *Institute of Electrical and Electronics Engineers Standards Association* (IEEE SA) has launched a program called the *Ethics Certification Program for Autonomous and Intelligent Systems* (ECPAIS), which aims to create specifications for the certification processes of autonomous and intelligent systems (AIS). In the White Paper on Artificial Intelligence, published by the European Commission in February 2020. It was indicated that in the case of high-risk AI systems, compliance assessment should be mandatory, and the assessment system will be based on compliance assessment procedures already known in the EU (e. g. Cybersecurity Act) taking into account the specificity of AI. On the other hand, with regard to AI systems that do not qualify as "high risk", the European Commission proposed the possibility of establishing a voluntary labelling scheme. Cf. the EC proposal of Artificial Intelligence Act.

44 More on this topic: Gabriela Bar, 'Przejrzystość, w tym wyjaśnialność, jako wymóg prawny dla systemów Sztucznej Inteligencji' (2020) 20 *Prawo Nowych Technologii* 75ff.

sional secrecy. Perhaps the right solution to these problems would be to introduce a system of conformity assessment (digital certification) for lawyers⁴⁵.

Without forgetting the risks associated with the use of AI, the lawyer of the future will use it or collaborate with it, creating more for less⁴⁶, providing high-quality services, more accessible, but at the same time tailored to the client's needs⁴⁷.

The future is now. We can see its primroses. There is no doubt that we will not function in the future as a lawyers of the second decade of the 21st century. The lawyer of the future will be an innovator, always seeking, using the achievements of various fields of science, cooperating with experts in the field of the newest technologies, including artificial minds, imagining the impossible and open to continuous development⁴⁸.

45 The project for digital certification of lawyers was submitted to the European Commission by the General Council of Spanish Lawyers (CGAE) as an idea for the future implementation of artificial intelligence or DLT in legal professional organizations. However, according to the information included in the EC Report "Study on the use of innovative technologies ...", this is an idea at a very early stage, with no further progress in its implementation. See (n 11) 176.

46 Susskind (n 1) 16.

47 More on the future of legal services: John Flood and Lachlan Robb, 'Professions and Expertise: How Machine Learning and Blockchain are Redesigning the Landscape of Professional Knowledge and Organisation' (2018) 18-20 Griffith University Law School Research Paper <<https://ssrn.com/abstract=3228950>> accessed: 19 January 2021; Mark McKamey, 'Legal Technology: Artificial Intelligence and the Future of the Law Practice' (2017) 45 APPEAL 22 Review of Current Law and Law Reform <ssrn.com/abstract=3014408> accessed: 19 January 2021; Michael Legg and Felicity Bell, 'Artificial Intelligence and the Legal Profession: Becoming The AI-Enhanced Lawyer' (2019) 38(2) University of Tasmania Law Review 59, <ssrn.com/abstract=3725949> accessed: 19 January 2021.

48 Escajeda (n 19) 520.

LegalTech in a Law Office in the context of Standardization and Autonomic Intelligence

Michał Wódczak

1. Introduction

In the light of the discussions accompanying the undoubted multitude of aspects behind the concept of *LegalTech* analyzed from a futuristic perspective, basically covering not only the operation of a law firm office per se, but, in a holistic sense, also broadly understood processes, such as the creation and application of law, or even the interpretation thereof, one may consider certain analogies with the works ongoing over many years on convergence and automation of telecommunications systems, where the concept of autonomic intelligence¹ is introduced under the umbrella of the *Future Internet*, going even beyond what is expected from artificial intelligence. Due to an extensive nature of this phenomenon understood in such a way, it seems necessary to explore this issue in terms of standardization², which, especially in a historical understanding, may provide all the desirable directions necessary for a proper placement of not only the legal aspects, but also the related technological factors.

2. Legal Services and Standardization

According to factual circumstances, with the passage of time one could discern a conspicuous alteration in the business model³ applicable to the operation of modern law offices, which is related to the more and more

-
- 1 The concepts contained in this work, apart from references to specific citations, have been outlined on the basis of the monograph Michał Wódczak, *Autonomic Intelligence Evolved Cooperative Networking* (Wiley 2018), as well as the lectures carried out by its author under the umbrella of the *Samsung-SGH Business Course* organized in cooperation with Warsaw School of Economics.
 - 2 Richard Susskind, *Tomorrow's Lawyers. An Introduction to Your Future* (Oxford University Press 2nd edn, 2017) 134.
 - 3 Tanel Kerikmäe and others, 'Legal Technology for Law Firms: Determining Roadmaps for Innovation' (2018) *Croatian International Relations Review* 105.

advanced processes of task automation that so far have seemed to be typically a human domain, just to mention the entire spectrum of solutions related to the exchange of electronic documents. As a consequence, such a conversion seems to naturally translate into a new approach to the model of legal service provisioning⁴, to be organized not exactly literally "in the law office", but rather "by the law office", allowing to offer a better value for a lower price, and, at the same time, to obtain the so much desirable competitive advantage⁵. However, such an approach is connected with specific challenges, since two, somewhat interweaving areas, are subject to a mutual change, both the one pertaining to legal business, and the one related to the technological operation of the same.

Given such a context, in principle, it appears fairly appropriate to adopt the assumption that computer systems dedicated to law offices exercising the *LegalTech* orientated approach should not display any closed nature, in the sense of limiting their operation to the area of one country only, but on the contrary, following the example of modern telecommunications systems, just to mention the 5G technology, should enable, in compliance with all the cybersecurity rules, cooperation on a cross-border, if not a global basis. Such a goal may be achievable by means of a standardization⁶ carried out in a proper manner, as the omission or disruption thereof could have far-reaching consequences. Yet, in the case of such endeavors, there may be no shortcuts, the prove of which may be derived from the fact that the telecommunications systems adopted as the point of reference, where the autonomic intelligence is supposed to be applied, are still at the research and standardization stage.

Therefore, narrowing the scope of consideration down to the most appropriate *LegalTech* 3.0 stage, as well as taking into account the level of expansion and distribution of the aforementioned computer systems, which are supposed to support the work of a lawyer in the already highlighted aspects of their activity, it appears advisable to place special emphasis on the extremely important role of organization of the said standardization process, since today's level of advancement of telecommunications systems

4 Qian Hongdao and others, 'Legal Technologies in Action: The Future of the Legal Market in Light of Disruptive Innovations' (2019) Sustainability 9.

5 Deloitte Legal, 'What's your problem? Legal Technology' (2018) Legal Management Consulting 4.

6 From now on, unless a technological understanding has been clearly indicated, standardisation shall be perceived as a dual process, pertaining to the area of *LegalTech*, encompassing both the realm of legal activity and the technological solutions supporting such an activity.

is a derivative of lessons from not too distant history, when in the 1980s it became conspicuous that globalization requires universal solutions. As a result, a Reference Model for Open Systems Interconnection⁷ was born, the degree of complexity of which, as well as the fluctuations at its research stage, resulted in the fact that standards were not developed at the right time, which is best illustrated by the concept of the so-called apocalypse of two elephants⁸ (Fig. 1).

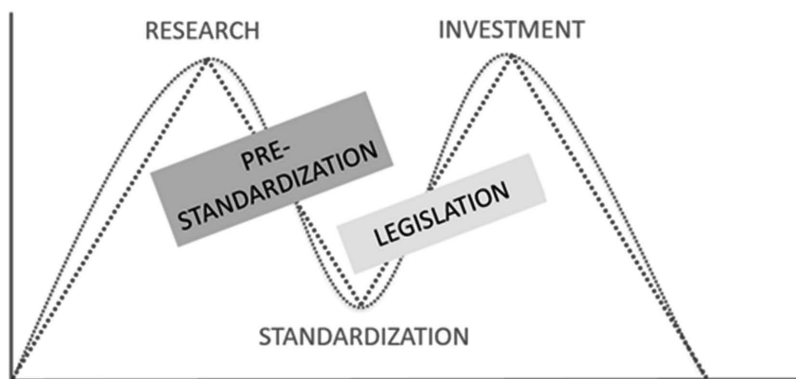
Despite the relatively expressive⁹ name, the concept of the apocalypse of two elephants is, in fact, intended to illustrate the mutual relationship among three phases, with an emphasis on the standardization stage being located in the middle, while, at the same time, remaining in relation to the research and investment stages, allowing the avoidance of two significant risks. On the one hand, too early standardization, i.e., before the research works have been completed, would undoubtedly lead to potential solutions that could take into account only some of the demands of respective participants of such a process, which could result in attempts at introduction of incompatible products. On the other hand, too late standardization, i.e., overlapping at least partially with the investment stage, would similarly result in incompatible products that would fail to address the demands of all interested parties alike, although this time it would result from a lack of timely arrangements.

7 ITU-T, 'Series X: Data Networks and Open System Communications. OSI Networking and System Aspects – Efficiency' (1998) ITU-T Recommendation X.630 10.

8 Andrew S Tanenbaum and David J Wetherall, *Computer Networks* (Prentice Hall 2011) 51.

9 Due a specific nature thereof, the original naming from Andrew S Tanenbaum and David J Wetherall, *Computer Networks* has been maintained, while possibly, from a semantic perspective, the "collision of two elephants" could be a more adequate term.

Fig. 1. *Apocalypse of two elephants*



Source: Own elaboration¹⁰ based on Andrew S Tanenbaum and David J Wetherall, *Computer Networks*, (Prentice Hall 2011) 52.

At the same time, one should note that this model, also in relation to *LegalTech*, is not intended to deprive the above-mentioned product recipients of the possibility of using the advantages and benefits of competition, yet solely to ensure its cost-optimal nature. In other words, the currently prevailing trend on the market of telecommunications devices, manufactured for mobile operators, follows the assumption that devices coming from any vendor should work together without any difficulties. Therefore, standardization refers to the interfaces between functional blocks¹¹, typically referred to as black boxes, whose operating principles are often protected by patents, at the same time providing a field for obtaining the aforementioned competitive advantage, resulting, for example, from the use of more advanced algorithms. One should expect that such a model shall be assumed for the specifications created for autonomic distributed systems dedicated to *LegalTech*.

10 The source version does not contain the pre-standardisation and legislation stages.

11 Michał Wódczak and others, 'Standardizing a Reference Model and Autonomic Network Architectures for the Self-Managing Future Internet'(2011) 25(6) IEEE Network 51.

3. Technology and Legislation

Despite emphasizing above that standardization, as understood from the perspective of the functioning of a law office and embedded in a broader context of the entire legal ecosystem, is a dual process, i.e. it should be approached both from the point of view of legal services and technological solutions, one shall realize that the general assumptions regarding such a process remain invariable. A possibly good example could be constituted by a legal service pertaining to the preparation of a contract of a relatively common nature, where the law office could apply an approach based on a template¹², which would certainly reduce the unit cost in relation to a completely "bespoke" document, although equivalent in terms of content. However, only the circulation of such documents in electronic form, for example, for the purpose of the cooperation between or among two or more law offices, in the case of handling large-scale cases, could reveal the true essence of standardization.

In other words, by a complete analogy to the technological viewpoint, which is undoubtedly a derivative of the interactive or rather transactional model of cooperation, created in this way by a network of law offices, one comes to a situation in which entities, be it legal or technical, exchange information in a known format that is a direct implication for the existence of standardized "interfaces" between or among related lawyers or devices. Given such an approach, a lawyer of a given law office, being subject to exploiting specific experiences or established practices, yet different from equivalent "resources" applied by lawyers of other law offices, shall be perceived as performing their part of the overall undertaking in a way that reflects or imitates the functioning of networked devices¹³, which often may be operating in accordance with proprietary algorithms, so that, on a certain level of abstraction, it shall be possible to offer both services and functionalities adequate to expectations.

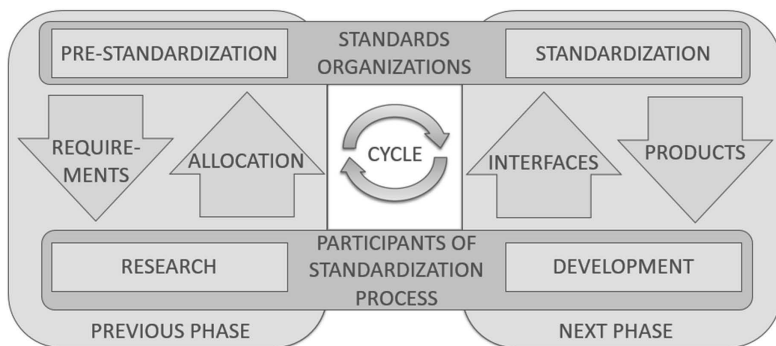
In general, the approach outlined above has not been successful from the very outset, and, in reality, it could only become implemented over the years, as exemplified by the aforementioned Reference Model for Open Systems Interconnection, in the case of which one may only recently conclude that present telecommunications systems are becoming the actual incarnation thereof. Paradoxically, the assumptions made several decades ago could be finally fulfilled, which may be a kind of warning for *LegalTech*

12 Susskind, (n 2) 28.

13 Michał Wódczak, *Autonomic Cooperative Networking* (Springer 2012) 62.

solutions, although the acquired knowledge allows the introduction of the pre-standardization stage, whose role is to soften the connection between the first two ones (Fig. 2). Unfortunately, modern telecommunications systems pose new challenges related to cybersecurity on an unprecedented scale, which is attempted to be addressed through appropriate legislative work at the European Union¹⁴ level, as well as separate legislative processes of the Member States.

Fig. 2. Role of pre-standardization



Source: Own elaboration¹⁵ initially presented under the umbrella of *Samsung-SGH Business Course*

The context introduced in this way is intended to emphasize the fact that the concepts of the future developed for the needs of the area of *LegalTech* will be able, given the technical side, to capitalize on the already complete standardization achievements developed for the needs of telecommunications systems, as well as to emphasize the challenges not only in the area of standardization, related to specific technical requirements, but most of all, to stress the legislative demands, which, moving with the times, shall also become reflected in the aforementioned concept of the apocalypse

-
- 14 Regulation (EU) 2019/881 of the European Parliament and of the Council of 17 April 2019 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 [2019] OJ L151 (Cybersecurity Act).
- 15 In the case of presented approach one may realise that due to their advancement at the standardisation stage more development than typically research works shall be referred to.

of two elephants. While the exact location of the legislative stage could require a broader discussion, and it will certainly become clear in a longer term, it is already possible to point out, without hesitation, that this stage shall precede the investment stage and, at the same time, overlap with the standardization one, creating somewhat a mirror image of the pre-standardization phase, as shown in Fig. 1.

4. Legal Processes and Autonomics

Moving to the aspects related to the potential application of the principles governing the concept of the autonomic intelligence mentioned at the beginning to *LegalTech* systems, as well as to show the potential of this approach in synergy with solutions based on artificial intelligence, it appears necessary to properly understand the notion of autonomics¹⁶ in the first place. A fairly common way of defining such an autonomic system is to indicate and underline the possibility thereof to function without any need for an external support, which, as it will become conspicuous soon, may not be an unambiguous definition at all, however, any inaccuracies of the same may be relatively easily explained on the basis of workings of the English language, where there are several similar concepts characterized by similar semantic fields. In fact, those are the slight semantic differences to be responsible for making the resulting ambiguities result in the misunderstanding of the idea of autonomics.

Therefore, the aforementioned autonomic system, also implemented for the purposes of automating legal processes, shall be perceived as imitating the functioning of the biologically-rooted autonomic nervous system in a form similar to what may be found in the human body, although under the assumption of a significantly lower level of complexity thereof, at least in relation to what is attainable by the technology of today. Fairly frequently one may also come across a more elevated form of introducing the definition of autonomics, where it becomes visualized by analogy to the "behavior" of an ant colony¹⁷. However, an autonomic system should not be confused with either an autonomous system or an automated system, because, in the first case, it is usually referred to as a part of a larger system

16 Michał Wódczak, *Autonomic Computing Enabled Cooperative Networked Design* (Springer 2014) 3-4.

17 Jeffrey O. Kephart and David M Chess, 'The Vision of Autonomic Computing' (2003) 36(1) IEEE Computer 44.

that can function "independently", so in the sense of being "detached", while, in the second case, it is thought of more as a system based on the processing of computer scripts.

As a result of said ambiguities, somewhat a synonym for the concept of autonomies in the form of self-management was also introduced, which immediately highlights the difference between the above-mentioned types of systems. Moreover, bearing in mind the earlier reference to possible synergy with artificial intelligence, it is also worth noting, and this will be additionally confirmed by the architectural assumptions adequate for *LegalTech* systems as mentioned below, that even the concept of autonomic self-learning¹⁸ systems, referred to in legal literature, also seems not to entirely exhaust the assumptions behind autonomies in the very sense in which it has been introduced in this work. These assumptions are profoundly rooted in the Generic Autonomic Network Architecture¹⁹ based on the so-called mechanism of Hierarchical Control Loops (Fig. 2), which will be also applicable to the discussion of the concept of autonomies in relation to the functioning of a law office.

In general, the architecture under discussion is based on the assumption that there are four levels of said Hierarchical Control Loops²⁰ located at the protocol level, function level, node level, and network level. In each case, remaining in line with the generalized concept of such a Hierarchical Control Loop as outlined in Fig. 3, the superior or controlling role is attributed to and performed by the so-called Decision Elements. As such, Decision Elements can enter into two types of mutual relations in the sense of becoming dependent either vertically or horizontally, which, in the first case, shall be perceived as a relationship of being superior or subordinate, while, in the second case, shall translate into a relationship of a mutual dependence or, rather, being concurrent. It is worth noting that, as far as the technical aspects are concerned, each level is standardized in

18 Expert Group on Liability and New Technologies – New Technologies Formation, 'Liability for Artificial Intelligence and Other Emerging Digital Technologies' (2019) European Commission 25.

19 ETSI-GS-AFI-001, 'Autonomic network engineering for the self-managing Future Internet (AFI); Scenarios Use Cases and Requirements for Autonomic/Self-Managing Future Internet' (ETSI Group Specification 2011) 6.

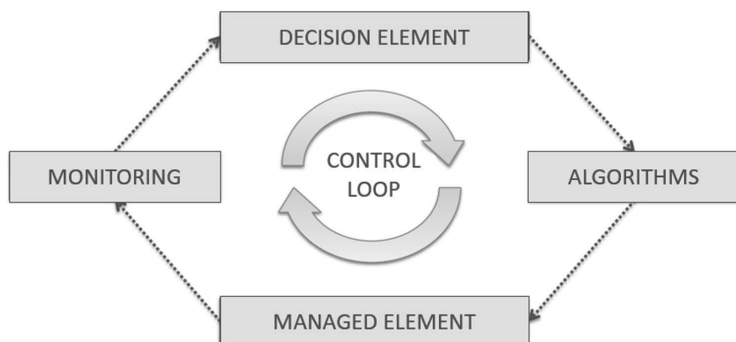
20 ETSI-GS-AFI-002, 'Autonomic network engineering for the self-managing Future Internet (AFI); Generic Autonomic Network Architecture (An Architectural Reference Model for Autonomic Networking, Cognitive Networking and Self-Management)' (ETSI Group Specification 2011) 13.

detail, which may facilitate its transposition to a computer system intended to support a pertinent network of law offices.

5. Agent Systems and Definition of a Thing

However, in the case under discussion, apart from the technical dimension, largely boiling down to a communication system, there remains the already highlighted strictly legal aspect, which requires some kind of a mapping of the principles of functioning of a future law office in a broader context, where at least some of the legal competences can be expected to be replaced by robotic systems. It seems that due to the fact that the logical structure of the network of such law offices would coincide with the hardware infrastructure of the related computer system, the models of autonomic control of each of them would not so much function in parallel, but could even interweave on the basis of synergy, yet a correct design of such a of such a system would require to carry out, in the first place, the research stage, and only after the appropriate critical mass has been achieved, to commence the standardization path, preferably taking into account pre-standardization.

Fig. 3. Autonomic Hierarchical Control Loop



Source: Own elaboration²¹ based on ETSI-GS-AFI-002, 'Autonomic network engineering for the self-managing Future Internet (AFI); Generic Autonomic Network Architecture (An Architectural Reference Model for Autonomic Networking, Cognitive Networking and Self-Management) (2013) ETSI Group Specification 44.

The intelligence of such an autonomic system would consist precisely in the assumption that its individual Decision Elements would have a significant freedom of action and could theoretically not be able to stop certain "behaviors" without intervention, especially should appropriate principles of operation be not assigned authoritatively. The easiest way to explain this phenomenon would be to refer to the operation of the human organism, or more specifically its autonomic nervous system, in the case of which, for example, a stressful situation would cause an accelerated heart rate, which, unfortunately, could not be remedied only by the act of thinking, i.e., by using the brain, but which could spontaneously disappear in an unknowing manner. The aforementioned ant colony would also function similarly, so that encountering an obstacle while moving, it would not

21 The presented high level view of the Hierarchical Autonomic Control Loop shall be perceived as a significantly simplified version thereof, prepared in order to outline its generalised workings. Such an approach is advantageous because it allows to highlight the difference between autonomic intelligence and artificial intelligence, where the latter would be limited to residing within one or more Decision Elements, while the former is based on the interaction of an entire arrangement of such Hierarchical Autonomic Control Loops.

stop locally, but continue as a consistent whole, remaining in an amazing symbiotic relationship with the environment.

Most obviously, one may consider certain "safety valves" that would allow the administrator or operator, who in principle should only supervise such a system without interfering with its workings, to perform the operation of opening²² a Hierarchical Control Loop to perform any required adjustments, should there arise a need for doing so. In this context, an important issue from the legal point of view could be related to a certain kind of functional correspondence between the autonomic system using Decision Elements and an agent system²³. This is so as in the case of a telecommunications operator's network, at the current stage of technology, one refers almost exclusively to completely virtual entities, i.e., occurring only in the form of software, while considering the application of the introduced architectural concepts directly to the area of *LegalTech*, one could possibly imagine the use of robots, which could raise reasonable questions about their actual legal status.

The emergence of such a question should be interpreted as a harbinger of the aforementioned need to introduce the concept of legislation into the discussed process of standardization of technological systems, while maintaining previous references to the stages of research and investment. After a more in-depth analysis, it may transpire that depending on the features attributed to the agent in question, it can consequently be considered not only as an object, but also as a subject of a legal relationship, and thus qualify, in a large generalization, either as an artificial agent or a moral agent, where, in the first case, the imitation of human intelligence may seem to be sufficient only to exhaust the definition of a thing within the meaning of Art. 45 of the Polish Civil Code, for example, while in the second case, the basis for classification is the recognition of the autonomic flavor of the agent which is related to the fact that it is not dependent on human decisions.

22 ETSI, 'Generic Framework for Multi-Domain Federated ETSI GANA Knowledge Planes (KPs) for End-to-End Autonomic (Closed-Loop) Security Management & Control for 5G Slices, Networks/Services' (2020) 6 White Paper 12.

23 Frances MT Brazier and others, 'Agents and Service-Oriented Computing for Autonomic Computing: A Research Agenda' (2009) 13(3) IEEE Internet Computing 83.

6. Conclusion

All in all, despite the existence of an evident, although somewhat futurological, mutual correspondence between the network of law offices and the network of computer entities, it is supported by in the strict sense, one should not forget about technical aspects mostly attributable to the legal side, such as for example datafication, algorithmic solutions, or distributed ledgers which should undoubtedly be integrated into the technical part, too. In a sense, one may be under an impression that the degree of conceptual complication, not to mention any possible deployment, may be surprisingly high in the case of the synergistic approach under consideration. Nevertheless, it also transpires that there is no escape from automation in one form or another, and success can only be brought about by a conscious deployment of a well-prepared action plan with a standardizing tone, constructively drawing on the experience of previous years as it has been already indicated.

LegalTech in the Judiciary: Technological Developments and the Future of the Court System

Mariusz Załucki

1. Introduction

Today's judiciary is a well-established structure with a variety of courts of varying jurisdiction, in which traditionally sit persons holding the office of a judge. A judge is independent in his actions, and the only limit to his actions is the binding law. The latter, as we know, has been expanding on a large scale in recent years. This has led to a situation in which the office of a judge and the way he acts should be viewed differently from the way it was a dozen or so years ago. Admittedly, this does not yet involve changes to the constitutional foundations for the performance of the office of a judge, which, as it can be assumed, may soon appear if only in connection with calls for the replacement of traditional judges with algorithms in deciding certain categories of cases. This axis of a change in views is currently rather related to the methodology of exercising the office of a judge. Undoubtedly, the world of new technologies is also transforming the judiciary, and the benefits associated with this world can and do serve the administration of justice.¹

Efficient adjudication of court cases is one of today's elements of the constitutional standard of the right to a court, often referred to as the so-called "fair trial", in connection with the jurisprudence appearing not only against the background of individual Constitutions, but also, at least from the point of view of European countries, against the background of Article 6 of the European Convention on Human Rights.² This standard,

1 Tania Sourdin, 'Judge v. robot? Artificial Intelligence and judicial decision making' (2018) 4 UNSW Law Journal 1114.

2 cf Elsa Toska Dobjani, 'Length of proceedings as standard of due process of law in the practise of the Constitutional Court of Albania' (2016) 13 Academicus. International Scientific Journal 161. Martin Kuijer, 'The right to a fair trial and the Council of Europe's efforts to ensure effective remedies on a domestic level for excessively lengthy proceedings' (2013) 13 Human Rights Law Review 777-794.

developed over the years, has often been disturbed in some systems. These distortions, which today make up one of the basic deficiencies of the justice system - the lengthiness of court proceedings - are the motive for most of the changes in procedural regulations, whose basic task, at least from the perspective of recent years, is to speed up the examination of cases, to reduce their duration. In many countries, key indicators of the length of court proceedings have deteriorated in recent years. This must mean lowering of standards and widespread dissatisfaction, and therefore provoke a search for solutions which could improve efficiency.³

It should be emphasised that lawyers from all over the world are considering how to shape the performance of judges so that it can meet public expectations.⁴ In the European judicial area currently in force, which is based on dialogue and mutual recognition of judicial decisions, the values that must guide the exercise of judicial functions must meet certain standards. Efficiency and speed are standards which affect the functioning of the entire justice system, if only in the context familiar from, for example, the Council of Europe and European Union regulations. These standards already recognise the problem of new technologies, the opportunities and threats which these may bring to the justice system.⁵ Today's court is very different from the one that operated just a few decades ago. A prime example of this is the availability of online case law, which means that today anyone interested can easily access it. If it were not for modern technology, such a possibility would not exist; one would still have to browse through thousands of pages of library catalogues or various archives.

Technological changes can also be seen in individual court procedures. Procedural rules have undergone significant changes in recent years. Typically "analogue" court proceedings are already becoming "digital". This was accelerated in connection with the COVID-19 pandemic, when the work of the courts was suspended for some time and a large-scale search began for solutions that could provide a panacea for the orders of social

3 cf Nicholas Mouttotos, 'Reform of civil procedure in Cyprus: Delivering justice in a more efficient and timely way'(2020) 2 Common Law World Review 99.

4 cf Magdalena Siwek, 'Prawa i obowiązki sędziego'(2006) 13 Studenckie Zeszyty Naukowe 37. See, also Ewa Łętowska, 'Dekalog dobrego sędziego'(2016) 1 Krajowa Rada Sądownictwa 5-8.

5 See The Report of the European Commission: European Commission, 'Study on the use of innovative technologies in the justice field. Final report' (Publication Office European Union 2020) "Study on the use of innovative technologies in the justice field", (Brussels, September 2020).

isolation in force during the pandemic.⁶ There are many such solutions, both in the practical functioning of courts and in the conceptual phase. They may have, and often do have, an impact on the activities of courts and the parties involved. The experience of several countries shows that the bold use of non-traditional solutions can have very desirable effects.⁷ Such solutions include those based on artificial intelligence. Therefore, new technologies in the administration of justice, LegalTech, is a path from which there is no turning back today. This will be the subject of the following remarks.

2. Experience with LegalTech in the judiciary

Focusing on the current state of the use of technological tools in the administration of justice, it should be recalled that LegalTech tools can be divided into several groups. Many indicate that, in fact, today one can speak of at least three “waves” of LegalTech.⁸ It should be recalled that LegalTech 1.0 refers to the technology including software that supports the activities of lawyers as professionals. Thus, it refers to the long-known IT systems for office organisation and operation, document circulation, legal information systems, or certain services available online, such as videoconferencing, online communication with courts, or even online hearings. LegalTech 2.0 is already much more advanced technology, not only supporting the work of judges and clerks, but also replacing people, where in the justice system we can talk about, among others, automation of certain activities. Finally, LegalTech 3.0 are solutions that are aimed not so much at automation and replacing humans as at the possibility of making autonomous decisions by technological solutions, which is primarily related to the development of artificial intelligence.⁹

Looking at the above, one can in principle independently assess the implementation of the various available LegalTech tools in a given legal system. Looking at the above, e.g. from the perspective of the Polish

6 David Freeman Engstrom, ‘Post-COVID courts’ (2020) 68 UCLA Law Review Dis-course 246.

7 Robert Size, ‘Taking advantage of advances in technology to enhance the rule of law’ (2017) 91 Australian Law Journal 575.

8 cf Dariusz Szostek, in Dariusz Szostek (ed) *Legal tech. Czyli jak bezpiecznie korzystać z narzędzi informatycznych w organizacji, w tym w kancelarii oraz dziale prawnym* (C. H. Beck 2021).

9 *ibid.*

judiciary, transformations connected with the first stage of LegalTech development are noticeable, but there are no wider attempts to apply further benefits of new technologies, despite subsequent IT projects aimed at improving the judiciary that have been appearing for some time now. The situation is similar in most European countries. As a rule, judges have legal information systems available, and they use an electronic system for management of hearings. In practice, there are, inter alia, so-called court information portals, solutions for persons having the status of a party to proceedings or an attorney, enabling direct online access to information resources contained in court files. There is a number of tools supporting the adjudication process which should be qualified as LegalTech 1.0 solutions.¹⁰

In the practice of the judiciary, however, more and more voices are being raised about the need to cross further barriers and perhaps replace, at least in some cases, traditional judges in the future by algorithms using artificial intelligence skills.¹¹ Such a possibility should certainly not be underestimated, especially as the first results of research and experiments (what will be presented below), at least for some, seem promising.¹²

The implementation of LegalTech tools in the judiciary takes place in stages. Today, it is not a problem to use an IT system in court, as it has become an everyday practice basically everywhere. Today, the important problem is the effective use of such systems, which could be seen in the world at least in connection with the COVID-19 pandemic. It would be impossible to list all the examples of the use of LegalTech here, but at least one example shows where the judicial world is heading. As already mentioned, LegalTech includes, inter alia, the possibility to organise part of a trial by videoconferencing. Until the COVID-19 pandemic, in different legal systems, the state of implementation of various solutions related to this was at different stages. The pandemic made the use of such tools more and more daring. This was not a question of the availability of technical solutions, but rather of the legal possibility of using these solutions for the purposes of cases proceeded by the courts. Therefore, it should be

10 Mariusz Załucki, in Dariusz Szostek (ed) *Legal tech. Czyli jak bezpiecznie korzystać z narzędzi informatycznych w organizacji, w tym w kancelarii oraz dziale prawnym* (C. H. Beck 2021).

11 cf Richard Susskind, *Online Courts and the Future of Justice* (Oxford University Press 2019).

12 cf Mariusz Załucki, 'Wykorzystanie sztucznej inteligencji do rozstrzygania spraw spadkowych' in Luigi Lai and Marek Świerczyński (eds) *Prawo sztucznej inteligencji* (C. H. Beck, 2020) 145-155.

emphasised that an important change in recent months that has occurred in the world in relation to the functioning of the judiciary is the broad possibility of holding the so-called trials at a different location by means of audio-video technology (videoconferencing). Legislative changes in individual countries have given rise to the use of such instant messengers as Zoom, Skype, Facetime, MS Teams and Google Meet for procedural activities. As a rule, hearings were conducted by means of technical devices allowing for their remote execution with simultaneous direct transmission of images and sound, with the reservation that the persons participating in them do not have to be present in the court building (including another court, which was the subject of previous regulation in some states). In principle, therefore, court hearings as a result of these changes may be held online in many countries, unless holding them in the traditional manner does not pose an excessive risk to health. Against this background, one wonders whether this improvement will remain in individual court procedures even after the pandemic period. At least some people expect this. Such a change in judicial procedures does not happen often.¹³

The above means that court procedures have recently undergone a significant transformation and the way courts operate today is indeed different from how it was just a few years ago. The need to incorporate the technological world into the legal world is undeniable. It is to be expected that this interpenetration of these worlds will continue. An effective and efficient justice system is a key factor influencing the functioning of the state, particularly in the area of security and economic development. Widely understood computerisation, as LegalTech tools can be understood, is certainly a way to improve the functioning of the justice system. However, computerisation understood as a support is not everything. More and more often, the possibility of replacing a human being, at least at certain stages of case recognition before a court, is being considered.

3. AI in the judiciary

The impulse for further discussion in this area may be the results of a test which were published in 2016, to which 584 cases pending before the European Court of Human Rights were subjected. The algorithm, after analysing the documents, predicted 79 % of the decisions of this court concerning claims under Article 3 (prohibition of torture, inhuman and de-

13 Załucki (n 10).

grading treatment), Article 6 (right to a fair trial) and Article 8 (right to respect for private and family life) of the European Convention on Human Rights.¹⁴ The results of this test have resonated widely in the world literature and have given impetus to undertake further research, which is also promising.¹⁵ Undoubtedly, the level of complexity of the matter to be resolved and the complexity of the issues raised allows an optimistic outlook on the future from the perspective of the possibility to create an algorithm for resolving less complicated cases, which are most often the subject of adjudication before a common court.

A similar test, the results of which were published in 2017, was conducted in the United States of America. Here, in turn, artificial intelligence analysed more than 28,000 cases pending before the US Supreme Court on the basis of the created algorithm.¹⁶ The algorithm was able to predict 70.2 % of cases decided between 1816 and 2015.¹⁷ At the same time, the spectrum of cases was much broader than in the case of the test concerning the application of the standards of the European Convention on Human Rights in specific cases. This is certainly one of the next impulses, a motivation to try to further search for alternative methods of judging disputes. Therefore, it is not surprising that also this experiment was widely echoed in the scientific space.¹⁸

The above tests were primarily based on a natural language processing method, where an artificial intelligence predictive model operating on text data was used. Large amounts of data were analysed to accurately predict the actual outcome. The results of the tests are interesting in that a large proportion of the errors related to similar legal standards, where only the nuances of the jurisprudence decided on a different outcome in reality. It should therefore be noted that a system dealing with the automation

14 cf. Nikolos Aletras, Dimitrios Tsarapatsanis, Daniel Preotiuc-Pietro and Vasileios Lamos, 'Predicting judicial decisions of the European Court of Human Rights: a natural language processing perspective' (2016) 2 *PeerJ Computer Science* 93.

15 Masha Medvedeva, 'Using machine learning to predict decisions of the European Court of Human Rights' (2020) 28 *Artificial Intelligence and Law* 237-266.

16 cf. Daniel Martin Katz, Michel J. Bommarito II and Josh Blackman, 'A General Approach for Predicting the Behavior of the Supreme Court of the United States' (2017) 3 *PLOS ONE*.

17 *ibid.*

18 cf., eg.: Haoxi Zhong, Zhipeng Guo, Cunchao Tu, Chaojun Xiao, Zhiyuan Liu and Maosong Sun, 'Legal Judgment Prediction via Topological Learning' (Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing, Brussels 2018) 3540-3549.

of the analysis, understanding, translation and generation of natural language by a computer in the context of the processing of specific real-life judgments could be an interesting starting point for further research.¹⁹ Certainly, in turn, such experiments open up the discussion of whether the traditional judge can be replaced by a computer. For many this seems tempting, although for obvious reasons this is not yet (and may never be) the standard that individual legislators are aiming for. Nevertheless, in the scientific discussion, it is becoming more and more courageous to formulate theories according to which, at least in certain categories of cases, it seems possible.²⁰

Tests such as the ones indicated above show that artificial intelligence can be an interesting tool to assist in the administration of justice, and may one day be able to replace “real” judges. In fact, this idea is not entirely new, as already in the 1970s concepts related to this appeared.²¹ Recently there has been a growing buzz about a project originating in Estonia, where the first steps are being taken by a mechanism that assists judges by collecting certain data necessary to decide a given case and analysing it so as to decide the case in the most just manner.²² This mechanism is intended, among other things, as a response to the courts' inability to cope with the growing number of cases, so one of the motivations for working on this solution is the desire to improve the efficiency and effectiveness of case resolution. Its first task is to resolve the so-called minor cases, where the value of the subject of a dispute does not exceed the amount of 7000 EUR.²³ Traditional judges are not involved in these settlements. The system is based on the parties providing documents supporting their positions, which are analysed by an algorithm which then issues the decision. Only an appeal against this decision is heard in the traditional way. It is

19 Oleg Metsker, Egor Trofimov, Sofia Grechishcheva, ‘Natural Language Processing of Russian Court Decisions for Digital Indicators Mapping for Oversight Process Control Efficiency: Disobeying a Police Officer Case’ (Electronic Governance and Open Society: Challenges in Eurasia, 5th International Conference, EGOSE 2018, St. Petersburg 2018).

20 See Sourdin, (n 924)1114; Mariusz Załucki, ‘Computers in gowns and wigs. Some remarks about a new era of judiciary’ in Laura Miraut Martin and Mariusz Załucki (eds) *AI and human Rights*, (in print 2021).

21 cf Anthony D’Amato, ‘Can/Should Computers Replace Judges?’ (1997) 11 Georgia Law Review 1277–1301.

22 Eric Miller, ‘Can AI Be a Fair Judge in Court? Estonia Thins So’ (WIRED 3 March 2019) <<http://www.wired.com/>> accessed 7 April 2021.

23 Franciska Z. Gyuranecz, Bernadett Krausz and Dorottya Papp, ‘The AI is Now in Session. The Impact of Digitalization on Courts’ (2019) 8.

therefore certainly another step towards taking seriously solutions of this kind based on artificial intelligence, where the involvement of a human judge is minor (minimised).²⁴ The Estonian solution is part of the Estonian strategy of digitizing public actions, and the first effects of using it also seem promising.

Another example of the use of artificial intelligence in the judiciary is the US-based system, the Correctional Offender Management Profiling for Alternative Sanctions (COMPAS), which assesses the risk of recidivism on the basis of 137 types of data.²⁵ The COMPAS software uses an algorithm to make this assessment. The system predicts, among other things, pre-trial risk, which is a measure of a person's potential to fail to appear and commit new offences while in custody. For this purpose, the system assesses, *inter alia*, current charges, pending charges, history of previous imprisonment, previous pre-trial failures, housing stability, employment status, social ties, or substance abuse, which, according to science, are the most significant indicators affecting the outcome of such risk. The system also performs risk assessments to predict new crimes after release from prison. It uses, among other things, a person's criminal history, associates, drug involvement and signs of juvenile delinquency as data. The system also makes it possible to predict the commission of violent crimes after release. To do this, the system uses data such as criminal history, history of non-compliance with the law in other ways, occupational problems, educational problems, age of the person on admission and age of the person on first arrest, among others. So far, the system has met with a rather enthusiastic reception, although it has of course also been subject to criticism. For example, the position of the Wisconsin Supreme Court emphasises that the COMPAS evaluation may be taken into account in sentencing, but that the limitations of the system must also be taken into account.²⁶ This opinion is interesting also in the context that the court concluded that the trial court's use of an algorithmic risk assessment in sentencing did not violate the defendant's due process rights, even though

24 Tanel Kerikmäe and Evelin Pärn-Lee, 'Legal dilemmas of Estonian artificial intelligence strategy: in between of e-society and global race'(2020) *AI & Society* <<https://doi.org/10.1007/s00146-020-01009-8>> accessed 7 April 2021 .

25 Tim Brennan, William Dieterich and Beate Ehret, 'Evaluating the predictive validity of the Compas risk and needs assessment system' (2009) 1 *Criminal Justice and Behavior* 21.

26 *State v. Loomis*, 881 N.W. 2d 749, (Wisconsin 2016).

the methodology used to prepare the assessment was not disclosed to either the court or the defendant.²⁷

Allegations of this kind are increasingly common in relation to similar solutions. It is stressed that the functioning of such a mechanism should be clear and access to the algorithm should be open. It is argued that since such algorithms are usually secret, they cannot be examined by the public and the parties involved, which may constitute a violation of the right to a fair trial.²⁸ It is also stressed, *inter alia*, that algorithms may be susceptible to various kinds of bias. In the case of COMPAS, a study showed, among other things, that the system did not treat persons of different race equally. The study showed that African-Americans were much less likely to repeat the same offence, while the COMPAS system showed such a result for Caucasians.²⁹ Without prejudging the effectiveness of the system, it should be noted that it raises certain controversies, which should undoubtedly be taken into account in the future, when designing analogous solutions.

Speaking of analogous solutions, it is worth mentioning the one operating in France, concerning the software for setting the amounts of severance payments for dismissals without just cause.³⁰ One of the reasons for seeking an algorithm-based solution was to limit excessive variability in case law. Indeed, the practice of the French courts to date in this regard has been far from uniform. The introduction of an algorithm based on various data has also proved to be a promising solution in this respect and a tool based on artificial intelligence is helpful for the adjudicator in a given case.³¹ Interesting solutions also exist e.g. in China, where three internet courts operate (Hangzhou, Beijing, Guangzhou), in which the settlement of cases is based, among others, also on algorithms based

27 Katherine Freeman, 'Algorithmic injustice: How the Wisconsin Supreme Court failed to protect due process rights in *State v. Loomis*' (2016) 5 *North Carolina Journal of Law & Technology* 75.

28 *ibid* 106.

29 cf Julian Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, 'Machine bias' (Pro Publica, 23 May 2016) <<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>> accessed 11 March 2021.

30 Roseline Letterton, 'L'accès numérique au droit' (2018) 3 *Annales des Mines* 68-72.

31 Pierre Cahuc, Franck Malherbet and Julien Prat, 'The detrimental effect of job protection on employment: Evidence from France' (2019) *Iza Institute of Labor Economics* 1.

on artificial intelligence,³² or where the “Shanghai Intelligent Assistive case-handling system for criminal cases - System 206” operates, which is useful for solving criminal cases.³³ Relevant tests are also being conducted in Brazil (Inova PJe).³⁴

There are already many similar examples of using tools based on artificial intelligence. It is impossible to present them all in one place. However, looking at those mentioned as well as some of the solutions not presented here, one may be tempted to conclude that a place is slowly being created for the use of artificial intelligence in resolving certain categories of court cases. Support for the judiciary in terms of new technologies is no longer just about solutions that help a judge, the use of which cannot be overestimated, but also about the use of artificial intelligence alone, which can decide certain categories of cases instead of a judge. Particularly in the context of the COVID-19 pandemic, there has been a large-scale and intensive search for tools that could allow courts to function normally, eliminating at least some of the ills of their operation. Artificial intelligence is certainly a solution. However, it is still a solution that requires further research. So what can artificial intelligence do for the functioning of the courts?

4. The potential of AI in the context of the functioning of the judiciary of the future

There is no doubt that artificial intelligence can be helpful to the judiciary. This help may concern many aspects of its functioning. There are even some who believe that artificial intelligence would make judgments in individual cases fairer.³⁵ It could certainly also become more efficient, especially in those types of cases where human involvement takes up all of a person's professional capacity. An example of such a case is the recently heard criminal case in Poland concerning the so-called Amber-Gold affair. The justification for the first instance verdict in this case is 9345 pages long, and its preparation took over nine months.³⁶ Leaving aside the actual

32 Alison (Lu) Xu, ‘Chinese Judicial Justice on the Cloud: A Future Call or a Pandora’s Box? An Analysis of the ‘Intelligent Court System’ of China’(2017) 1 Information & Communications Technology Law 59-71.

33 cf Yadong Cui, *Artificial Intelligence and Judicial Modernization* (Springer 2020) 43.

34 Paulo C. Neves Jr., ‘Judiciário 5.0’ (Blucher 2020) 76.

35 Daniel Kahnemann, *Thinking fast and slow* (Farrar, Straus and Giroux 2011) 43.

36 cf Natalia Grzybowska, ‘Jest uzasadnienie wyroku ws. Amber Gold. Liczy 9345 stron I zajmie około 47 tomów akt sprawy’ (gdansk.naszemiasto.pl, 29 July 2020)

possibility of a human being preparing more than 30 pages of text per day, it seems that in this scope the applied support could be provided by artificial intelligence. At the same time it should be stressed that it is precisely the legitimacy and transparency of decision making by mechanisms based on artificial intelligence that is a solid argument against such solutions.³⁷ While many would accept the support of the adjudication process by artificial intelligence, the lack of knowledge of how the algorithm arrives at specific conclusions and the parallel impossibility to trace subsequent steps in the argumentation (which is a characteristic of most algorithms used so far) seems to be important for assuming, if only against the background of the functioning standards related to the so-called fair trial, that the rights of a party could be violated in this way. It is, however, certainly a functionality of the system that can be improved in the future, which in the case of cases such as the one discussed above, would significantly affect the efficiency of the justice system.

It is undoubtedly possible for artificial intelligence to influence the administration of justice by organising and structuring information, providing advice or bringing about uniformity in the adjudication process. It is the task of any adjudicatory process to recognise certain model views in the documents being analysed, e.g. in reasons for court decisions or doctrinal positions. There is no doubt that a mechanism based on artificial intelligence will be much quicker to determine whether there is a line of case law that should be considered for the resolution of a given case. All judgments, as well as scientific articles or glosses, contain a lot of different information. Automated analysis of this information can considerably speed up specific litigation decisions. Automated analysis of various data can also have other applications. This can be seen, for example, in the eDiscovery system from the United States of America, which is used for the preparation of evidence proceedings, which may include litigation. In the so-called electronic discovery we deal with gathering, processing and presenting electronic evidence, i.e. means of proof, which are based on information stored electronically. The ways in which potential evidence is handled in eDiscovery are governed by rules depending on statutory requirements or by guidelines agreed by the parties and then accepted by the judge. The fact that a specific algorithm is used significantly reduces

<<https://gdansk.naszemiasto.pl/jest-uzasadnienie-wyroku-ws-amber-gold-liczy-934-5-stron-i/ar/c1-7827784>> accessed 7 April 2021.

37 cf Paul Marrow, Mansi Karol and Steven Kuyan, 'Artificial Intelligence and Arbitration: The Computer as an Arbitrator. Are We There Yet?' (2020) 4 *Dispute Resolution Journal*.

the length of the evidentiary process.³⁸ The use of eDiscovery involves the application of an algorithm in the pre-trial phase of a trial in which each party investigates the facts of the case by, among other things, obtaining evidence from the opposing party. In the local legal system, this is a widely used mechanism that can essentially predict the outcome of a case. It is undoubtedly a much faster mechanism than physically reviewing all the data manually.³⁹

On the other hand, the so-called advisory use of artificial intelligence seems to be needed insofar as, in principle, everyone, not only the judge dealing with a given case, could, upon presentation of certain facts, receive information on the expected outcome. An example is the Civil Resolution Tribunal in Canada, where victims of road traffic accidents can receive free information about their claims. The tool uses a question and answer function to provide the public with tailored legal information, written in plain language, and self-help tools. The aim of this solution is to seek to resolve disputes without the need to file a lawsuit.⁴⁰

A similar solution is being tested in the Netherlands, where a court in collaboration with research units is investigating the possibilities of artificial intelligence in the context of traffic offence cases in which a citizen appeals (contesting the validity of the penalties imposed for the offence). The aim of this work is to develop an artificial intelligence mechanism that would resolve such cases autonomously.⁴¹

Predictive tools, which allow solid guesses as to the outcome of a future court case, may be of great importance in the perspective of the development of artificial intelligence tools used in the judiciary. For this reason, further tests of software analysing specific databases of judgments and drawing appropriate conclusions from them should be expected in the near future. According to many, the justice system of the future will

38 Jack G. Conrad, 'E-Discovery revisited: The need for artificial intelligence beyond information retrieval' (2010) 4 *Artificial Intelligence and Law* 321-345.

39 cf James N. Dertouzos, Nicholas M. Pace and Robert H. Anderson, 'The Legal and Economic Implications of Electronic Discovery' 2008 *Institute for Civil Justice* 7.

40 Shannon Salter, 'Online dispute resolution and justice system integration: British Columbia's Civil Resolution Tribunal' (2017) 34 *Windsor Yearbook of Access to Justice* 112.

41 cf Manuella van der Put, 'Kan artificiële intelligentie de rechtspraak betoveren' (2019) 2 *Rechtstreeks* 50.

be one where justice can be predicted by artificial intelligence.⁴² This is already recognised by many stakeholders, including such major institutions as the European Union and the Council of Europe.

It may also be an important step to entrust artificial intelligence with the adjudication of certain cases, as is the case, for example, in Estonia. To this end, science indicates, among other things, that it is necessary to select cases that would be suitable for adjudication by artificial intelligence and conduct further tests. As can be expected, this will be a melody of the not too distant future.

Here, as an example, one can point to the extensive use of technological tools in Poland, in arbitration courts. For example, one of them, operating at the Polish Notaries' Association in Warsaw, conducts completely electronic proceedings and its IT system is largely automated, verging on AI mechanisms.⁴³ In the future, it is planned to carry out analysis of case documentation and their assignment to specific legal norms by artificial intelligence, which is to be advisory and prepare draft awards with justifications.⁴⁴ The system is also to support the arbitrator during the proceedings by providing him with information on the course and outcome of other similar cases. It will also present excerpts from the justifications of other judgments that best explain a particular problem or legal issue.⁴⁵ The announcements are therefore promising. The trend towards total electronicisation, or at least an increase in its significance, can also be seen in other places. Here, for example, one can point to the Chinese justice system and the transformation of court procedures, which resulted in the adoption of the Rules on the Provision of Online Case Service for Parties to Cross-border Litigation on 3 February 2021(关于为跨境诉讼当事人提供网上立案服务的若干规定). These require Chinese courts to provide services that include guidance on initiating online cases, responding to enquiries, providing testimony via video, and initiating cases for parties

42 Veronika Myltseva, 'The legal nature and principles of the predictive justice' (2019) 3 *Recht der Osteuropäischen Staaten* 59; Antoine Garapon, 'Les enjeux de la justice prédictive' (2017) 1-2 *La Semaine juridique*.

43 cf Patrycja Rojek-Socha, 'Rusza elektroniczny sąd polubowny, skorzysta z profile zaufanego' (*Prawo.pl*, 24 April 2019) <<https://www.prawo.pl/prawnicy-sady/el-ektroniczny-sad-polubowny-ultima-ratio-rusza-przy,402433.html>> accessed 11 March 2021.

44 cf Ultima Ratio 'Sztuczna inteligencja w Ultima Ratio. Czy roboty zastąpią arbitrów?' (*ultimratio.pl*) <<https://ultimratio.pl/sztuczna-inteligencja-w-ultima-ratio-czy-roboty-zastapia-arbitrow>> accessed 12 March 2021.

45 *ibid.*

in cross-border litigation. This is certainly the path that other countries will follow.⁴⁶

5. Dilemmas related to AI and the judiciary of the future

In the above it should be noted that the use of artificial intelligence in the administration of justice raises many objections and a number of doubts. Seeing the potential related to the development of artificial intelligence, it is raised, among others, the possibility of a threat to the further development of law, predicting, for example, the twilight of legal discourse of judicature. In this context it is stressed that artificial intelligence will resolve the same cases in the same way, which will deprive jurisprudence of its new legal wisdom. The necessity of the human factor in adjudication is also raised, stressing among other things the need for de-automated and empathic handling of cases.⁴⁷ Finally, a number of ethical issues are raised concerning the functioning of artificial intelligence in the judiciary, not to mention the typical constitutional problems of the administration of justice by an independent and autonomous court.

These and other problems appear in institutional studies related to the future of justice through the use of artificial intelligence. Such future is seen, among others, by the European Union, which in the document "Study on the use of innovative technologies in the justice field" published on 14 September 2020, considers the use of artificial intelligence and blockchain/DLT technologies in the field of justice as a priority.⁴⁸ The document identifies 130 projects in this field (using innovative technologies in the justice field) in EU countries and proposes the creation of an EU legal and policy framework for future action. It is recalled that in the doctrinal discussion of this field, researchers and organisations debate various legal and ethical aspects. These aspects include ensuring guarantees for funda-

46 cf Meng Yu, 'Filing Lawsuits While Living Abroad: China's New Policy' (China Justice Observer, 7 March 2021) <<https://www.chinajusticeobserver.com/a/filing-lawsuits-while-living-abroad-china-s-new-policy>> accessed 12 March 2021.

47 cf Mark Halsey and Melissa de Van-Palumbo, 'Courts as empathic spaces: reflections on the Melbourne neighbourhood justice centre' (2018) 2 Griffith Law Review 182.

48 The Report of the European Commission: European Commission, 'Study on the use of innovative technologies in the justice field. Final report' (Publication Office European Union 2020) "Study on the use of innovative technologies in the justice field", (Brussels, September 2020).

mental rights and freedoms, such as respect for private life, protection of personal data, fair trial, good administration or non-discrimination.⁴⁹ It also recalled that several important papers have been prepared analysing the impact of AI on these rights and debating whether the existing legal framework is sufficiently adapted and adequate to deal with potential problems, and whether it is flexible enough to cope with the complexity and pace of technological developments.

As suggested by some of the doctrine's contributions, the document also notes that AI technology for dispute resolution is currently underutilised and its use remains at a rudimentary level. This can be understood to mean that we are still in an area that will develop and has great potential. So if the EU, a strongly institutionalised structure, is thinking about the future of justice in terms of the use of AI, it is highly likely that such a future in a more institutionalised form will occur.

This is certainly also recognised by the Council of Europe, which in its 2018 document, "European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and Their Environment" pointed to five fundamental principles for shaping the practice of justice with artificial intelligence.⁵⁰ These are:

- 1) respect for fundamental rights,
- 2) equal treatment and non-discrimination,
- 3) quality and security of data,
- 4) transparency, impartiality and fairness,
- 5) operation of AI systems under user control.

49 cf Eduard F. Villaronga, Peter Kieseberg and Tiffany Li, 'Humans forget, machines remember: Artificial intelligence and the Right to Be Forgotten' (2018) 34, 2 Computer Law & Security Review 304–313; Paul Nemitz, 'Constitutional democracy and technology in the age of artificial intelligence' (2018) 2133 Royal Society Publishing; Aleš Završnik, 'Algorithmic justice: Algorithms and big data in criminal justice settings' (2019) 11 European Journal of Criminology . 1–20; (n 220) 83–92; Patrick Perrot, 'What about AI in criminal intelligence? From predictive policing to AI perspectives' (2017) 16 European Police Science and Research Bulletin 16; Karamjit S. Gill, 'Data to Decision and Judgment Making – a Question of Wisdom' (2018) 30 IFAC Papers On Line 733-738; Michael L. Butterworth, 'The ICO and artificial intelligence: The role of fairness in the GDPR framework' (2018) 2 Computer Law Security Review 257-268.

50 European Ethical Charter on the use of artificial intelligence in judicial systems and their environment, Council of Europe, Commission for the Efficiency of Justice (CEPEJ), <<https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c>> accessed 22 april 2021).

The Charter is intended for public and private stakeholders responsible for the design and implementation of AI-based tools and services that involve the processing of judicial decisions and data (machine learning or other methods derived from data science). It also concerns public policy makers responsible for legislative or regulatory frameworks. It should therefore be seen as an important guideline for future solutions that have the potential to revolutionise the justice system.

The above means, therefore, that the area of artificial intelligence and its possible applications in the administration of justice is an area where the last word has not yet been said. What is more, it is an area that still requires a great deal of investment and research. There is no doubt, however, that artificial intelligence is of great importance in the administration of justice and that the future possibilities are endless. With this in mind, while respecting the standard of a fair trial, as well as extremely important ethical issues, it is necessary to continue the search for possible applications of solutions based on artificial intelligence in the judiciary.

6. *Conclusions*

Transformation of the judiciary is a natural process, sometimes occurring too slowly. Today, in the world of new technologies, there is a need to adapt the judiciary to new realities and social expectations. Traditional adjudication of cases reveals more and more problems and becomes ineffective. Hence, changes are needed, especially those that boldly enter the world of new technologies. Some of the biggest obstacles to a modern court system, including online or automated courts, are thought to be political will. Carrying out such a transformation would require the support of judges and professionals, a source of funding and a well thought-out methodology for the transformation. Although today some solutions seem too futuristic, at the end of the day it is important to point out that in the practice of the judiciary there is a serious problem with wide access and efficiency. Technology can improve outcomes and give the public the tools to resolve public disputes in ways that were not possible before. While such a transformation may not solve many of the problems associated with the administration of justice, it can offer significant improvements in areas

where this is expected. Therefore, further opportunities for technology development in the judiciary cannot be ignored.⁵¹

51 cf Tania Sourdin and Richard Cornes, 'Do Judges Need to Be Human? The Implications of Technology for Responsive Judging' in Tania Sourdin and Archie Zariski (eds) *The Responsive Judge.*, (Springer, 2018) 87.

SECTION FIVE.
**Possibilities of Applying LegalTech Tools in Legal
Communication**

Self Sovereign Identity

Michal Tabor

1. Electronic Identification

Identification and authentication of the users to the online services is one of the key needs of Internet business and electronic transactions. Electronic identification was established in European Union as legal definition in the eIDAS regulation.

‘electronic identification’ means the process of using person identification data in electronic form uniquely representing either a natural or legal person, or a natural person representing a legal person; (article 3 eIDAS)

The eIDAS Regulation founded general requirements for identification means complying with levels of assurance, and general needs to recognize and accept electronic identification in public online services. Electronic identification is widely used by public services but was not so widely adopted by business. Private systems in general onboard and register users on their systems each time by their own methods, some services ceded authentication to large solution providers, in particular Google, Apple and Microsoft. For several years, work has been underway to build Self-Sovereign Identity (SSI) technology that allows much more than using person identification data as defined in eIDAS. SSI enables the use of own user identity attributes in the manner in an independent way, where no one particular operator takes actions in the identification process. Moreover, European Commission takes action to force law online services to accept SSI identification in all their services. Your identity is determined by many attributes, some of which are permanent, such as your date of birth, while others, such as your home address, may change. Each of the identity attributes has its origin, e.g. name, surname, date of birth and parents' data come from the register of civil status, while the ID number from the register of personal documents. The concept of SSI is that individual identity attributes can be collected by their holder from different sources, while their use and which ones will be used is decided by the holder himself.

Most solutions for electronic identification used now are based on two models: centralized and federated. In a centralized identity management model, you have to onboard to each service separately and you use individual credentials (login and password) to access to each service (e.g. office, bank, e-store, booking platform). In the federation model, the attributes and authentication mechanism are maintained by a single identity provider and accepted by other systems – this model is the basis for functioning in notified electronic identification means in the EU and also is used for solutions like Login with Google/Apple/Facebook. In both of these models (centralized and federated), a services are in possession of user identity data; manage them and allow authentication. SSI assumes that it is the user himself who manages the attributes of his identity and implements the authentication process, based on the IT solution he/she is in control.¹

As indicated above, multiple attributes may be associated with an individual's identity (user), m.in.: first name, last name, date of birth, adulthood, residence, identification number, *tax number*, *email*, phone number, and much more. Each of these attributes can be used in specific actions, but very rarely you need to use them at once. Within SSI, the attribute holder selects the attributes (and only those) that they want to use, and authenticates their own possession, without the need for external systems.

Example:

To illustrate an SSI concept, you might want to describe it in the following usage example:

- 1) The holder launches on his smartphone an application constituting his wallet for managing an self-sovereign identity. As in an electronic signature, this wallet is associated with a public and private key that allows the holder to collect and use individual attributes.
- 2) The holder must confirm their wallet with the first identification service, which will allow him to assign the first attributes that allow his identification in other systems. These attributes will be assigned to the public key that was previously generated in the wallet.
- 3) Each use of identities and attributes is preceded by a system that asks for that identity. Such a system must show that it is entitled to ask

1 Christopher Allen, 'The Path to Self-Sovereign Identity' (*Life With Alacrity*, 25 April 2016) <<http://www.lifewithalacrity.com/2016/04/the-path-to-self-sovereign-identity.html>> accessed 21 February 2021; See 'Self-Sovereign Identity' (The Moxxy Tongue, 9 February 2016) <<http://www.moxxytongue.com/2016/02/self-sovereign-identity.html>> accessed 21 February 2021.

- questions and should provide a list of expected attributes. The holder will have the right to choose the ones that he decides to present;
- 4) The holder, presenting his attribute by signing it, proves that he owns it. Once authenticated, the holder will be able to complete the collection of attributes they have, e.g. education, driving privileges, or information about their funds in their account.

The SSI concept is implemented on the basis of open algorithms and standardized data formats and commonly recognized cryptographic algorithms. Standardization allows the user to choose the technologies and applications by which the above processes will be described, and in particular will allow the maintenance of cryptographic keys and support for a wallet. The implementation of the SSI allows the identified person to control what information he/she makes available to the system and to prevent central systems from collecting access to information about where and when his or her identity was used. The whole is complemented by the fact that identifiers in independent identity solutions do not need (or should not be) immutable identification numbers. Multiple Identifiers can be assigned to a single user, and their structure should prevent operations from being tracked.

Self-sovereign identity is based on technical standards developed by W3C standards organisation and involves a number of standardisation initiatives, including *Verifiable Credentials*(VC) and ² *Decentralized Identifiers*(DID).³

The verifiable credentials technology allows the unambiguous identification of the relationship between natural persons, legal entities and other objects (car, dog, house, other object), in a way in which the relationship is unambiguous, the credential is confirmed by trusted source and the credential can only be used by a person authorized to do so.

2 'Verifiable Credentials Data Model 1.0. Expressing verifiable information on the Web' (W3C, 19 November 2019) <<https://www.w3.org/TR/vc-data-model/>> accessed 21 February 2021.

3 'Decentralized Identifiers (DIDs) v1.0. Core architecture, data model, and representations' (W3C, 3 August 2021) <<https://www.w3.org/TR/did-core/>> accessed 3 August 2021.

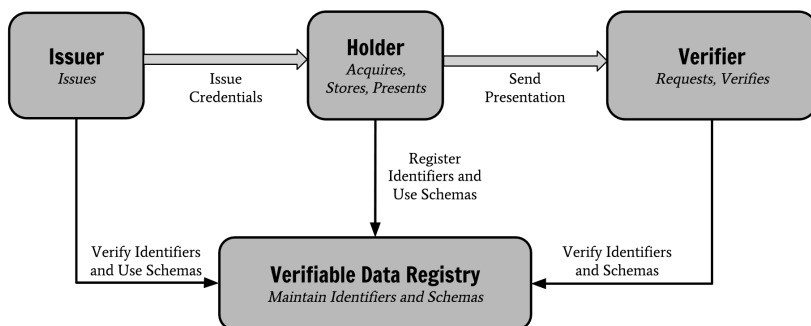
Example:

A typical verifiable credential shows examples of relationships:

- 1) Michael [owns] a car.
- 2) Agnes [obtained a master's degree in economics] from the University of Oxford.

Verifiable Credentials technology not only unambiguously describes the relationships between individual entities, but also allows them to be used in accordance with the rules set out in the verifiable credential itself. The relationship resulting from verifiable credentials is best illustrated in the following figure:

Figure 1. Roles and information flow



Source: Verifiable Credentials Data Model 1.0, § 1.2.

Each Verifiable Credential uniquely identifies its publisher (a trusted source), the holder, and the objects that are described in the verifiable credential. The issuer must be trusted and verifiable, which is implemented on the basis of cryptographic technologies, electronic signatures and seals or Blockchain technologies. The publisher, when creating a Verifiable Credential, indicates its *Holder* and specifies the cryptographic method that will be used to authenticate it. Using this technology, the holder will have direct access to the contents of the verifiable credential, e.g. put it in his wallet, but will also be able to use it. The use of the Verifiable Credential is called a presentation. The presentation of the Verifiable Credential shall include the entire credential and the digital signature of the holder. Verifiable Credential contain in the body information how holder is authenticated, so in the process of presentation authentication of the

holder can be verified by the verifier. The whole scheme needs for proper functioning a public register, which due to its characteristics is most often implemented on the basis of DLT (distributed ledger technologies). DLT enable the operation and use of distributed registries. A distributed register is ⁴defined as a ledger that is shared by a set of DLT nodes and synchronized between DLT nodes using a consensus mechanism.⁵

Ensuring the clarity of relationships in SSI solutions is based on Decentralized Identifiers (DID) that unambiguously and uniquely identify a specific person, object, or explicitly Verifiable Credential. Also note that DID itself (as an identifier) is not an identity. The reason is that DID is a unique, random string of alphanumeric characters, under the control of the user, while only the user has a private cryptographic key, stored in a digital wallet, which he can use to confirm any operation (based on the DID ID). DID also does not contain any other identity attributes, such as first name, last name, and so on. Thus, with DID, the user can simply prove that he controls this alphanumeric number, but no longer his identity. On the other hand, a verifiable credential that can be issued to a DID holder also contains a set of identity attributes.

Example:

Each of the objects mentioned above, i.e. Michael, car, Agnies, University of Oxford will have a DID assigned in verifiable credentials. When a user shares their verifiable credentials with someone, they generate a DID proof of ownership (digitally signing with a PRIVATE DID key), and the recipient can verify who has identity attributes in the Verifiable Credential.

2. Distributed Confirmations

The entire Decentralized Identifiers solution can use various technologies to secure integrity and authenticity, in particular digital signature technologies, but blockchain-based technologies, in particular *distributed* DLT, are the most natural technologies for a distributed environment. Based on a distributed registry, DID does not require a centralized enrolment

4 For a broader overview of DLT technology, see Electronic Communication chapter by Anna Zalesińska and Dariusz Szostek.

5 ISO/TC 307, 'ISO 22739:2020 Blockchain and distributed ledger technologies' (July 2020).

system, allowing the deployment of decentralized public key infrastructure (DPKI) and decentralized key management system (DKMS),⁶ tools independent of a single trust service provider, a single hierarchy, and maintaining the independence of subsequent certificate publishers.

Each Distributed DID is bound to a document (*DID Document*). In fact, this document is a Verifiable Credential placed in a verifiable registry, while the use of a distributed DLT provides certainty of access and security of the integrity of such a registry. At the same time, the DID Publisher has the ability to manage the lifecycle of such an identifier, such as changing its status, invalidating or updating it.

The independent identity mechanism described earlier uses Verifiable Credentials to describe the identity attributes of the wallet holder. Verifiable Credentials are placed directly in the data portfolio or accessible through a Verifiable Registry. Each identification is in fact a verifiable credential presentation service, while all objects related to that identity are uniquely identified by decentralized identifiers, while shared data based on identifiers can be accessed through the registry and DLT.

Example:

On the main *smartphone platforms*, there are already production implementations of the wallet used to store Verifiable Credentials and Distributed Identifiers, these applications implement the above-mentioned processes of cryptographic key generation for the holder, provide the functions of saving Verifiable Credentials and Distributed Identifiers. All available solutions allow you to identify both the system asking for identity and the use of identity attributes in electronic identification, as well as to confirm the transaction.

It is planned that the European Commission will introduce an obligation for all service providers in the EU to identify and use independent identity mechanisms by all service providers in the EU as part of the 2021-2023 review of eIDAS.⁷ The aim of this action is to provide a universal (for all citizens of UE) identification scheme, allowing for proof of identity, both in public administration systems and in private systems. To

6 Alexander Papageorgiou, Antonis Mygiakis, Konsantinos Loupos and Thomas Krousarlis, 'DPKI: A Blockchain-Based Decentralized Public Key Infrastructure System' (2020 Global Internet of Things Summit (GIoTS) Dublin, June 2020).

7 Alex Preukschat, 'Understanding the European Self-Sovereign Identity Framework (ESSIF) – Daniël Du Seuil and Carlos Pastor – Webinar 32' <<https://ssimeetup.org/understanding-european-self-sovereign-identity-framework-essif-daniel-du-seuil-carlos-pastor-webinar-32/>> accessed 21 February 2021.

this end, each Member State will be required to provide services to the public *to obtain Verifiable Credentials of its identity, and at the same time any online service provider, whether public or private*, will be required to accept the identification thus carried out in its services. As part of the development and testing of capabilities, the EC has launched the "EU Login" application, which allows testing to be carried out in the framework of projects carried out in the Connecting Europe *Facility* (CEF) programme.⁸

8 CEF Digital, 'eID' <<https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eID>> accessed: 21 February 2021.

Electronic Delivery

Sylwester Szczepanik, Michał Tabor

1. Introduction

The exchange of letters, documents and their service is one of the basic activities of the legal profession, regardless of the time and legal system in which he has to practice. Also in times of strong development of technology and its impact on the legal profession, the indicated aspect of activity is subject to significant changes. In the case of traditional correspondence exchange, the main role of the lawyer was limited to choosing two possible methods of exchange:

- 1) using an intermediary in the form of a postal operator;
- 2) the implementation of delivery with own human resources (including each other).

If a postal operator was selected, it was necessary to ensure that the parcel with correspondence was properly secured, the addressee was correctly identified and the payment was made. An additional element was a risk analysis consisting in assessing whether a given item of correspondence is to be a registered item, registered item with return confirmation of receipt or a regular item.

In the case of the exchange of own human resources, the same challenges arose as in the case of a postal shipment, with the exception of making a payment and selecting the shipment variant.

The choice of a given method was mainly determined by such elements as the time of delivery, the probability of receiving the parcel by the other party and possibly a legal provision that could provide for a better legal position for a given method of shipment (the procedural deadline).

The difference in the indicated methods, which certainly occurs and is often not taken into account, is the issue of the need to protect the parcel against loss and damage and the responsibility for any loss or damage to the parcel.

When new technologies are used, the range of steps required to select the final delivery method is much greater. Due to the development of technology, even the traditionally understood postal item may have a

hybrid character, i.e. at some stage of the delivery process it may change its form from paper to electronic (or vice versa). The situation is further complicated when methods of correspondence exchange not regulated by generally applicable law are used. The challenges include such issues as: parcel security, identification of addressees, place of exchange.

2. Correspondence Exchange - Terminological Remarks

Later in the chapter, the term "correspondence" will be used to describe the above-mentioned phenomena in general. It should be noted that this term will be used autonomously in this chapter. This term will mean the transmission of information, in particular of documents, between two lawyers, irrespective of the type of tool used to provide such information or documents, be it in paper or electronic form. In the authors' opinion, the indicated understanding of this concept is broad and, at the same time, adequate enough to highlight important elements, such as:

- 1) the act of exchange;
- 2) document - as information;
- 3) intention of this activity;
- 4) tool independence;
- 5) two-sided actions.

We can divide correspondence into two types, i.e. horizontal exchange, carried out between lawyers, and hierarchical exchange, carried out between lawyers and authorities (including public administration bodies or courts). In the traditional model of division into public and private law, it can be concluded that horizontal exchange is the domain of private law, and hierarchical exchange is the domain of public law. Of course, this division is not consistent, because in the case of, for example, court procedures, requiring lawyers who are parties' attorneys to exchange letters between them as a formal condition, accept a given letter by the court, such exchange, although it took place horizontally, is carried out under the rule of law. public.

The presented division into both horizontal and hierarchical exchange as well as further indication of the elements of public and private law will be arranged later in the chapter. However, issues related to technological solutions as well as online dissertations and tools for remote work remain outside the scope of the chapter. These issues are discussed in greater detail in other parts of the monograph, in particular devoted to cloud computing services and the use of tools *LegalTech* in the judiciary, law

enforcement agencies and law firms. It can only signal that Technological solutions are currently based mainly on cloud computing services, with the help of which work on shared computing resources or exchange of correspondence is carried out by placing files by one user in the area separated for other - indicated by him - users for sharing. The above should be distinguished from a situation where placing a file in such a separated sphere only facilitates the transmission of correspondence, and the legal effects are related to the moment of granting this access.

Example:

An example of such a service is the transmission by electronic means, e.g. by e-mail, of information about the possibility of reading the content of documents which, due to the large size of the files, have been made available to the other party with the option of saving them to another location by the other party. Such an *e-mail* has an informational value only and allows you to find access to the resource. Another example of such sharing is document collaboration.

3. Horizontal Exchange of Correspondence

In the case of the legal profession, the exchange of correspondence is not left outside the scope of the law. Requirements regarding cybersecurity and data protection, including professional secrecy, should be indicated here. This is due to the fact that lawyers are bound by legal provisions regulating the status and manner of practicing the profession, and often by corporate rules¹. Two basic principles emerge in the foreground, which are:

- 1) the principle of professional secrecy;
- 2) the principle of the good of the client.

Within the framework of horizontal exchange, we can distinguish two basic types of this exchange. The first type is the exchange of actual correspondence, the second is the exchange of legal correspondence. In the first case, it concerns the exchange of professional correspondence, however, the fact of exchanging correspondence has no legal consequences, but

1 See Dariusz. Szostek (ed), *Bezpieczeństwo danych i IT w kancelarii prawnej radcowskiej/adwokackiej/notarialnej/komorniczej. Czyli jak bezpiecznie przechowywać dane w kancelarii prawnej* (C. H. Beck 2018).

only a change of the facts. In the second case, the main purpose of the exchange of correspondence is to perform a legal act, exercise a right or legal obligation towards the other party or with effect on the third party. In the Polish doctrine of legal theory, this type of exchange may be treated as a conventional activity². Both types of exchanges can only take place between lawyers or between lawyers and clients. However, regardless of whether the correspondence is exchanged in the actual or legal sphere, the lawyer who performs the exchange should always take into account the principle of professional secrecy and the principle of the client's welfare.

Even a cursory analysis shows that problematic from the point of view of the above-mentioned exchange of correspondence becomes the rule:

- 1) by tools not examined by the lawyer;
- 2) in an unsecured manner;
- 3) in a manner that does not provide an acceptable degree of certainty in the identification of the other party.

Easy and cheap access to technology makes it tempting to use even free communication exchange tools. An example of such action may be *social media* which provide functionalities of information exchange between selected participants of a given medium. The use of these tools to exchange professional correspondence, without checking the rules of operation of a given tool, the scope of information collected by the owner of the tool, the method of transferring this information and technical security measures, may easily lead to breach of the principle of professional secrecy. A similar problem concerns the use of public e-mail accounts. Although the information transmission technology differs from the above-mentioned for example, there is still the problem of keeping the two rules above.

Of course, the entry into force of the GDPR also affected lawyers. Not only industry law and corporate rules, but also the provisions of the GDPR, threatened with high sanctions, have strengthened the attorneys' care in the selection of correspondence exchange, e.g. by continuing to use free and generally available solutions to exchange correspondence, the content itself is adequately secured (e.g. by encrypting).

Ensuring the security of the exchange of correspondence for horizontal activities is only one of the elements of the issue. The second element is the correct identification of the addressee of the correspondence. In the case of

2 For more on conventional acts see Stanisław Czepita 'On the Concept of a Conventional Act and its Varieties' (2017) Year LXXIX No. 1 Legal, Economic and Sociological Movement 85.

exchanging correspondence in electronic form, the most commonly used model today is the use of e-mail devices. In this model, data is sent to the other party's e-mail address:

- 1) indicated in the document being the source of the obligation, e.g. contract, party's notifications about the e-mail address, invoice, etc.;
- 2) indicated in the procedural letter in the case of correspondence in administrative or civil matters;
- 3) contained in a publicly available source, e.g. publishing the address on a website, business card, etc.

In the first case, however, in practice, there are doubts as to whether each e-mail address indicated in the contract is an address that may be used for the exchange of correspondence intended to have a specific legal effect. In particular, it is about the situation where e-mail addresses are not indicated in the contract comparison, and in the part describing the method of its implementation, where these addresses are indicated as addresses of persons responsible for the contract. Failure to clearly indicate that these addresses can be used for this type of correspondence increases the legal uncertainty of the parties and significantly reduces the possibility of using electronic correspondence exchange to the indicated addresses as a way to achieve the expected legal effect. Summing up, the identification of the addressee and the legal effect of the correspondence exchange in this case are as strong as the sanction specified in mutual obligations for failure to notify about a change of e-mail address. The method of minimizing the indicated risks is to indicate specific e-mail addresses in the contract, which are used to exchange correspondence with legal consequences and to introduce sanctions for failure to notify about the change of such address. These sanctions usually take the following form:

- 1) ineffectiveness of the method of notification of the change of e-mail address, which was made in a manner other than that specified in the contract;
- 2) the effectiveness of delivery to the e-mail address in each case in which a formal notification of its change was not made in accordance with the content of the contract.

In the case of correspondence exchange carried out on the basis of e-mail addresses indicated in pleadings, the sanctions and legal effects of such an exchange are usually determined by law. The liability of the parties is limited to the correct verification of the address and to documenting the sending of the correspondence to the correct address.

The method of exchanging correspondence to publicly available addresses is used only in the absence of another source of identification of the other party and its e-mail address. This method of exchanging communication raises high legal risks related to the validity of the address, proving its use by the other party and demonstrating the legal effectiveness of such exchange related to the obligation.

Legal provisions appear in the professional trade that increase the certainty of legal transactions through public e-mail addresses in appropriate open and accessible registers or publishers. An example of such a provision is the Polish register of entrepreneurs who are natural persons (CEIDG). The provisions regulating the operation of the register sometimes indicate that the entrepreneur may indicate his contact details, in particular e-mail address or contact details of the representative, in particular his e-mail address, website address, telephone number. Such publication of data in the public register increases the level of legal certainty in the case of correspondence exchanges conducted using this address, even if it is initiated only by one of the parties. The effectiveness of such an exchange will be determined in this respect by the scope of the power of attorney and procuration as well as the provisions of law regulating the principles of passive representation.³ A similar solution applies in the Register of Entrepreneurs atregulated by statute on the National Court Register. Entities on whose application an e-mail address has been entered into the register of entrepreneurs are required to report a change in this data.⁴

In recent years, solutions have emerged, based on generally applicable provisions of law, formalizing the horizontal exchange of correspondence between entities, including lawyers. Statutory solutions are introduced, followed by technical solutions to ensure an appropriate level of assurance of the addressee's identification, certainty of delivery and appropriate quality of evidence of information exchange. Thus, although this type of exchange is the domain of private law and the principle of party autonomy, nevertheless nation states, and sometimes corporations themselves, interfere with the indicated autonomy.

3 2018 Act on the Central Register and Information on Economic Activity and the Information Point for Entrepreneurs (Journal of Laws of 2020/ 2296).

4 1997 The National Court Register (Journal of Laws of 2021/ 112).

4. Hierarchical Exchange of Correspondence

Hierarchical exchange of correspondence in the vast majority of cases is of a legal nature. This is one of the important elements distinguishing this type of exchange from horizontal exchange, where in most cases this exchange is factual and only for the selected type of correspondence does it have legal effects.

Hierarchical correspondence exchange, in contrast to horizontal exchange, is therefore highly formalized. Formalism manifests itself in two spheres: in the legal sphere, by strict regulation of the manner of carrying out the exchange of correspondence, which may have a legal effect, and in the case of electronic form, by specifying the tools by which it can be carried out.

The latter element is somewhat different from the correspondence carried out in paper form, where the main emphasis was not on the manner of delivery, but on specific evidence with which legal effects are associated, e.g. sending the parcel to an entity that could have issued a formal confirmation of posting, e.g. by a postal operator, or at the time of service to a public entity or court, which left outside the scope of the regulation, the method of service and the entity that physically performed it.

In other words, in the electronic world, national states define what acts of service will be deemed to have legal effects and what tools the parties and representatives are obliged to use. Most often, these countries not only limit themselves to identifying these tools, but are also building them. These are all kinds of services online (electronic services). These are also dedicated portals where, apart from the correspondence exchange functionalities, other functionalities are also made available, such as access to files, participation in hearings, etc.). More on this in part VI, ch. 1.

The consequence of the failure to use the tool indicated by the Member State may be the legal ineffectiveness of the replacement. This ineffectiveness is not always absolute, because states allow the possibility of validating this ineffectiveness. There are, of course, different models; sometimes they allow the use of paper form within the deadline, although there is a noticeable trend of limiting this type of option for professional entities, including lawyers; sometimes it is possible to use the correct tool and the deadline is considered to be respected. There are procedures that do not, however, provide for the possibility of supplementing (validating) the activities, which in the case of tight deadlines poses a significant threat to the parties to the proceedings.

An example of such an absolute sanction of ineffectiveness is the submission of a pleading to the e-mail address of a public entity instead of

its electronic inbox.⁵ - in the light of the Polish provision of the Code of Administrative Procedure. The second, now pan-European, example is the lack of use of electronic form for submitting a public procurement in a procedure where only the electronic way of submitting offers is provided. Failure to use the electronic route may not be validated in any way, even in the form of submitting a paper offer.

5. Electronic Delivery - eIDAS Regulation

A special type of correspondence exchange is Registered Electronic Delivery. It was regulated in the eIDAS Regulation. Registered Electronic Delivery is a trust service introduced at the European level. According to the eIDAS regulation we mean the trust service, namely the service realized by the entity called a trust service provider (TSP). TSP provides the service for remuneration, based on the adopted service policy and based on the adopted technical practice. The entire operation of such a provider is subject to trust service supervision. EU law gives you the freedom to provide trust services by allowing you to provide services in one country to entities in other EU countries.

Within the meaning of art. 3 of the eIDAS Regulation, the "electronic registered delivery service" means a service that makes it possible to transmit data between third parties by electronic means and provides evidence relating to the handling of the transmitted data, including proof of sending and receiving the data, and that protects transmitted data against the risk of loss, theft, damage or any unauthorised alterations. By means of the electronic delivery service, third parties exchange data (information) in a confidential and integrity-protected manner. The effect of the service is the issuance of proofs of sending and receiving data. The service provider is an independent entity that cannot be dependent on the sender or recipient (when carrying out delivery). An electronic delivery service may be provided by a single trust service provider, or it may enable delivery through the collaboration of multiple electronic delivery service providers. In such a situation, an item posted using one registered delivery service will be transferred between vendors so that the delivery is made via a vendor serving the addressee.

5 2011 The Regulation of the Prime Minister on the Preparation and Delivery of Electronic Documents and the Provision of Forms, Specimens and Copies of Electronic Documents (Journal of Laws of 2018/ 186).

The eIDAS Regulation does not provide for equivalence between qualified electronic delivery services and traditional postal registered mail. However, it is indicated in the literature that Member States may establish this equivalence at national level⁶. This is also what happened in most regulations in Poland (as a result of the entry into force of the Act of November 18, 2020 on electronic delivery⁷), but also in Belgium and Denmark. Registered electronic delivery items are in principle equivalent to registered items where the provision so provides. However, the implementation of a hybrid shipment looks different, i.e. a shipment that takes a material form at any stage of delivery (sending or receiving). Polish law recognizes that a hybrid parcel is a type of postal item regulated under the provisions of postal law, while in Belgium it is assumed that it is a type of parcel qualified for the trust service⁸.

The basis for the definition of registered electronic delivery is the technological neutrality of the solution. The provisions of the eIDAS Regulation do not indicate which technology is to be used for electronic delivery. It only presents the mechanisms that must be provided for service to qualify as registered electronic delivery or qualified electronic delivery service. This allows for the adaptation of legal provisions to the current state of technology and applied solutions. An example is the possibility of exchanging correspondence by registered electronic delivery using the technology used in e-mail communication with additional requirements. For Qualified Registered Electronic Delivery the compliance with the ETSI EN 319 521 standard (Security Requirements and Policies for Registered Electronic Delivery) confirms the fulfilment of legal requirements - a standard extending the requirements of ETSI EN 319 401 with specific requirements for REM service providers.

Electronic delivery is a self-contained type of communication between entities and may take place independently of the services online. However, in the event of a binding of the service online it can complement such a service. In service online pre-defined electronic forms for the purpose of

6 Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services, 'Trust Services Under the eIDAS Regulation' (Portail-qualite.lu, June 2018) , <<https://portail-qualite.public.lu/content/dam/qualite/publications/confiance-numerique/trustservices-under-eIDAS.pdf>> access 19 February 2021.

7 J. of Laws, item 2320.

8 Mirko Faccioli in: Alessio Zaccaria, Martin Schmidt-Kessel, Reiner Schulze and Alberto M Gambino (eds) *EU eIDAS Regulation. Commentary*, (Beck/Hart 2020) 331.

settling a given case may be created, or even advanced solutions based on authentication allowing for semi-automatic or fully automatic handling of the case. Electronic delivery then plays the role of a method of providing evidence of a transaction in the service (sending and receiving an application, settling the case). The value of such a solution is the fact that the evidence generated independently of the service itself, acts as if in the background of the main solution. The advantage of using electronic deliveries is that there is no need to build communication modules for users, the account management system in ICT systems providing services online and thus their faster construction and easier commissioning. Of course, in the case of complex processes, the construction of the indicated elements may be necessary, but with less advanced services online communication for such a service based on electronic delivery is sufficient.

6. *Qualified Electronic Delivery Service*

A qualified registered delivery service is a service provided by a qualified service provider, must meet the additional requirements of the eIDAS Regulation, as well as be subject to periodic audits and national supervision in the field of trust services. Data sent and received using a qualified electronic registered delivery service shall benefit from the presumption of data integrity, the sending of the data by the identified sender and receipt by the identified addressee, and the accuracy of the date and time of sending and receipt of the evidence indicated by the qualified electronic registered delivery service.

A qualified electronic delivery service provides identification of the sender and, prior to delivery, of the addressee. This identification ensures the safety of trading to the parties, protects them against unwanted correspondence and ensures the authenticity of the data provided. Identification in a qualified service may be performed on the basis of reliable nationally operating identification means, it may also be based on other mechanisms, in particular an electronic signature. The qualified electronic delivery service therefore combines the features of an advanced electronic signature and seal as well as a qualified time stamp⁹.

9 Łukasz Goździaszek (ed) *Identyfikacja elektroniczna i usługi zaufania w odniesieniu do transakcji elektronicznych na rynku wewnętrznym Unii Europejskiej. Komentarz* (C. H. Beck 2020) 242.

The provisions of Article 43 of the eIDAS Regulations assign legal effect to the evidence of the registered electronic delivery service, while there is no relevant regulation in the provisions on qualified electronic signature, including the indication that qualified electronic registered delivery, which is recognized in one country, will also be recognized in the other. The literature indicates that: "this is probably a mere oversight of the European legislator"¹⁰. It seems, however, that this is a deliberate action, because unlike qualified electronic signatures, qualified electronic seals or qualified time stamps, it is necessary to build an appropriate infrastructure for the exchange of information under this trust service. The services indicated above may operate in either mode *offline* or they can be used in any available communication technology, e.g. e-mail. In this case, registered electronic delivery requires the construction of similar technical solutions as in the case of electronic identification.

The specificity of qualified electronic delivery is an appropriately organized model of identification of entities participating in the transmission of correspondence, and then the delivery mechanism. Delivery in a qualified service is normally carried out with the following steps:

- 1) the sender identifies and authenticates to the delivery service and then forwards the data (parcel);
- 2) after receiving the data, the service issues a proof of posting and marks it with a qualified time stamp;
- 3) the data is forwarded to the service provider who will deliver it to the addressee;
- 4) the addressee is informed about the waiting data;
- 5) the addressee identifies and authenticates to the service, and then the service makes the item available to the addressee;
- 6) the service issues a proof of receipt and marks it with a qualified time stamp.

The described requirements as to the certainty of the process of identifying the parties to the correspondence exchange, the method of securing it and generating evidence affect, from the technical side, the high probability of establishing the course of correspondence. For this reason, the European legislator, as with other trust services, decided to grant additional legal presumptions to qualified electronic services.

10 Zaccaria, Schmidt-Kessel, Schulze and Gambino (n 8) 327.

7. Polish Act on Electronic Delivery

7.1. Introduction

The act on electronic delivery lays down rules for the delivery of electronic documents whose addressee or sender is the public administration. Delivery, in accordance with *DorElektrU*, is carried out using a public service and qualified electronic registered delivery services. As part of *DorElektrU*, the role of a service supporting public entities directly will be played by a public service provider - a designated operator, which will perform all activities based on the same requirements that apply to qualified suppliers. Individuals and private entities will be able to choose whether they will be served by a public registered delivery service or a qualified service. Qualified suppliers will be able to service individuals and private entities, providing them with the possibility of sending correspondence to other private entities, as well as to public administration. In the field of handling parcels addressed to public administration, qualified services will exchange data with the public electronic delivery service.

7.2. Common Address Infrastructure

An interesting solution chosen by the Polish legislator is the introduction of a common address infrastructure for all providers of registered electronic delivery (including qualified delivery) who wish to join the system. Effective service requires the possibility of indicating the addressee or addressees of a given registered electronic delivery. According to *DorElektrU*, the address for electronic deliveries given by the minister responsible for computerization will be used to uniquely identify the addressee of parcels. This address will be assigned to the service that directly serves the addressee, while the database of electronic addresses will enable the address to be verified and the shipment to be properly directed to the supplier who supports it. To ensure the unambiguous assignment of a natural, legal or public entity to an address, this address will be unique and once assigned to one entity it cannot be assigned to another. In addition, public entities will be able to search for the address itself on the basis of other characteristics of the addressee's identity, e.g. name, surname, PESEL number and physical address. This is a solution that has not been provided for directly in the eIDAS Regulation. However, its introduction has a practical dimension, which is the introduction of an address management

mechanism so that any changes to service providers do not affect changes in addresses.

7.3. Reception and Mailing Boxes

The electronic registered delivery service does not require sending and delivery to be made from dedicated boxes, lockers or named infrastructure. In particular, the party sending the document may use the electronic delivery service, without the need to have any account in a given service. In the case of a qualified service, delivery should, however, be preceded by the identification of the sender. The electronic service itself also does not have to be performed only for the person who has previously registered in the service, and the condition for submitting the document is the identification of the person who is the addressee of the document; DorElektrU also points out that deliveries by means of the public registered delivery service will be carried out using a delivery box, which will allow for the temporary storage of the correspondence delivered and the proof of posting and receipt.

7.4. Mandatory Address for the Legal Profession

The Polish regulation introduces the obligation for selected legal professions to have an address for electronic delivery and to report it to the register referred to in Chapter 7.2. The indicated obligation was included not only in DorElektrU, but also in acts regulating the manner of performing a given legal profession (legal advisers and advocates). Thus, this obligation is not only an administrative and legal obligation, but is an element of a professional obligation, and failure to comply with it may constitute grounds for disciplinary liability. A legal practitioner will be able to choose the provider of his e-mail address. The attorney-at-law will be able to choose either the address at the designated operator and in this case will receive an electronic delivery box or will be able to use the service of a qualified electronic delivery provider, i.e. a private entity, which will be entitled to provide such a service. The electronic delivery address will be able to be used for both hierarchical and horizontal communication.

8. *Qualified Electronic Delivery in Selected EU Member States*

At the time of writing, there were 19 qualified electronic registered delivery service providers in the EU. Most qualified services are provided in France (7 services) and Spain (5 services). Detailed analysis shows that they are used in the field of business transactions, in particular for processes such as signing contracts and sending invoices. In these services, most often the addressee does not have to have an account or a distinguished address for electronic delivery, and the delivery is made to a natural or legal person defined by the sender, which additionally defines the method of notifying the addressee about the pending shipment, e.g. via his address e-mail. An interesting conclusion from the analysis of these services is the fact that while the level of verification of the sender's identity is verified in detail, in many implementations the level of verification of the addressee's identity is carried out in accordance with the sender's guidelines - i.e. in some situations only based on e-authentication. e-mail.

Due to the introduced solutions, on the basis of the EU, we can distinguish different models of the organization of the system for ensuring registered electronic delivery. The cooperation model, in which the state provides electronic delivery services through a designated operator, is used in the Czech Republic, Belgium, Denmark and France. The e-delivery service, which includes, inter alia, hybrid shipment, is provided, inter alia, in France¹¹¹²¹³ (in Czech Republic, the hybrid service provides for both the processing of digital information into traditional mail and the digitization of an analog mail).

An interesting model is also the Italian solution. The Italian e-delivery model is currently the most developed in the EU. Italian Certified Electronic Mail (Italian *La Posta Elettronica Certificata*, PEC¹⁴). The functioning of the PEC is based on a dozen commercial PEC service providers who complete the delivery process and issue the appropriate shipping and receipt receipts. As part of the system's operation, the Public Administration

11 2016 Act on the Digital Republic (LOI n ° 2016-1321) <<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000033202746>> accessed 25 March 2021.

12 2008 Czech Act No. 300/2008 col. on Electronic Measures and Authorized Document Conversion (Zákon č. 300/2008). <https://www.zakonyprolidi.cz/cs/2008-300>.

13 Regulation (EU) 910/2014 of The European Parliament and of the Council of 23 July 2014 on Electronic Identification and Trust Services for Electronic Transactions in the Internal Market and Repealing Directive 1999/93/EC L 257/73

14 2005 Digital Administration Code (Codice dell'Amministrazione Digitale, Decreto Legislativo 82/2005 modificato ed integrato dal Decreto Legislativo 235/2010).

Index has been made available, which allows you to check and use PEC addresses of any public entity. Each public entity is required to create a PEC box as part of the services of one of the suppliers and forward this address to the market surveillance unit (Agency for Digital Italy - AgID). Electronic transmission of information requiring collection is carried out on the basis of the decree of the President of the Republic of February 11, 2005.¹⁵ Pursuant to this act, the electronic transmission of an electronic document is tantamount to notification by post, unless the law provides otherwise. In 2020, as part of the PEC operation, over 2 billion electronic parcels were sent, there were over 12 million registered mailboxes and over 250,000 domains.

Registered electronic delivery is a service which, due to its conditions, is still at the implementation stage, as opposed to, for example, electronic signatures. Although the number of entities providing this service is small compared to other trust services, the number of such solutions is slowly growing. For example, in February 2021, in Bulgaria was launched the first one qualified electronic registered delivery service¹⁶, this service carries out the process of electronic delivery based on the portal and mobile phone applications. As part of the indicated service, it is possible to deliver electronic parcels to and from public administration, also in accordance with the information provided on the website of the court parcel service provider.

As shown by the experiences of various EU Member States, electronic service requires changes to the national law in order to fully implement it. Although the presumptions related to the use of qualified electronic registered delivery ensure legal certainty, the full implementation of solutions is hampered by specific procedures that exist in the Member States. It should be remembered that one of the principles of EU law is the procedural autonomy of the Member States, which means that this area of law is still largely regulated in a national and traditional manner, i.e. in paper form. The full implementation of registered service therefore requires changes to the provisions of national law. It generally takes place in two ways. The first is the introduction of a single legal act indicating a possible way of communication between businesses and citizens, and between

15 2005 Decree of the President of the Republic of February 11 (Decreto del Presidente della Repubblica 11 febbraio 2005 No. 68).

16 See Evrotrust, 'Sending and receiving courts' decisions is already possible through the smartphone' (www.evrotrust.com, 9 February 2021) <<https://www.evrotrust.com/landing/en/a/sending-and-receiving-courts-decisions-is-already-possible-through-the-smartphone>> access 19 February 2021.

citizens and public authorities. The second model is making changes to specific procedures. For example, in the Republic of Poland, in order to ensure the actual implementation of a registered electronic delivery, approx. 160 different legal acts, including KPA and court procedures. The second problem with the use of electronic delivery is the reconciliation of this trust service with postal services. As indicated above, the European legislator did not comment on the relationship between the eIDAS Regulation and Directive 97/67 / EC of the European Parliament and of the Council of December 15, 1997 on common rules for the development of the internal market of Community postal services and the improvement of the quality of services.¹⁷ the Journal of Law, the EU, the Polish Special Edition, chapter 6, vol. 3, p. 71, as amended), assuming that these two regulations differ from each other and function independently of each other. However, the practice of economic trading shows that these ranges intersect in at least two places. The first scope is the already indicated equation of paper correspondence and correspondence carried out on the basis of registered electronic delivery in the light of national law. The second scope is the qualification of the hybrid service as either a postal service or a trust service. As shown by the experiences of the Member States, the practice of regulating the above-mentioned the scope varies.

9. The PEPPOL System - Description of the Solution Today and Development Prospects

In addition to qualified and public registered electronic delivery services, there is also a PEPPOL system in the EU consisting of many registered but unqualified delivery services cooperating within one network. These services, after meeting the criteria imposed within the network, in particular after meeting the communication standard and common address infrastructure, serve delivery nodes. The PEPPOL network is used for communication between business entities in the field of the transmission of invoices and business documents. Pursuant to the regulations in force in the Republic of Poland, invoicing for large public procurement procedures takes place via the PEPPOL network. The experience from building the PEPPOL network was used to define the requirements for qualified delivery services and to build mechanisms that will function within public deliveries in the Republic of Poland. Currently, the PEPPOL system is

17 OJ WE L 1998 No. 15, 4 as amended.

directed and focused on the elements of trade exchange within orders and e-invoicing. However, due to the fact that countries not only from the EU region are starting to operate in the PEPPOL network, but also, for example, from Australia, Singapore, and through these countries other Asian countries¹⁸, there is a great potential for using the PEPPOL network to create an exchange standard in the future, not only of commercial but also legal documents. The advantage of the PEPPOL network over the electronic delivery solutions defined today in the ETSI standards is its open standard (based on *opensource*) and by the practice of applying in cross-border trade. The experience in ensuring interoperability in various legal systems may prove to be invaluable and significantly influence the increasing use of the standard on a global scale.

18 OpenPEPPOL AISBL, 'Nationwide E-Invoicing Framework in Singapore' (Peppol.eu) <<https://peppol.eu/what-is-peppol/peppol-country-profiles/singapore-country-profile/>> access 19 February 2021.

Electronic Communication

Anna Zalesińska, Dariusz Szostek

1. Introduction

Electronic communication is one of the key tools in LegalTech 1.0. Apart from digitalisation of resources, it was the first of LegalTech instruments used by lawyers. It underwent significant evolution over the span of years. Beginning from first simple e-mails, through attaching documents thereto, using Skype-like solutions, and then more advanced messengers, videoconferencing, e-hearings, saving data on a cloud, making such data available and sharing thereof, to Distributed Ledger Technology (DLT) and blockchain and, finally, the AI. We are on the verge of automation of the process, combination of data from various sources, including from Internet of Things (IoT) solutions, the ever-greater elimination of the human factor, and datafication of documents.

Lawyers, as well as such organisations as the courts, the public administration, and law offices, are at varying stages of digital expertise. Those range from very weak – where only the simplest solutions are used (even today, there happen to be European states in the territory of which one cannot communicate with a court in an electronic manner¹), through mid-range (electronic communication only as a means for “transport” of documents – an early stage of LegalTech, access to certain information or documents through a website, and e-hearings substituted for a “traditional” court hearing), to automated systems using databases supported by algorithms, machine learning, or ever-more frequently entering the domain of AI, based on DLT and blockchain at the end. A few years ago, lawyers sent entire volumes of casefiles between themselves and the courts, the administration, etc. Today, this takes place in organisations with low digital expertise. Slowly, storing respective data (and not entire documents) in blockchain which technologically safeguards their authenticity, integrity and immutability becomes standard. At the same time, an adequately set level of access allows for the possibility of parallel work on

1 Poland is an example of one, as there is no possibility of filing briefs via electronic communication.

data by many persons in many systems, including by automatic systems, with a guarantee that there is continuity of data and that such data is up-to-date.

We are past the stage of implementing the human-to-human (institution/organisation) electronic communication. We are faced with, or are at the stage of (depending on the digital expertise of a given organisation) implementing human-to-machine (human-to-algorithm) electronic communication, and machine-to-machine communication (where a human only oversees the data ex post). Putting it differently, we are at the stage of implementing LegalTech in the matter of communication.

That which we send has changed. Documents in standardised formats (doc, pdf, xml, etc) are still dominant in organisations with low digital expertise. In those more developed, we are looking at appropriately structured data, not necessarily in formats deemed hitherto to be “traditional” electronic documents. Algorithms are in no need of documents, but of appropriately described data. A contemporary document is not only a closed, secured structure (e.g. in a pdf format, signed with a qualified electronic signature), but is also can function on the basis of data entered into blockchain (certainty of data and the possibility of verifying back data), being an active document. This is allowed inter alia by the novel approach of the European Union to an electronic document and to its directly applicable definition following from Article 3(35) of the eIDAS Regulation², according to which ‘electronic document’ means any content stored in electronic form, in particular text or sound, visual or audio-visual recording. Many scholars refer to the second part of that definition which unfortunately indicates only the examples of documents structured into commonly known formats. For the purposes of LegalTech 2.0, the first part of the definition - any content, stored or made available in any manner, and thus including multi-source data entered into DLT or blockchain, acquired either from a human or from equipment, the latter including Internet of Things (IoT) or Internet of Body (IoB)³. A consequence of such an approach is not only the new construction of a document, but also a new manner of communication between lawyers – organisations/institutions and algorithms.

2 Regulation (EU) 910/2014 of The European Parliament and of the Council of 23 July 2014 on Electronic Identification and Trust Services for Electronic Transactions in the Internal Market and Repealing Directive 1999/93/EC L 257/73.

3 Internet of Body: devices combining a body (be it human or animal) with the Internet, inter alia in telemedicine.

2. Transmission of Data and Making Data Available

The natural phenomenon occurring for many years in organisations, both those functioning in the private sector and those of the public sectors, was to transmit data⁴ between employees (internal communication) or between an organisation and third parties (external communication)⁵. Transmission in the case of “paper-based” communication, in such an instance understood more as a physical transfer of media containing such data, required presentation of the original in order to duplicate its contents (through transcription, copying or digitalisation), or the transfer of a copy.

-
- 4 Data construed as facts. Structured data constitute information. In everyday usage, the terms of “data” and “information” often are used interchangeably. A hierarchy of cognitive concepts is named a “pyramid” or hierarchy of knowledge/information (the so-called DIKW, from data, information, knowledge, and wisdom). Information is one of the fundamental factors affecting the making of a decision in an organisation. It also constitutes a basis of knowledge building for persons involved in the process of its acquisition and utilisation. Martin H. Frické, ‘Data-Information-Knowledge-Wisdom (DIKW) Pyramid, Framework, Continuum’, in Laurie A. Schintler and Connie L. McNeely (eds) *Encyclopedia of Big Data* (Springer 2018) <https://doi.org/10.1007/978-3-319-32001-4_331-1> accessed 11 January 2021; Chaim Zins, ‘Conceptual approaches for defining data, information, and knowledge’ (2007) 58(4) *Journal of the American Society for Information Science and Technology*, 479 <<https://doi.org/10.1002/asi.20508>> accessed 11 January 2021. Given that information is secondary to data which were processed in such a manner as to give them concrete value and make them capable of being used in decision-making, communication processes are going to be described in the context of access to data. Nevertheless, any reasoning related to the way of exchanging data or making that data available retains its relevance for information.
- 5 Data represent facts, which are registered, processed, and transmitted or made available. On their own, data as such have neither meaning nor purpose. However, its transmission or making them available always occurs for a particular reason, which in turn affects the interpretation of the recipient. Moreover, information is the data contained in the communiqué, which were interpreted by the recipient. Thus, data have objective character, while the character of information is subjective. Mariusz Grabowski, Agnieszka Zajac, ‘Dane, informacje, wiedza – próba definicji’ (2009) 798 *Zeszyty Naukowe Uniwersytetu Ekonomicznego w Krakowie* 111; Gene Bellinger, Durval Castro, Anthony Mills, ‘Data, Information, Knowledge and Wisdom’ (2004) <<http://www.Systems-thinking.org/dikw/dikw.htm>> accessed 11 January 2021; Jennifer Rowley ‘The wisdom hierarchy: Representations of the DIKW hierarchy’ (2007) *Journal of Information Science* <<https://journals.sagepub.com/doi/10.1177/0165551506070706>> accessed 11 January 2021; David Weinberger, ‘The problem with the data-information-knowledge-wisdom hierarchy’ (2010) *Harvard Business Review* <<https://hbr.org/2010/02/data-is-to-info-as-info-is-not>> accessed 11 January 2021.

As a consequence, many data were being duplicated at many locations. Due to the time-consuming and multistage process of handling physical media within an organisation or between parties to the communication process that were external to that organisation⁶, it was not uncommon for the data to lose their quality of being essential or up-to-date. However, that was dictated by the restrictions resulting from the technical capabilities of that time. When the use of new technologies in the work of an organisation was becoming common, such a traditional approach to the exchange of data was replicated, yet the transmission of data via the means of electronic communication appeared in place of the transfer of physical media. Regrettably, documents were still being generated (for most commonly in that very form the transmission of data was taking place) and actually sent between users inside or outside an organisation. Only the carrier changed, for predominantly that was e-mail instead of mail construed traditionally, as circulation of physical consignments. In that instance, the process of communication was only supported through LegalTech 1.0-type solutions. Data were being transmitted to many locations, where their copies containing versions of files with varying degrees of current relevance were then present. Those were incapable of being used by algorithms. That often led to chaos regarding information, as the participants of the very same process were making decisions based on data that were only ostensibly identical, i.e. working on different versions of the same document (file). That approach changed only recently, even though the technical capabilities themselves were already present for some time. However, the emergence of faster transmission of data, available mobile devices with large data capacities, and a change in the mentality of users were needed. Instead of transmitting data, making the data available became ever more popular. Above all, this is done by uploading the data to a cloud and then allowing authorised entities access thereto. Some lawyers and organisations stopped at this stage. As of now, contemporary organisations still base themselves on a cloud, but store data while using DLT and blockchain. That allows for simultaneous, multi-location data storage, which is implemented in real-time. A distributed ledger provides the possibility of very fast access from the nearest (fastest) node. Security is increased when compared to traditional communication (via e-mail). It

6 “Process” understood here as a collection of reciprocally linked actions, the performance of which leads to the achievement of a specified outcome. Where a process of communication is concerned, the purpose thereof is to create a communiqué by a sender, and then the sending thereof, its receipt by a recipient, and its interpretation in a manner expected by the sender (decoding).

is important to note that every alteration of data (overwriting) in real-time is available to all those who are authorised, and each entry on every node is original by nature (which prejudices, for legal purposes, many national legal enactments on blockchain).

Where there is transmission of data, there is a transfer thereof from the sender to the receiver and saving of that data on local drives or other permanent data media of the communicating parties. In Economy 4.0, or Digital Economy 3.0, where the circulation of data is very fast, data saved in such a manner are often back data. However, making data available consists in allowing concurrent access to data for entitled or authorised entities (this pertains both to making data available from a single server, groups thereof, or by DLT).

A recipient is unambiguously defined in the event of traditional transfer of data. When making data available, the scope of addressees needs to be specified, and said scope may be unlimited (publicly available data, without the need to identify users) or limited (defined by the provisions of law or by security policy of an organisation). As opposed to the transmission of data, which takes place at a given moment (which results in the data that are up-to-date at the moment of transmission), making data available ensures access to data that are always up-to-date. An entitled or authorised entity has access to data at any time, and that data are aggregated and updated in specified time intervals on a single resource (the single source principle) or in distributed ledgers (DLT). Data in automated systems based on blockchain are updated constantly, which guarantees their up-to-date nature. Such a model not only ensures the up-to-date relevance of data, but also is a guarantor of their credibility. There is a risk of incorrect duplication of databases in the traditional model of transmitting data, which causes a danger of appearance of many different sources of data. The latter may result in a distortion of the decisional process, due to the differences between the contents and the up-to-date nature of the databases. That problem does not occur in the event of making data available or using DLT and blockchain. The extant LegalTech solutions (in particular those that are cloud-based) allow for creating access (granting authority) in accordance with the desired key criterion (taking account of the provisions on personal data protection and relevant security principles). Such a manner of working on data ensures greater efficiency and accelerates the processes in an organisation, which in turn translates to the efficacy of operation and ultimately to the reduction of costs. For that reason, the traditional, archaic model of service is being phased out in favour of making contemporary cloud-, DLT, or blockchain-based data available in real-time.

Example

In the traditional manner of communication, a notice of the date of a hearing, served on paper or through the means of electronic communication, requires interaction on part of a lawyer – reading the correspondence, entering it in the calendar, etc. This is carried out by a clerical office in organisations with low digital expertise. In contemporary systems, that process is carried out automatically without participation of a human. A date of a hearing is entered into the system, and by virtue of an application programming interface (API) that data are downloaded and saved in a lawyer's calendar. Entering a hearing date into a calendar, change thereof, or taking it out of the docket altogether occur automatically in accordance with the time interval of data synchronisation; at best, there may be subsequent notice of that fact to the user, through sending of an alert. Contemporary LegalTech systems also allow for verification of calendars and fixing a date acceptable for anyone concerned.

3. Data Sharing

3.1. Introduction

Making data available should be distinguished from sharing of data, understood as collaborative work on a certain resource by many entities. Like the example of making data available, such a form of cooperation was limited in the past by the capabilities of transfer, having been often effected at the expense of efficiency. In the age of fast Internet and universal use of mobile devices those requirements are no longer relevant. Secure sharing of data by collaborating entities and their clients (both in the public and private sectors) undoubtedly contributes to the improvement of business efficiency. Additionally, data sharing reduces the risk of the loss of data, whereas the model of independent work on data requires the management of multiple workstations to that end. The risk of equipment failure or theft may lead to loss of valuable data, in particular where they are stored on non-secure IT data media. For many years, transferring data and the calculations connected to them to secure, appropriately administrated servers and access to data and applications through remoted desktop protocols was the alternative. The alternative now is the blockchain, which ensures the security of data. Data sharing means that there is a possibility of concurrent work of many users on various databases, including on various sets of data. In such systems, ensuring the versioning of shared documents

and visualisation of any introduced changes are required, together with unambiguous identification of the author of such changes. Solutions available on the market allow for registration of information and its storage in logs as regards any changes, the moment of effecting a given change, and on the person, who introduced such a change. Collaborative work on data requires implementation of such mechanisms ensuring accountability and identification of changes. Moreover, algorithms managing databases of that type facilitate gradation of access from read-only privileges to highest privileges related to modification and deletion of data. As of now, the development of solutions supporting the flow of data is of strategic importance for an organisation, in particular because of the fact that LegalTech 2.0 solutions are used for work on a large volume of data. They support the processes carried out hitherto by humans, through automation of those processes.

Example

Pursuant to the traditional approach, documents were sent and duplicated for the purposes of various organisations. Contemporary systems use multiple sources (which increasingly use blockchain in modern organisations). Alteration of data in one location causes automatic access in other systems and affects the possibility of decision. For instance, with properly configured LegalTech solutions, recording a death certificate of person X in vital records is automatically available for a judge adjudicating a case against such a person (e.g. in criminal proceedings), with the concurrent foreclosure of making a judicial decision as regards the deceased, discontinuation of proceedings, and the entry of relevant information in the system of the Prosecution Office.

3.2 Automation of Processes Through Use of Aggregated Data

The amount of data gathered and made available increases systematically. As a consequence, the functionalities of IT systems facilitating selection and compression of excessive amount of data become especially important. However, that data must have certain features in order to be useful, i.e. they must be up-to-date (as of the moment of decision-making, and they must be provided in due time), complete (they must not be fragmentary), reliable (the source of data must be credible), purposeful (in accordance with the rational premiss of gathering thereof, excess data distort and prolong the decisional process), accurate (to the extent possible). Financial cost borne in relation to the process of data gathering must also remain

adequately related to the benefits thus acquired. Multiplicity of data which are processed and interpreted within a framework of a given organisation affects the amount of information possessed thereby. This facilitates satisfying the need of information and addressing the so-called information gaps resulting from e.g. the need to make a decision.

The above is no different when it comes to public bodies, where the possibility of monitoring the flow of cases, or ensuring the requisite solutions allowing for oversight at every level are also matters of great importance. Moreover, efficacy of proceedings in the age of LegalTech solutions remains closely related to the facilitation of commencement of proceedings via electronic means and to implementation of effective electronic service of process. In turn, management of those processes requires automation at the stage of commencing proceedings, registration of a case, or administrative-clerical service. Advantages of automation of processes occur where the workload in the form of input of data, completed once, pays dividends at the subsequent stages of service. Thus, in a situation where the user would manually input a specified set of data, other systems or other users are going to use that data at subsequent steps in an automated manner. In state-of-the-art systems the input increasingly occurs automatically and is made by devices, e.g. by IoT. The ever-stronger pressure on the integration of IT systems and automation of acquisition of required data is noticeable. Such an automation may support the process of user identification and authorisation, making required data available at the stage of support for the decision-making process, or, finally, transmitting information on the final decision to entitled parties. All of those stages within a correctly planned integration may take place without involvement of the human factor, with the concurrent guarantee of authenticity and integrity of data. It is vital when designing IT systems serving public or private bodies (in the event of access to public databases) to ensure mechanisms of data integration (Application Programming Interface, API) from various databases with a given application, which expands its availability and allows for effective interoperability⁷. However, increasingly more powerful databases come into being as a consequence thereof, and work on them slowly goes beyond the cognitive capabilities of a human. For that reason, ever stronger emphasis is put on the development of LegalTech 3.0 solutions

7 As a result, the way work is organised changes as well. An example of that is making the API to the Information Portal of the Common Courts in Poland available. That caused a bolstering of interest among the bodies offering commercial programs for law offices in integration thereof with their systems.

that use machine learning (the so-called weak AI) for contextual resource search⁸.

Example

An instance of simple automation in the area of the judiciary in organisations of mid-range digital expertise is the supplementation of data in documents from other data, e.g. from a claim (*mutatis mutandis* – from an application to commence non-contentious proceedings, or from a different brief initiating proceedings). Those data are entered into the internal system of a court without involvement (or with little support) of the human factor. Then, the headings for the correspondence to be sent in a given matter (and sometimes even its contents) are generated automatically on that basis. At the last stage, based on the initial data complemented with data gathered during the proceedings, the routine elements of the final decision are generated. Another example, applied in organisations of broader digital expertise, is the one from point 1.2.1, as applied in e.g. Estonia⁹.

3.3 Searching Through Data

Where there is a large volume of data, it is always a challenge to ensure that there are mechanisms in place that allow for efficient searching through those data and for effective work while using them. In most systems, input data are structured in accordance with a specified key. Therefore, creating a solution facilitating a search of those databases poses no challenge and only comes down to ensuring the sorting of records from a given column which contain a given string of data, which then comes down to forming queries while using keywords or sorting commands. However, what proves to be a challenge is the contextual search of databases, i.e. through a precise definition of the analysed problem, and acquisition of re-

-
- 8 The expression of that is found in the Proposal for a Regulation of the European Parliament and of The Council on European data governance (Data Governance Act) of 25.11.2020, COM (2020), 737 final, 2020/0340 (COD). This is the first of a number of instruments planned by the European Commission in the European Data Strategy. The purpose of that regulation is to stimulate growth of the economy based on data in Europe, through reduction of transaction costs for the exchange of data, improvement of the availability of data for re-use, and stimulation of the actions of neutral data exchange intermediaries (the so-called data brokers).
- 9 <<https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/2019/07/29/Estonian+e-File+system>> accessed 12 January 2021, <<https://scoop4c.eu/cases/estonian-data-exchange-layer-information-systems-x-road>> accessed 12 January 2021.

sults corresponding to the query made, by virtue of substantive weight (and not only lexical convergence of keywords). In case of public bodies, a database which falls within the concept of contextual search is e.g. a database of judicial decisions (decisions on merits by public bodies). In the event of publishing judicial decisions (be it on commercial websites or on websites available free-of-charge), solutions based on machine learning are used. The first stage where there is a plan for using systems of that type is the one for the process of erasing personal data from the contents of judicial decisions (anonymisation of court decisions). Anonymisation in the Polish Portal of Judicial Decisions of Common Courts (*Portal Orzeczeń Sądów Powszechnych*) takes place automatically, due to advanced algorithms of text analysis based on neural networks. The efficiency of the applied mechanism reaches almost 99 % and constantly increases together with the amount of analysed material, as that system is based on neural networks¹⁰.

The second moment where there is a need to reach for tools using components of artificial intelligence is the process of searching through judicial decisions. With the amount of data which is published as of now, search based only on text search as regards specific phrases yields too large a volume of results. However, content analysis of statements of reasons allows for an appropriate categorisation with the use of IT solutions, which permit a significant reduction in results. The jurisprudence of the common courts gathered and published in dedicated portals exhibits a similarity which may be identified on the basis of various criteria (features). Contents of decisions contain legal bases and references to case-file reference numbers of other cases which constitute closed collections. Moreover, phrases specific for texts of that type are often used. Identification of such existences facilitates search for decisions similar to one another through highlighting the material common features of the documents. However, in the situation where the jurisprudence of the courts is published by those courts in vast quantities, finding information of interest becomes ever more difficult, and the search methods based on outdated methods of comparison and document proximity analysis increasingly less effective. Searching for information of interest becomes time-consuming and less effective with the increasing volume of data in the databases of court

10 Nevertheless, and in spite of such good results, there is a percentage of information remaining that may be omitted. That necessitated the introduction of the human factor into the entire process of publication, in the form of a person verifying the correctness of automatic anonymisation.

decisions, which must be automatically processed and then assimilated by the user. Correct categorisation of decisions similar on merits allows for saving the time and for open access to sources of legal knowledge by the professionals and by persons occasionally seeking legal aid. It is currently possible to use solutions that would allow aggregating decisions with similar contents in an advanced manner, to allow users to identify decisions with similar facts of the case, or to allow them to track a line of case-law in the scope of a given legal issue. Those capabilities are granted by using AI tools or machine learning algorithms, which made the analysis of natural texts and applying cognitive abilities thereto. Machine learning allows for discerning significant features of judicial decisions not only in the area of taxonomy, but also of semantics. Solutions of LegalTech 3.0, which offer intelligent full-text search methods, methods of creating search results rankings, or methods of finding similar documents, undoubtedly constitute the future of services addressed to lawyers. Work in that area is underway e.g.¹¹ in Poland for the system of the 'Portal of Judicial Decisions'¹², in France¹³, in the UK¹⁴, and in the United States of America¹⁵.

A similar challenge is posed by the products achieved with use of automatic speech recognition (ASR). ASR systems also use advanced machine learning methods. The degree of precision is adjusted for a given language situation and yields different results when dictating documents (increasingly more common for use in law offices and by judges) than those obtained therefrom through recognition of spontaneous recordings (e.g. from hearings). In case of the former, the degree of correct recognition (even for the legal language) reaches almost 99%. In case of the latter, the end result depends on the quality of the recording¹⁶. ASR technology and word-spot-

11 European Ethical Charter on the use of artificial intelligence in judicial systems and their environment, Council of Europe, Commission for the Efficiency of Justice (CEPEJ), <<https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c>> accessed 12 January 2021¹⁸.

12 <www.orzeczenia.ms.gov.pl> accessed 12 January 2021.

13 Case Law Analytics, JurisData Analytics (LexisNexis) <www.doctrine.fr> accessed 12 January 2021.

14 Luminance. HART (analysis – criminal, risk of reoffending) - Harm Assessment Risk Tool.

15 Watson/Ross (IBM), Lex Machina (LexisNexis).

16 For the purposes of automatic speech recognition, the correctness of recognition is calculated by interpreting the results of the WER (Word Error Rate) metric. The WER comes from the so-called Levenshtein distance, but depends on the compatibility of words, and not single letters in words. It consists in comparing the source text with the recognised text, and then calculating a rate provided by a

ting¹⁷ became one of the key issues in the field of developing LegalTech 3.0 solutions due to the increasing amount of data stored in the form of recordings (and in particular due to the ever-broader use of electronic official record, long-distance hearings, and trials over the Internet).

4. Communication by Using IT Solutions

4.1. Communication Within an Organisation

Rapid development of technology in recent years has become an impulse for evolution of organisations, both in the private sector and in the public sphere, towards development of processes supported by IT solutions or implemented entirely through the use thereof. As a consequence, an organisation increases its operational efficiency through use of contemporary technological solutions, aiming to reach digital maturity of an intelligent organisation, understood as the constant process of adapting that organisation to the changing digital environment¹⁸. The ecosystem wherein both organisations and clients/recipients of services function is defined as SMAC (Social, Mobile, Analytics, Cloud) and is supplemented by the technology of IoT. Development of communications technology remains closely linked to contemporary solutions reinforcing the process of management and the service of processes. Functioning of an organisation in the age of digital transformation requires adjustment of methods

quotient of a sum of substituted, inserted and deleted words and the number of words in the entirety of the text. The ASR system functioning at the Polish courts has a very high level of WER (below 9.5 % for the Polish language). The highest level of WER was achieved for the English language, and it currently amounts to 4.9 % (Google). Emil Protalinski, 'Google's speech recognition technology now has a 4.9% word error rate' <<https://venturebeat.com/2017/05/17/googles-speech-recognition-technology-now-has-a-4-9-word-error-rate/>> accessed 11 January 2021.

17 Audio mining or search for information in sound recordings.

18 James Corr 'An introduction to the digital maturity model' (2020) <<https://www.seerinteractive.com/blog/introduction-to-digital-maturity/>> accessed 11 January 2021; Tristan Thorsen, Matthias Murawski, Markus Bick 'How to Measure Digitalization? A Critical Evaluation of Digital Maturity Models' in Marié Hattingh, Machdel Matthee, Hanlie Smuts, Ilias Pappas, Yogesh K. Dwivedi, Matti Mäntymäki (eds) *Responsible Design, Implementation and Use of Information and Communication Technology* (Springer-Cham 2020) <https://doi.org/10.1007/978-3-030-44999-5_30P> accessed 11 January 2021; Piotr Adamczewski, 'Ku dojrzałości cyfrowej organizacji inteligentnych' (2018) 161 *Studia i Prace. Kolegium Zarządzania i Finansów*, 67.

of management and communication to the contemporary standards based on using technology of the so-called Third Platform of ICT (SMAC). An intelligent organisation understood as an economic system utilising advanced ICT infrastructure in its internal organisation and communication (including external communication) constitutes, as of now, the essence for the functioning of information society in business fields¹⁹. Therefore, ensuring that an organisation is appropriately equipped with system and communications infrastructure, and at times hardware infrastructure, becomes necessary for service of processes inside the unit.

It is now standard to use mobile devices such as smartphones and telephones (Mobile) for communication withing the framework of a given organisation. Analytical solutions become increasingly important (Analytics), as they are capable of providing specific preferences, trends or dependencies on the basis of aggregated data and with the use of advanced algorithms. As a result, the decision-making process is supported at various levels of an organisation. Advantages of that type of analysis are used increasingly more often in law offices and public bodies. And finally, there is the ultimate mainstay of SMAC, i.e. the technology of the computing cloud (Cloud), with DLT and blockchain included therein.

However, using full potential of SMAC requires profound change within an organisation and, above all, abandonment of traditional “analog” solutions in favour of digitalisation. It is much easier to work, make available, process, and analyse sources that were originally created and fixed electronically. This is followed by the need of reorganising personnel towards employees who possess appropriate expertise in that field. Changes in the private sector must also be correlated with changes in the public sphere. A state understood as public administration and the judiciary should also increase the availability of services offered electronically, gather resources of digital data, and create a friendly legal ecosystem. After all, effective use of contemporary technologies in an organisation, automation of repetitive processes, and innovation are one of the components of the so-called process maturity of an organisation²⁰.

-
- 19 Stewart Clegg, ‘Globalizing the Intelligent Organization: Learning Organizations, Smart Workers, (Not So) Clever Countries and the Sociological Imagination, *Management Learning*’ (1999) Sage journals <<https://journals.sagepub.com/doi/abs/10.1177/1350507699303001>> accessed 11 January 2021;
Piotr Adamczewski, ‘Organizacje inteligentne w zintegrowanym rozwoju gospodarki’ (2016) 2 *Zeszyty Naukowe Uniwersytetu Rzeszowskiego*, 420.
- 20 Vladimír Modrák, Zuzana Šoltysová, ‘Development of an Organizational Maturity Model in Terms of Mass Customization’ in Dominik T. Matt, Vladimír

Examples of solutions used outside of an organisation are found in: messengers (e.g. MS Teams), special solutions for collaborative work (e.g. Workplace, Trello), platforms allowing for videoconferencing and online meetings (e.g. MS Teams, Zoom, Jitsi Meet), e-mail based on customised mailbox, integrated with a calendar and available on many devices (e.g. Exchange), corporate social media (e.g. Yammer), workplace collaboration software (e.g. Basecamp or Slack), intranet, newsletters, etc. The solutions thus described are often integrated, which makes the flow of information within an organisation more efficient and consistent.

4.2. *Communication with Parties from Outside an Organisation*

At present, where communication with external partners is concerned – analogously to communication within an organisation – the parties base themselves on SMAC technologies. However, professional messengers (such as MS Teams, Zoom, Google Meet, Jitsi Meet, etc.) that become a platform for swift exchange of information and knowledge sharing, increasingly become the mainstay for such communication. It is not only the private sector that functions within this medium. Ever more frequently, public bodies consider that form of communication – apart from the dominant one, via domain-specific ICT systems – to be permissible as well, which allows an organisation to apply homogenous standards in communication with partners from both sectors. The approach to mobile devices also changes, and in communication with partners from outside the organisation those are used not only as tools for direct communication (in the form of telephone conversation, or of a SMS message), but also – or, above all – as tools for using videoconferencing platforms or ICT systems. Universal usage of smartphones and tablets necessitates that applications and webpages of any kind must also be available in the so-called mobile version, and it must be added that those devices are permanently connected to the Internet. A cloud also finds its use in communication with external parties, by granting specific privileges (access) to defined resources for business partners or service recipients. It also becomes standard to work on a joint project by using specialised solutions, such as JIRA, IC

Modrák and Helmut Zsifkovits (eds) *Industry 4.0 for SMEs* (Palgrave Macmillan 2020) 215 <https://doi.org/10.1007/978-3-030-25425-4_8> accessed 12 January 2021, Magdalena Raczyńska 'Modele dojrzałości procesowej organizacji' (2017) XLIV 2 Acta Universitatis Nicolai Copernici. Zarządzanie, 61.

Project, GanttPRO, Workzone, etc. The solutions described here systematically supersede the methods of communication used hitherto, which in most cases were based on sending an electronic message via e-mail, or on direct communication.

As of now, using uniform methods of communication within an organisation and with partners outside an organisation is noticeable. It is due to the synergy between the four mainstays of the Third Platform of ICT mentioned above that ecosystems that were hitherto closed and often restricted to one organisation and its partners have been opened to third parties, including public bodies. New channels of communication facilitate efficient transfer of information to a broad range of recipients. In turn, mobile technologies guarantee constant access to that information by virtue of a permanent connection to the Internet. Furthermore, data analysis ensures optimisation of processes, while cloud technology facilitates scalability and reduction of costs while working on data. Work within the boundaries of one working environment ensures timesaving and improves the flow of information. However, that requires high standards in the scope of cybersecurity, for hitherto isolated systems or databases are opened for persons from outside an organisation, and thus for persons constituting a potential hazard.

5. *Electronic Services in LegalTech*

5.1. *Introduction*

One of the most important challenges posed for public administration and the judiciary is to ensure efficient communication with other offices, citizens, and entrepreneurs²¹, based on high standards of security and on verification of identity. The most important task in that area is the ensuring of the provision of public services via electronic means, which ultimately is to accelerate and improve deciding cases before public bodies. The concept of an electronic service (e-service) should be construed as a service which may be provided without physical presence of the parties

21 The following communication channels are distinguished: *Government-to-Government* (G2G) – public authorities to other public authorities, *Government-to-Citizen* (G2C) – public authorities to citizens, *Citizen-to-Government* (C2G) – citizens to public authorities, *Government-to-Business* (G2B) – public authorities to entrepreneurs, *Business-to-Government* (B2G) – entrepreneurs to public authorities.

at one given venue (remotely via the Internet) by using information technology (either partially or completely automatically). Such services should be set up in a manner targeted to a citizen, i.e. in a clear, transparent, productive, and effective manner, in order to avoid exclusion of any groups, in particular in the context of the so-called “functional illiteracy”, understood as “IT exclusion”. Traditionally, there are four stages of maturity for electronic services provided by public bodies, i.e. information, interaction, transactional services, and integrative services²². Recently, personalisation was discerned as the fifth stage.

5.2. *Information and Interaction Services*

At the most basic, i.e. at the informative level, the institutions publish information at their websites, while recipients (citizens, clients, users) may only familiarise themselves with such information by browsing webpages through a personal computer, mobile devices, or the so-called information kiosks. At present, the first stage of service maturity is already a standard. Every public body, be it among European Union bodies or within national structures, ensures access to an appropriate collection of information as of now.

The second stage of maturity presupposes one-way interaction. Users transfer information to an institution via electronic means, yet not in all cases the institution would answer them in the same way (communication

22 Janina Banasikowska, Anna Sołtysik-Piorunkiewicz, ‘Czynniki kształtujące poziom akceptacji i poziom dojrzałości systemów e-administracji na tle rozwoju społeczeństwa informacyjnego’ (2016) 308 *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, 9 and literature cited thereunder. Alternatively, there is another categorisation of services posited in the academic literature, in that there are: Level – 1: Information, Level 2 – unilateral interaction, Level 3 – bilateral interaction, Level 4 – transactional, Level 5 – personalisation; alternatively, there is a categorisation of: cataloguing (in that an organisation has a webpage), transaction (there is a possibility of providing services for citizens electronically, but only coming down to the option of making a service of downloading interactive forms from a website and transmitting them to that authority available), vertical integration (databases of various organisations are integrated, there is a possibility of making a decision on a case electronically), horizontal integration (linking various data systems that comprise separate groups of services provided for citizens, by which a citizen becomes able to have his or her various cases “heard” at a single place). Karen Layne, Jungwoo Lee, ‘Developing Fully Functional e-Government: A Four Stage Model’ (2001) 18 *Government Information Quarterly* 122.

may be unilateral, when only the input of information occurs electronically, or bilateral, where an authority responds that way as well).

5.3. *Transactional and Integrative Services. Personalisation as the Fifth Stage of Maturity for e-Services*

In the transactional model, the recipient communicates with a public office via electronic means and in that way receives a reply (communication is bilateral, often using dedicated applications, e.g. through completing a form on-line and sending it with attachments to a public authority via electronic means).

At the fourth stage, i.e. the integrative stage, users access dedicated portals on which they use information from various parties. This is made possible due to integration of data from such various sources, and thus work is carried out with the use of shared data. The entire process commences wholly via electronic means. From the acquisition of information, commencement of proceedings, payment of an appropriate fee, to the making of either a procedural or substantive final decision on the case at the end²³.

Lastly, personalisation consists in offering services to users where such services are customised for individual needs and circumstances of those users. Due to the implementation of appropriate algorithms of data processing, services are automated and provided proactively (that is, the institution itself reaches to the recipient with the proposal of providing a service).

6. *New Approach to Directness*²⁴

6.1. *Introduction*

IT solutions alter the way in which lawyers operate. Major acceleration of changes has occurred due to COVID-19 and thus the inability to operate as usual, i.e. through direct physical meetings, either with clients or

²³ *ibid.*

²⁴ Ewa Rott-Pietrzyk, Dariusz Szostek, 'A New Approach to the Legal Understanding of "Directness" and "Participation" in the Aftermath of COVID-19' in: Ewoud Hondius, Marta Santos Silva, Andrea Nicolussi, Pablo Salvador Coderch, Christiane Wendehorst, Fryderyk Zoll (eds) *Coronavirus and the Law in Europe*

with a court²⁵. We stood witness when the work methodology of lawyers (through universal use of videoconferencing), institutions (including the courts), and the interpretation of the concept of “being in the presence” have changed in mere weeks. Before the pandemic, that last concept was interpreted restrictively, equating it with physical presence at the same place and at the same time²⁶. By adopting a purposive interpretation without actually amending the law, holding online meetings and sessions (including those of the European Parliament or those of national parliaments, administrative authorities, or companies), where members connect thereto via IT solutions and participate in proceedings in real-time. That change shall last, including after COVID-19. Online hearings became obvious. In just several days, online trials were greenlit as well, in countries where this was impossible until that time (to that extent, an amendment of the law was needed at times, and sometimes the existence of online trials had to be “discovered” in existing provisions), deeming that online solutions fulfil the requirements of directness. Lithuania, Italy, or Norway may be indicated as examples in that regard²⁷. In other countries the legal bases (which were admittedly extant) were expanded to include a possibility of holding trials on-line for lower instance courts and the opportunity of connection from a different venue than that of the court. Such acts were taken *inter alia* in Poland, Brazil, and Canada²⁸. In countries with substantial digital expertise (e.g. in Austria) the conduct of notaries changed, and permission to draft notarial deeds online was given. More importantly,

<<https://www.intersentiaonline.com/publication/coronavirus-and-the-law-in-europe/658?version=v-2f6f01ec-324e-637b-c7ca-a6bc0e384e16>> accessed 15 December 2020.

25 Tiffanie Wen, ‘How coronavirus has transformed the way we communicate’ (BBC, 9 April 2020) <<https://www.bbc.com/worklife/article/20200408-coronavirus-how-lockdown-helps-those-who-fear-the-phone>> accessed 15 December 2020.

26 However, there emerged a concept of “tele-presence” in the doctrine, as an alternative to the traditionally understood physical presence. Nonetheless, those analyses more often pertained to the ODR rather than to classic judicial procedures. The COVID-19 pandemic caused this view to shift and intensified a wider use of videoconferencing platforms for the purposes of organising a court hearing. Richard Susskind, *Online Courts and the Future of Justice* (Oxford University Press 2019) 255.

27 Ewoud Hondius, Marta Santos Silva, Andrea Nicolussi, Pablo Salvador Coderch, Christiane Wendehorst and Fryderyk Zoll (eds) *Coronavirus and the Law in Europe* <<https://www.intersentiaonline.com/bundle/coronavirus-and-the-law-in-europe>> accessed 12 August 2021.

28 *ibid.*

ISO 29115 technical norms²⁹ on identity assurance at the LoA2 or LoA3 levels, and thus at the average or high levels of assurance, respectively, permit identity verification carried out fully online. At the global level, the SP 800-63 guideline introduces 4 individual assurance levels; at IAL2 and IAL3, verification of identity online is permissible, on condition that where the latter level is concerned there would be an online connection of a trained employee with the person being verified, and verification of identity would take place via that transmission and verification of an ID card with a photo. As of this moment, there are actions being considered whose purpose would be to verify identity with an entry in blockchain, taken together with additional attributes which could be freely added by the verified person to his or her data (e.g. an attribute of the entry in the Bar, on the roll of notaries, etc).

6.2. *Electronic Hearings According to the Example of European States*

Remote hearings (also known as electronic hearings, online hearings, hearings over the Internet, or “devenued” hearings³⁰) are a specific example of electronic services offered by the judiciary. Receipt of information is an active and complex process, in which the mind cooperates with the senses to create an image of the reality surrounding us. Among them, sight is the most developed sense and has greatest importance in the process of perception. Moreover, studying the reaction of the person heard allows a judge to swiftly respond by appropriately adjusting and rephrasing questions. The advantages of a remote hearing caused it to be universally used in the states of the European Union for many years already, both in civil and criminal proceedings³¹. Audio-video streaming, in itself, is being developed,

29 <<https://www.iso.org/standard/45138.html>> accessed 10 December 2020.

30 As they are referred to in Poland.

31 A tool named “Telehoren” has been used in the Netherlands since 1999 (Aarnout Schmidt, ‘Technologie komunikacyjno-informatyczne w sądownictwie w Holandii – aktualna sytuacja’ (2006) 16 *Prawo mediów elektronicznych*). In Austria, Germany, Finland, Estonia and Poland, a remote deposition was consistently being implemented for successive courts during the first years of the 21st century (Jacek Gołaczyński (eds) *Informatyzacja postępowania sądowego w prawie polskim i wybranych państw* (C. H. Beck 2009) 36. The option to use videoconferencing to render legal assistance between courts of various states was provided for under the Convention established by the Council in accordance with Article 34 of the Treaty on European Union, on Mutual Assistance in Criminal Matters between the Member States of the European Union OJ C 197/12 and under Council Regu-

and associated services such as autodescription or VMI (video-mediated interpreting) are being activated³².

The next stage of development for audio-visual communication between a court and the parties to the proceedings is the so-called electronic (on-line) hearing. It is based on the assumption that not only witnesses or expert witnesses but parties to the proceedings in general may be present at other venues than that of the court hearing the case. In that event, the parties may take part in a hearing while being physically present at a different courthouse and take action in proceedings from there. The course of proceedings is transmitted in real-time to the place of stay of the parties and to the court holding proceedings³³. The SARS-CoV2 pandemic has made the use of audio-visual techniques universal, as an alternative to personal appearance in court. It has also generated an impulse to abandon the traditional transmission between stations located in courts, penitentiaries, or other organisational units of the judiciary. Moreover, solutions allowing participation in a court hearing from any place where a party is present have appeared³⁴. At an online hearing, a party to the proceedings may effectively take any procedural acts, with legal effects prescribed in the legal provisions³⁵. One may discern hearings where some parties connect remotely (partially remote hearing) and hearings wherein everyone (including the composition of a given court) participates remotely (fully remote hearing).

An addition to the active communication between a party and a court is found in passive communication, consisting in streaming the hearing

lation (EC) No 1206/2001 of 28 May 2001 on cooperation between the courts of the Member States in the taking of evidence in civil or commercial matters OJ L 174/27.

32 Sabine Braun, 'Remote Interpreting' in Holly Mikkelsen and Renée Jourdenais (eds) *Routledge Handbook of Interpreting* (Routledge 2015) 352. <<http://wp.videoconference-interpreting.net>> accessed 12 January 2021.

33 Anna Zalesińska, 'Electronic Court Report in Proceedings Before Common Courts in Poland' in: Jacek Gołaczyński, Wolfgang Kilian and Tomasz Scheffler (eds) *Legal Innovation in Polish Law* (C. H. Beck 2019) 119–131.

34 To illustrate, such a solution was provided in Poland by the Act of 14 May 2020 on the amendment of certain statutes in the scope of protective acts related to the spread of the SARS-CoV-2 virus (Journal of Laws of 2020, item 875).

35 The level of maturity for a e-service of holding a hearing online was defined at 4th level. This means fully settling a matter by making an application to hold a hearing online, then processing that application, planning a videoconference and confirmation of a date, allocation of resources, and finally holding a hearing.

on-line³⁶. That functionality comprises allowing the authorised persons to stream the course of public hearings through the videoconferencing infrastructure. The examples of programs used to organise videoconferences at courts are: Microsoft Teams (Italy), Skype for business (Hungary, the UK, the Czech Republic), Zoom (Great Britain's Northern Ireland), BT MeetMe (Great Britain's Northern Ireland), Sightlink (Great Britain's Northern Ireland), Jitsi Meet and Avaya Scopia (Poland), the respective countries' own systems (Spain). The SARS-CoV-2 pandemic made the implementation of systems handling videoconferencing in common courts of the Member States of the EU more intense. Admittedly, a remote hearing was possible in some states even before 2020. For instance, there were no material changes to the operation of the judiciary in Croatia, as communication via electronic means and remote hearings in civil and commercial matters were also possible even before the pandemic. That state of affairs is similar in Estonia, where it was also made possible in any given type of cases, regardless of the role or function performed in proceedings. There also was a possibility of organising remote proceedings in Finland, including through videoconferencing, both in civil and criminal cases. Furthermore, there were provisions in force in Germany before the pandemic that allowed the parties, their representatives and advisers to provide testimony during a pending hearing from various venues, i.e. not necessarily from the courtroom. In some Member States of the EU, the pandemic accelerated the implementations or became an accelerant for new, innovative projects. Ireland is a good example of that, for it took the pandemic to start work related to ensuring appropriate legislation and infrastructure for the purposes of videoconferencing there. Pilot stages did not commence until April 2020. In two regions of Spain which belong to the most advanced as regards the implementation of videoconferencing systems, that is in Valencia and Catalonia, there is a possibility since April 2020 for an arrested person or a person held in custody to make a remote deposition and for an expert to give testimony (respectively, by using the CISCO WEBEX system in Catalonia), or solely for an arrested person (in Valencia). While regulations allowing for remote hearings in Lithuania were introduced for civil cases, they were used only sporadically until the pandemic. There also was an initiative in April 2020 to ensure broad use of videoconferencing also in criminal proceedings. As far as the analogous situation in Poland was concerned, remote hearings were used

36 Streaming understood here as a transfer of data from one device to another, which allows for playback of data in real-time.

sparingly (yet much more often in criminal matters). Remote trials, despite the provisions that allowed them already in 2015, were not garnering a great amount of attention. It was from May 2020 that the change came, after amendment of the provisions on remote participation in a civil trial from any place, without the need to stay in a courthouse. Abandonment of the requirement to be present at a courthouse has contributed to the promotion of the tool at issue and to renewed interest in such a form of participation from the parties to proceedings. What is more, there were two new types of commencing proceedings adopted in Italy during the period of the pandemic, i.e. the “mobile” one (document-based) and remote proceedings in the form of videoconferencing through a dedicated application. There was a project called “Skype Defence”, launched in January 2020 in the Czech Republic, allowing remote communication for defence counsel with their clients who were present in penitentiaries. It was not until a temporary regulation on administration of justice, which came into force on 28 March 2020, that commencement of hearings via videoconferencing was allowed in Norway. In a similar vein, Hungary allowed an option of broad use of videoconferencing in civil and criminal matters at the beginning of April 2020. In Portugal and Sweden, court systems were adjusted after April 2020 to carry out videoconferencing where it would be compatible with the right to fair trial. In addition, there are states which use videoconferencing in a very limited manner, e.g. in Austria, where videoconferencing came into use only when the pandemic started, and only in criminal proceedings. Courts in Denmark restricted themselves to the option of holding a hearing mainly via electronic means (to a very limited extent, with the use of tools allowing audio-visual transmission)³⁷.

7. *Electronic Service of Process*

7.1. *Poland*

Due to organisational considerations and the costs associated thereto, computerisation of the judiciary in Poland progresses in stages. It was at the

37 Drafted on the basis of the document by the Foreign Affairs Committee of the National Assembly of Attorneys at Law. Krajowa Izba Radców Prawnych, ‘Sądy w trybie online – zdalna praca sądów w wybranych państwach europejskich w czasach pandemii SARS-COV-19` (2020) <<https://kirp.pl/wp-content/uploads/2020/05/opracowanie-komisji-zagranicznej-krrp-sady-w-trybie-online.pdf>> accessed 13 January 2020.

end of the past century when the first acts in the field of computerisation of court registers were taken. As of now, the management of the register of sentenced persons (State Criminal Register)³⁸, the land register³⁹, the register of liens, and the register of business entities (National Court Register)⁴⁰ is carried out remotely. From 2009, when Electronic Admonitory Proceedings (*Elektroniczne Postępowanie Upominawcze*, “EPU”)⁴¹ appeared in the Polish Code of Civil Procedure, the process of computerising the judiciary undoubtedly gained greater momentum. The electronic record of proceedings began to exist in 2010 beside the traditional written record of proceedings⁴². Following the example of civil proceedings, similar changes appeared within the proceedings in matters of contraventions and in criminal proceedings. The next stage was to implement oral statements of rea-

38 The IT system of the State Criminal Register cooperates with the Central Register of Vehicles and Drivers (Centralna Ewidencja Pojazdów i Kierowców) and with the IT system of the Central Board of the Prison Service at the Ministry of Justice. Since 2008, the State Criminal Register has cooperated with other criminal registers from some EU Member States through the sTESTA network.

39 It is possible to consult the entirety of the land register (“księga wieczysta”) through that system, obtain a certified copy, and verify authenticity of a print-out. There is an additional functionality of access to electronic notices on entry and to information on the state of a case to make an entry to the land register through the trusted ePUAP user profile (which is one of the national methods of identification in Poland, equivalent to a qualified electronic signature).

40 The currently available electronic services are: an Internet-based search engine for entities entered into the National Court Register; independent downloading of print-outs from that Register, which enjoy the legal status of a document issued by a court; making applications on-line to enter an entity into the National Court Register; making applications to enter a Polish private company limited by shares (a “sp. z o.o.”), a Polish registered partnership (a “sp.j.”), and a limited partnership (a “sp.k.”) to the Register (the so-called S-24 company module, which allows registration of those types of companies and partnerships through a ready-made template over 24 hours); ordering and receiving documents online from the corporate catalogue of documents.

41 Introduced by the Act of 9 January 2009 on the amendment of the Act – Code of Civil Procedure (Journal of Laws of 2009, item 156.). Consists in a simplified procedure of litigating money claims by completing an online form by the claimant (including by the so-called mass claimant), and in paying a judicial fee over the Internet. The claimant receives an order for payment to his or her account in the IT system, while the defendant is served therewith by post. An order for payment contains an identification code which allows for verification that the payment order exists and what are its contents in the IT system. There is an option of electronic (i.e. remote) commencement of civil enforcement proceedings.

42 Until 2010, there only was an option in judicial proceedings to take evidence remotely by way of videoconferencing.

sons for decisions into the proceedings, and then online hearings in 2015, as other European states did. According to Article 151§ 2 of the Polish Code of Civil Procedure⁴³, it is possible to order the commencement of a public hearing via technical means that would allow to carry it out remotely. In that event, parties to the proceedings may take part in the hearing while being physically present at some other venue and take procedural acts from there. The course of procedural acts is transmitted in real-time to the place of stay of the parties and to the court holding proceedings. The venue at which the parties may take part in a public hearing should be located at the courthouse of a different court. A major improvement for the purposes of applying for that very manner of holding a public hearing is found in the option of filing an application therefor via the Information Portal. Feedback communication with a court takes place electronically, as well. It is worth noting that the application for an on-line hearing made via electronic means is a first-of-a-kind service in Poland which is provided completely through the Internet, and thus the first service of the so-called Electronic Internal Mail Department (*Elektroniczne Biuro Podawcze*)⁴⁴. Everything in that regard depends on the technical capabilities present at a given court, in a given category of cases, or in the scope of a given procedural act. Such a capability was ensured for the application for an online hearing. However, such an application must be signed in accordance with Article 126§ 5 of the Polish Code of Civil Procedure, i.e. by a qualified electronic signature, by a trusted signature, or by a personal signature. The existing option to hold a hearing online with the participation of parties present in different courthouses was expanded in 2020. The state of the law

43 Act of 17 November 1964 – Code of Civil Procedure (consolidated text: Journal of Laws of 2020, item 1575, as amended).

44 The concept of the Electronic Internal Mail Department should be understood here as a complete solution that enables both the filing of briefs in an electronic manner and the electronic service. The provision of Article 125§ 2^{1a} of the Polish Code of Civil Procedure uses the phrase “selecting the option to file briefs (...) and subsequent filing of briefs” is permissible where it is possible due to technical reasons attributable to a given court. This should be understood in such a way that if the technical reasons permitted the handling of one type or category of cases, then only to that extent electronic communication at a given court would take place. Therefore, based on Article 125§ 2^{1a} of the Code, it is possible to file a specific brief through a ICT system that serves judicial procedures, on assumption that the proceedings then continue “on paper”. Marcin Uliasz in Jacek Gołaczyński and Dariusz Szostek (eds) *Kodeks postępowania cywilnego. Komentarz do ustawy z 4.7.2019 r. o zmianie ustawy – Kodeks postępowania cywilnego oraz niektórych innych ustaw* (C. H. Beck 2019) 72.

was subject to change due to passing a governmental bill to amend certain statutes in the scope of protective acts related to the spread of the SARS-CoV-2 virus⁴⁵, where the legislator decided to allow a broad participation in a hearing through a videoconference. According to Article 15zzs¹, the participants in an online hearing need not be present at court and may participate in a hearing remotely, by using a personal computer or a mobile device. Connection takes place by using two applications, i.e. Avaya Scopia or Jitsi Meet (the court decides which one is to be used). The entirety of the hearing is held remotely, including the delivery of a judgment and the presentation of the oral grounds therefor, or the provision of an oral statement of reasons⁴⁶.

The Information Portal was implemented into the court system together with the e-record of proceedings. It is a system allowing an authorised user to gain access to information on a given case, to court documents, to recordings of the electronic record⁴⁷, and to the Portal of Judicial Decisions mentioned above. Finally, the date of 10 July 2015 is of note here, as on that day the provisions allowing comprehensive service of fully electronic, bilateral communication with a court in civil matters were passed. Thus, the legislator allowed wide use of electronic and documentary forms in the context of recording court documents in the course of civil proceedings. However, the IT system was not created, and the administration of justice was mainly based on “paper-based” service of process (with

45 Act of 2 March 2020 on special solutions related to the prevention, counteraction and combating COVID-19, other infectious diseases and crisis situations caused thereby (Journal of Laws of 2020, item 1842, as amended).

46 Should a hearing be recorded by a device recording sound, or images and sound, the Polish legislator introduced the possibility for the statement of reasons to be delivered after the delivery of the operative part of the judgment, and then recorded by that device, in civil proceedings and in proceedings in the matters of contraventions. Oral statement of reasons becomes a part of the electronic record of proceedings. Anna Zalesińska, ‘Electronic Court’ in Jacek Gołaczyński, Wolfgang Kilian and Tomasz Scheffler (eds) *Legal Innovation in Polish Law* (C. H. Beck 2019), 119.

47 E-services for citizens are provided through the Information Portal, i.e.: an application for automatic transcription solely by using automatic speech recognition (ASR), application to make an audio-video recording available, application to reserve a station to consult the electronic official record at the file-reading room, an application for an e-hearing (the first application within the framework of the so-called Electronic Internal Mail Department). There is going to be an application for the streaming of a hearing, to be made available in 2021.

minor exceptions described above) until 2020⁴⁸. This is not to say that electronic service of process was not carried out. Public administration and the judiciary implemented that service in a limited⁴⁹ manner⁵⁰, in differing ways and by using different IT systems. Even within the bounds of the widely understood public administration (tax offices, the Social Insurance Institution, etc) there were divergences, in particular during the first years of implementing electronic communication⁵¹. That situation changed greatly on 18 November 2020, when the Act on Electronic Service was passed. However, implementation of electronic service and the creation of a system handling them is planned to take years, for this is a major organisational undertaking. Completion thereof is planned for as late as 2029. Due to the circumstances related to the pandemic, the Polish legislator has decided in 2021 to temporarily allow the possibility of carrying out effective electronic delivery service via Case Information System (Portal Informacyjny)⁵². Where cross-border communication is

48 Although the traditional postal receipt was superseded by an electronic receipt, the so-called Electronic Confirmation of Receipt.

49 Limited because only certain types and kinds of cases were capable of being managed remotely.

50 The duty to carry out electronic service on demand appeared in administrative procedure already in 2005. In civil proceedings, electronic service was performed only in select types and kinds of cases. By way of an example, one may point to the Electronic Admonitory Proceedings mentioned above.

51 The development of e-services has advanced greatly in recent years in Poland, and public bodies ensure the possibility of settling select cases over the Internet via those e-services for potential stakeholders.

52 Article 15zzs⁹ of the Act of 2 March 2020 on special solutions related to the prevention, counteraction and combating COVID-19, other infectious diseases and crisis situations caused thereby (Journal of Laws of 2020, item 1842, as amended), which came into force on 3 July 2021.

concerned, the eCODEX⁵³ and eCODEX Plus project⁵⁴ wherein Poland participated becomes of special importance. The purpose of that project was to create legal and factual capabilities of electronic receipt of briefs within the framework of two cross-border judicial procedures – the European Order for Payment⁵⁵ and the European Small Claims Procedure⁵⁶, by connecting the courts of Member States which participated in the project to the e-Justice portal (e-justice.europa.eu) and by introducing appropriate legislative amendments to the provisions of civil procedure in force⁵⁷. The

-
- 53 The e-CODEX project (carried out from 2010 to 2016) greatly influenced the development of computerisation of judicial procedures in the European Union. The concept of the e-Justice portal (e-justice.europa.eu) was drawn up within the framework of that project, to serve as a pan-European contact point in matters of the administration of justice. Furthermore, the project produced steering guidelines for subsequent work on filing and serving briefs and court letters via electronic means. The effects of that project were met with positive assessment from the European Commission and adapted in the work of the European legislator. *Katarzyna Klimas and Damian Klimas, 'Electronic Communication in European Cross-border Proceedings – Polish Perspective' in Jacek Gołaczyński, Wolfgang Kilian and Tomasz Scheffler (eds) Legal Innovation in Polish Law (C. H. Beck 2019)197*; Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Digitalisation of justice in the European Union A toolbox of opportunities, Brussels, 2.12.2020 COM(2020) 710 <https://ec.europa.eu/info/sites/info/files/communication_digitalisation_en.pdf> accessed 12 January 2021.
- 54 National ICT systems were successfully connected to a central portal within the framework of the eCODEX Plus project (carried out from 2017 to 2019). Pilot actions pertained to two procedures, i.e. procedure for the European Order for Payment and the European Small Claims Procedure. The pilot procedure took place at the District Court for Wrocław – Fabryczna in Wrocław and at the Regional Court in Wrocław.
- 55 Regulation (EC) No 1896/2006 of the European Parliament and of the Council of 12 December 2006 creating a European order for payment procedure, OJ L 399/1.
- 56 Regulation (EC) No 861/2007 of the European Parliament and of the Council of 11 July 2007 establishing a European Small Claims Procedure, OJ L 199/1.
- 57 The Polish legislator did not foresee the option of using contemporary technological solutions within the scope of provisions directly applicable to European cross-border procedures. However, legislative solutions foreseen by the European legislator allow for computerisation both the European Order for Payment procedure and the European Small Claims procedure. Using electronic communication between the courts of a given Member State hearing the case in one of the European cross-border procedures is made possible in particular by Article 26 of Regulation no. 1896/2006, which states that all procedural issues not specifically dealt with in that Regulation shall be governed by national law, and by Article 19 of Regulation no. 861/2007 which states in turn that subject to the provisions of that Regulation, the European Small Claims Procedure shall be governed by

project was a success, and the platform itself is going to be used to handle the next process, i.e. the transmission of applications and notices pursuant to Council Regulation (EC) No 1206/2001 of 28 May 2001 on cooperation between the courts of the Member States in the taking of evidence in civil or commercial matters⁵⁸.

Within the framework of the so-called back office, there are various IT systems supporting the work of officials at courts, including e.g. electronic clerical system for the courts, a HR/financial system based on the technology of SAP, or the electronic internal mail system. Using e-mail is the standard (the comprehensive implementation of Microsoft Outlook and a central AD domain within the Polish courts was completed in 2021). A videoconferencing system was a popular tool for internal meetings, even before the pandemic. However, solutions present within the Polish judiciary have an insular nature. There are many ICT systems, and not all of them are integrated. Duplicated data are stored on some of them. As it may be noticed, those systems apply to some types of cases, or only to some types of proceedings, or even to specific processes. A comprehensively implemented, homogenous ICT system serving the judiciary is absent in Poland. The potential of blockchain and AI is not realised in the Polish legal system, as of now. To some extent, certain mechanisms support the speech recognition process while transcribing the electronic records and handle the first stage of anonymising statements of reasons. However, automation of decision-making (including the cases of issuing an order for payment) is used only in the Electronic Admonitory Proceedings (and to a limited extent, for that matter) – that is, the draft of an order for

the procedural law of the Member State in which the procedure is conducted. Thus, those provisions grant relative autonomy in the scope of computerisation of those procedures at the national level. Moreover, there are provisions under both Regulations that refer to using electronic communication in European cross-border procedures, while at the same time leaving the decision on the issue of using them to the respective Member States of the European Union.

- 58 OJ L 174/27. Requests and communications provided for under that Regulation are to be transmitted through a decentralised IT system comprising national IT systems connected by communications infrastructure enabling secure and reliable cross-border exchange of information between national IT systems. A prototype created within the framework of the eCODEX project is to be that system. Cf. Proposal for a regulation of the European Parliament and of the council on a computerised system for communication in cross-border civil and criminal proceedings (e-CODEX system), and amending Regulation (EU) 2018/1726 <https://ec.europa.eu/info/sites/info/files/law/contribute_to_law-making/documents/e-code-x-main-act-en.pdf> accessed 12 January 2021.

payment is generated automatically on the basis of batch data from the claim. However, that draft requires acceptance by an adjudicator, which is carried out by affixing an electronic signature. Only then, such an order for payment is served on the defendant. In the upcoming years – apart from the uniformization of electronic service already being implemented by public bodies – the implementation of a new clerical system is planned. That system is going to supersede the various systems hitherto in operation and then provide a comprehensive back-office service both for a court and for processes wherein the so-called clients of the judiciary take part.

Cyber Security, Cyber Hygiene or Cyber Fiction of our Time

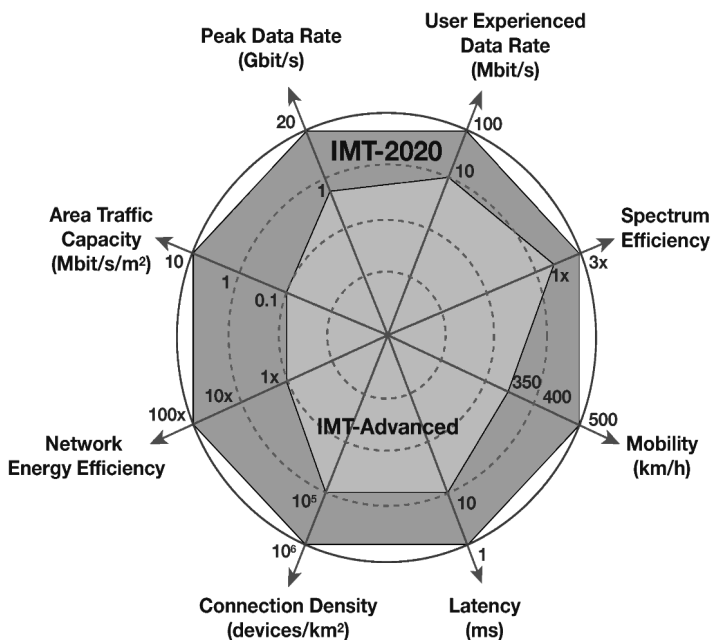
Tomasz Chomicki

1. Introduction

The moment we start thinking about how the world will look like in five, maybe ten years, the image of "The Matrix" or other sci-fi movies comes to mind. Is it possible to predict business processes and technologies that will become our everyday life in a few years? The answer is not simple, but in the technical literature you can read about what functions the future 5G or maybe even 6G network will have. Many pseudo-experts define the new, fifth-generation network as one that will give us extremely high speeds. This is just one of many parameters that only gives us a slight understanding of the technology. Standardization bodies ITU, International Telecommunications Union and 3rd Generation Partnership Project (3GPP) have defined in formal documents, technical parameters of the fifth-generation network. The most important of these are, first of all, 1 million devices per 1 km², minimum latency of up to 1 millisecond, sending speed to the edge of the network is 10Gbps, about 10 times longer battery life, operation of the network when devices move at 500 km/h, and great reliability described as six nines (or 99.9999). The technical document describing these assumptions is IMT-2020 (Figure 1).

What does this mean for the common man or the well-educated lawyer? The set of these enigmatic technical parameters shows that mobile communication technology is born, which means no less than "the new Internet". The Internet, to which, according to the theory, we will connect all devices. The Internet that will be a kind of oxygen of our modern life. Questions may arise: So do these services already exist? Do the technologies that realize the above described standard and advertisements of the operators tell us that we live in this technological mature world? Well, no. The development of this new technology is still ahead of us. Is it possible to stop or delay it? Probably not, because even the times of COVID-19 pandemic show how indispensable reliable communication is for today's functioning. The essence of the new tomorrow are autonomous cars, drones delivering packages, or Da Vinci medical robots, whose operators-doctors perform complex medical procedures. This is still the future,

Figure 15: Specification of the technical standard described in the ETSI IMT-2020 documents



Source: IMT-2020 - Wikipedia, <<https://en.wikipedia.org/wiki/IMT-2020>> ‘accessed 29 March 2021’.

although not very distant; such projects can already be found on the map of international implementations.

A surgeon in China has already performed the world's first remote surgery using 5G technology, PC Mag reports, citing local news reports from China. The doctor from the southeastern province of Fujian used next-generation networks to control robotic arms at a location 30 miles away. The operation was made possible by the extremely low latency of 5G..¹

1 China Performs First 5G Remote Surgery, <www.pcmag.com/news/china-performs-first-5g-remote-surgery> accessed 29 March 2021.

2. Cybersecurity

The great array of technological challenges is at the same time a rising tide of cyber threats. Analyses of the digital crimes occurring in our country made by cybersecurity companies indicate that the number and intensity of cyber attacks are invariably increasing. In 2019, DDoS attacks (those that overloaded websites) and ransomware attacks (software that encrypts for ransom) were the main problems in Polish companies. Organizations in Poland also noted data destruction, leakage or damage primarily due to malware infection. According to experts' analysis, the number of reported incidents after ransomware attacks increased by 20 % and the number of so-called botnets, which, among other things, spread other malware or sent spam, increased by 28 %. Analysts also observed an increase in the installation of special programs to secretly generate cryptocurrencies.² The number of tools that embed special scripts on websites and are used to steal financial data also increased by 200 %. In addition, the number of banking trojans that steal customers' payment data has increased in 2019.

We could also see interesting developments in 2020, when the COVID-19 pandemic took hold for good. Bitdefender's survey of IT staff published in July shows intimidating data - the number of IT security incidents has increased dramatically. The attacks that dominate have become whaling - a fishing attack on decision-making personnel (26 %) and ransomware (22 %). According to the survey described above, criminals were hitting financial institutions (43 %), healthcare (34 %) and the public sector with full force. However, the imagination of criminals knows no bounds.

From the information published on 10.2.2020 in the portal Niebezpiecznik, we can learn about an "interesting" and at the same time disturbing incident that could threaten the life and health of several thousand people, which was reported by a sheriff from Florida. "On Friday, someone broke into the water supply in Pinellas County and increased the concentration of sodium hydroxide a hundred times."³ Sodium hydroxide is used by Florida water utilities to control the acidity of water. The burglar managed to influence its concentration, which he altered to a value of 11,000 ppm, but luckily a waterworks employee noticed the change and

2 Check Point Data, 'Raport Cyberbezpieczeństwa' (2020).

3 Piotr Konieczny, 'Haker zatruł wodę w wociągach, przez Internet' (Niebezpiecznik.pl, 10 February 2021) <<https://niebezpiecznik.pl/post/ktos-przez-internet-zatrul-wode-w-wodociagach/>> accessed 31 March 2021.

promptly restored the correct parameters. Authorities reassure that even if the employee had not manually restored the settings, other safety systems would have worked, including one that monitors the pH of the water. They also add that the water with the changed parameters would be delivered to the residents the next day at the earliest.⁴

What does all this mean? The answer is quite simple: there is no longer a space in which we can feel safe. Critical infrastructure protection, including industrial networks, is becoming an important part of our security and thus a new area for deeper analysis by legal teams.

With this in mind, on December 11, 2020, a political agreement was reached at the European level to establish a European Cyber Security Competence Centre and Network. The seat of the Centre became Bucharest. This is not the only solution - in other countries there is also a heated debate on the law related to the implementation of new regulations related to cyber security. On the eve, when we stand at the stage of implementing new technologies, it is worth to stop and think about what to improve to avoid these threats and what systemic changes to introduce to minimize the effects of attacks and threats. Naive people may say that the law and emerging regulations will protect us. However, experts make it clear - the person responsible for protecting our security is us. Here are some rules that you should always pay attention to:

- 1) download and use applications always from authorized sources (stores like Play or Apple Store);
- 2) making regular copies of data in an independent cloud infrastructure;
- 3) active remote deletion function on the device (e.g. phone, tablet);
- 4) use of anti-virus systems, or applications with ongoing code analysis type MTD;
- 5) limiting trust in unknown links and attachments sent via email;
- 6) securing devices with password or biometric systems;
- 7) using unique passwords for each online account;
- 8) use of authentication;
- 9) keeping system software up to date;
- 10) using VPN services on open Wi-Fi networks;
- 11) separating professional and private work environments (containerization);

4 Andy Greenberg, 'A Hacker Tried to Poison a Florida City's Water Supply, Officials Say' (Wired.com, 2 August 2021) <www.wired.com/story/oldsmar-florida-water-utility-hack/> accessed 29 March 2021.

- 12) verifying the sender (carefully checking the email address) whenever you receive information about an amazing bargain, promotion, or win; messages sometimes contain minor character details, i.e., substituting the letter L for a capital I;
- 13) Paying attention to text messages, as it is not uncommon to receive shipping manipulation or impersonation of a store or contractor;
- 14) avoid using seemingly "free" applications or services (because they are not always free).

Is it enough? Of course not, but it will significantly reduce potential problems. Lack of knowledge does not release us from the consequences, and lawyers from responsibility, e.g. disciplinary. We must learn to build knowledge about cyber dangers, although Poles have more and more knowledge and awareness of threats and consequences of identity theft.

According to the study, 53 % of respondents are concerned about the security of data, 20 % of them used or use the services that provide data protection online⁵. According to a report prepared by the Insurance Information Institute (iii.org), identity theft continues to challenge consumers as criminals develop new mechanisms to commit fraud.

According to the 2019 Identity Fraud Survey from Javelin Strategy & Research, the number of consumers who were victims of identity fraud dropped to 14.4 million in 2018, down from a record 16.7 million in 2017. However, identity fraud victims bore a greater financial burden in 2018: 3.3 million, nearly triple the number in 2016. What's more, fraud costs more than doubled between 2016 and 2018 to \$1.7 billion. Fraud losses on new accounts have also increased slightly, and criminals have begun to focus on a variety of financial accounts, such as loyalty and bonus programs and retirement accounts. In addition, criminals are becoming adept at thwarting authentication processes, particularly in seizing cell phone accounts. The number of these takeovers has nearly doubled to 680. The Consumer Sentinel Network, maintained by the Federal Trade Commission (FTC), tracks consumer fraud and identity theft complaints filed with federal, state and local law enforcement agencies and private organizations. Of the 3.2 million identity theft and fraud reports received in 2019, 1.7 million were fraud-related, about 900,000 were other consumer complaints, and about 651,000 were identity theft reports. Of the 1.7 million

5 According to research carried out by Credit Information Bureau – BIK, 'Cybersecurity of Poles 2020' (Biuro prasowe Grupy BIK, 26 January 2021) <<https://media.bik.pl/informacje-prasowe/637189/dobre-praktyki-ochrony-danych-osobowych>> accessed 31 March 2021.

fraud cases, 23 % of the reported money was lost. In 2019, consumers reported losing more than \$1.9 billion due to fraud complaints, an increase of \$293 million from 2018. Within the fraud category, impersonation fraud was the most frequently reported and ranked first among the top 10 fraud categories identified by the FTC. They resulted in losses of \$667 million.⁶

The question arises why as many as 20 % of the respondents admitted that they do not protect their phone with a password at all, and 25 % never change the password they have? Internet users confirmed that antivirus programs are most often installed on computers (87 %), while 63 % use them on phones and tablets. Therefore, despite the growing awareness of threats, it is still necessary to intensively educate customers about cyber threats. KasperskyLab notes a 242 percent year-over-year increase in brute force attacks against protocols that support remote access to devices. Because a mobile device is not just a device from which we make phone calls, we are also increasingly "emailing," "banking" and working remotely. We must, therefore, almost re-learn the principles of cyber security.

3. Cybers Hygiene – A Security Package

The European Commission has unveiled a new cyber security package and a comprehensive set of rules for digital services operating in the EU. One of the postulates is the continuous deepening of knowledge from already well-established information websites like Niebezpiecznik, Zaufana Trzecia Strona, Rasmussen.edu, Itseccentral, Digitalguardian, Blog.feedspot or at technology seminars of various solution vendors. The governments of various countries are trying to talk a lot about it, organizing a wide range of courses and trainings and publishing more and more new information. It is worth realizing a great example shown by the Panoptykon Foundation. It shows what information can be obtained by connecting a smartphone to the network. As mentioned earlier, end devices, in order to ensure data security process, often connect to "cloud" services, creating copies of data, i.e. photos, recordings, contacts. It is worth taking care to secure this access with a strong password and carefully review the data storage policy and save very sensitive data on your own hardware.

6 See: Insurance Information Institute, 'Facts + Statistics: Identity theft and cyber-crime' (iii.org) <www.iii.org/fact-statistic/facts-statistics-identity-theft-and-cybercrime> accessed 29 March 2021.

Another important piece of advice for users is to uninstall applications that are not being used, and to look carefully at access requests, e.g. if a flashlight application requests access to contacts it is a sign that the application is suspicious, and its developers may not necessarily have honest intentions. We know that the state institutions have the right to demand information about us from telecom operators, providing it to the appropriate services (e.g. phone records, location data). Operators, in accordance with generally applicable law, are obliged to keep such data for at least 12 months.

State authorities have also at their disposal solutions that enable partial or total surveillance. Recently there has been a lot of publicity about software from Israeli company NSO Group called Pegasus. The application allows to "infect" a device and in the next step to take full control over it, processing information, eavesdropping on messages, listening to conversations, collecting location data or listening to sounds coming from the environment without user's knowledge. According to research by Citizen Lab, the software has been purchased by at least 45 countries in the past two years, including Mexico, France, the United Kingdom and Switzerland, among others.⁷

4. AI and ML vs Internet Security

In the world of LegalTech, AI and ML have to be added to the world of cyber, as potentially risky situations can also occur with the tools they cover.

An interesting story involves Robert Julian-Borchak of Detroit, who was arrested on the basis of faulty facial recognition by a police algorithm and, according to the media, spent thirty hours in custody while completely innocent. When Williams was summoned by police, he was automatically screened by cameras, and the image-processing analytics that reside there concluded that he was the person seen in the 2018 robbery video.

This case is widely considered to be the first AI/ML error of its kind in history. This raises the question of whether algorithms can therefore be trusted and whether the technology is necessary to function. Data from

7 Bill Marczak and others, 'Hide and seek, Tracking NSO Group's Pegasus Spyware to Operations in 45 Countries' (citizenlab.ca, 18 September 2018) <<https://citizenlab.ca/2018/09/hide-and-seek-tracking-nso-groups-pegasus-spyware-to-operations-in-45-countries/>> accessed 29 March 2021.

the IoT report is presented below. According to research presented by Strategy Analytics Research services of 2019, the number of devices using the Internet will grow rapidly, and no longer only smartphones, tablets, TVs will be connected to the network, but autonomous vehicles, "smart" home devices, industrial IoT, etc. The scale of various vulnerabilities is constantly growing, so machine learning algorithms and artificial intelligence solutions will also have to be used to counter them.

As an interesting note, Researchers from Monash University and the Indian Institute of Technology Ropar have developed machine learning algorithms capable of detecting fake videos, for example, during video conferencing conducted by the ZOOM app. The researchers applied over-the-top analysis and search for differences between video and audio, breaking images into fragments and analyzing the unsynchronized differences, searching for details in unnatural facial movements, lips, or sound disturbances.⁸

According to the EC, the expenses related to the development of artificial intelligence in the public and private sector will amount to about 20 billion euros per year in the time forecast 2020-2030. An important indicator on which systems are to be built is trust, which will force a change in current regulations. It is proposed that in selected sectors, such as medicine or transport, digital systems created using artificial intelligence and machine learning algorithms should always be transparent, traceable and supervised by a human. Thus, the role of law and lawyers who will be able to work in interdisciplinary teams that understand the technology and use the tools is slowly becoming a requirement rather than a direction for a distant transformation.

5. *The Forecast of the Future*

In the White Papers⁹ prepared by Samsung, we can read that applications using wireless communication, are expanding from connecting people to

8 See: Monash University, 'Deepfakes detect Zoom-bombing culprits' (monash.edu, 25 January 2021) <www.monash.edu/it/about-us/news-and-events/latest/articles/2021/deepfakes-detect-zoom-bombing-culprits> accessed 29 March 2021.

9 See: Samsung, 'Samsung's 6G White Paper Lays Out the Company's Vision for the Next Generation of Communications Technology' (Samsung Newsroom, 14 July 2020) <<https://news.samsung.com/global/samsungs-6g-white-paper-lays-out-the-companys-vision-for-the-next-generation-of-communications-technology>> accessed 29 March 2021.

connecting things. Wireless communication is becoming an important part of social infrastructure and people's daily lives. In addition, today's exponential growth of advanced technologies such as artificial intelligence (AI), robotics, and automation will cause an unprecedented paradigm shift in wireless communication. These circumstances lead to four major megatrends moving toward 6G: connected machines, the use of AI in wireless communications, the openness of mobile communications, and increased contribution to social goals. The number of connected devices is expected to reach 500 billion by 2030, about 59 times the projected world population by then (8.5 billion). Mobile devices will take many forms, such as augmented reality (AR) glasses, virtual reality (VR) headsets and hologram devices. Increasingly, machines will need to be connected via wireless communications. Examples of connected machines include vehicles, robots, drones, home appliances, displays, smart sensors installed in various pieces of infrastructure, construction machinery, and factory equipment. As the number of machines increases exponentially, data will become the dominant user of 6G connectivity.

Looking at the history of wireless communications, the technologies were developed with the premise of developing services targeted at people. That was and is their primary use. In 5G, machines and technology development have also been taken into account when defining requirements and technology development. It can be expected that new technologies, such as 6G, will need to be developed specifically to connect hundreds of billions of machines. To provide initial insight into the target performance required, the perceptual abilities of humans and machines were compared. For example, the ability of the human eye is limited to a maximum resolution of $1/150^\circ$ and a viewing angle of 200° in azimuth and 130° in zenith. On the other hand, machine vision capabilities are highly developed and the elimination of such limitations occurs because it can use multiple cameras with different functions. Given the strong capabilities of machines, the performance requirements of a 6G system can be very high for relevant service scenarios that are still unknown today. In recent years, the development of AI has penetrated various fields such as finance, healthcare, manufacturing, industry, and wireless communication systems. The application of AI in wireless communications has the potential to increase efficiency improvements and reduce capital expenditures (CAPEX) and operating expenditures (OPEX).

The authors of the paper¹⁰ show by example that AI can improve the efficiency of data relaying operations by taking into account the dynamic geographic deployment of networks and environments, and in a new way optimize network planning that includes the location of stations baseband (BS) and network termination. The advantages that will be achieved include reduced network energy consumption and prediction, detection and repair of network anomalies. In the case of 6G, the realization that AI technologies are available for practical applications can help develop a system that takes into account the possibility of embedding AI in the various entities that make up the wireless network and services. The vast amount of data associated with hundreds of billions of connected machines and people will need to be collected and used in 6G systems. Including AI early in the concept and technology development for 6G will therefore provide more opportunities to use AI to improve the overall network performance in terms of efficiency, cost, and ability to provide various services.

¹⁰ *ibid.*

Information Security in Legal Firms

Robert Paják

1. Introduction

Law firms and lawyers have been an interesting target for cybercriminals for many years. This is particularly because they possess a considerable amount of valuable information (e.g., know-how, contract details etc.). This does not only refer to their own data (including that of their employees), but above all that of their customers¹. However, the possession of interesting data is not the only reason. In particular, law firms are also increasingly becoming the indirect target of attacks as (legal) service providers. In this way, by leveraging the trust in such entities, cybercriminals can more easily get into the targeted company/person or gain knowledge to act against them.

The consequences of this type of action are obviously devastating. Starting from loss of reputation, through liability related to violation of the law (personal data, sensitive data, various types of information protected by secrecy rules), up to the lawyer's disciplinary liability. It should also be mentioned that law firms work under a special ethical and legal regime (attorney-client privilege), which further increases the seriousness of the problem of security attacks and information security breaches.

The aim of this chapter is to provide an introduction to information security and protection and to show where to begin in order to build protective mechanisms and how to start implementing recommendations from the list of so-called best practices. This will enable conscious and consistent management of the protection of information processed in a law firm, including its employees and associates. Additionally, this chapter aims to familiarize reader with the vocabulary used in the information security and protection industry, which will consequently allow to understand where and how to deepen your knowledge on this topic.

1 Donie O'Sullivan C, 'Hacked Celebrity Law Firm Says It Has Not Worked With Trump' (CNN, 17 May 2020) <<https://edition.cnn.com/2020/05/17/politics/celebrity-law-firm-hacked-trump/index.html>> accessed 17 August 2021.

Information security and data protection is a highly interdisciplinary knowledge domain - covering whole range of topics - from physical protection, through highly specialized technical matters, to policies, procedures, regulations, guidelines, and plans. A comprehensive coverage of such a broad topic would require a separate publication, so in this chapter we only provide an introduction to the problem. However, taking the challenge holistically - thanks to the systematic approach aimed at reducing some of the more complex topics, adding references to detailed guidelines and the introduction of aspects related to the concept and language of risk - it is possible to bring the subject closer to the reader and achieve the goal of increasing security in law firms and introducing best practices into the daily routine of this important professional group. This will also naturally increase the chances of warding off threats or minimizing their effects. Finally, it can also provide an opportunity to prevent the phenomenon of resignation or to analyse the issue of delays and to try to understand the common, yet incorrect, opinion that security must be very expensive and only large companies can afford it.

2. The Concept of Information Security, Data Protection and Cyber security

One of the most important steps in dealing with a new subject is to determine the meanings of the basic (key) terms and concepts that underlie it. In the case of information security and protection, however, it is difficult to find one coherent and exhaustive definition, especially one that would comprehensively convey the depth of the topic. A scholarly discourse would allow us to derive an understanding of the concept from matters of basic human needs ("overlaid" on modern information society) and would lead us to issues of etymology of the word itself. In this chapter, however, the focus is on the conceptualization and practical application. The challenge of finding the one unified definition is further complicated by semantic problems. It should be noted that a significant part of the terms in information security and data protection originate in English-speaking countries, where a distinction is made between the terms "security" and "safety"², and they do not always find a proper translation in

2 Ludovic Piètre-Cambacédès and Claude Chaudet, 'The SEMA Referential Framework: Avoiding Ambiguities In The Terms "Security" And "Safety"' (2010) 3 International Journal of Critical Infrastructure Protection.

other languages³. Trying to look for a definitional consensus that would take into account the proper adaptation to our needs in the pragmatic field, we will quickly come to define the measure of security by distinguishing a number of criteria. Since the 1970s and the first studies of data protection, coming from the military domain and industry best practices and standards, the so-called "CIA triad" has been considered the primary criteria for information security. This acronym comes from the first letters of three main parameters: confidentiality, integrity, and availability. Confidentiality is the most intuitive attribute of information - it assures us that only authorized people can see the information. Integrity, on the other hand, indicates an important feature of information that is the need to ensure data consistency in the sense of absence of unauthorized changes. Availability of information - similarly intuitive - tells us that a person can access the information whenever he or she needs it.

This minimum set of three criteria, described in detail in ISO 27001, has been expanded to include a number of other properties that define the crucial parameters of information security, especially in a communication context. While the above-mentioned three basic criteria suffice to define the problematic, it is worth looking at one additional attribute - accountability, an attribute of information that specifies that we can unambiguously attribute given actions to a specific user.

When thinking on how to protect a particular piece of information, we can consider the goals of securing it in the context of these criteria. It is worth remembering to look at the subject of information protection also beyond information systems - hence the reference in this chapter to more general concepts, i.e., information security and protection - rather than using the increasingly common concept of cybersecurity. In addition to linguistic purism, this is particularly important given the fact that there is still a significant amount of information that is not necessarily in digital form or exists in dual form. Similarly, the security of information in digital form may also require measures outside of information systems.

As an example, let's take a situation in which a law firm is attacked and, in addition to data on digital media, information is stolen, e.g., in the form of printouts - and the break-in itself occurs trivially by breaking a window and unauthorized access to the building. In this case, one can

3 Spyridon Samonas and David Coss, 'The CIA Strikes Back: Redefining, Confidentiality, Integrity And Availability In Security' (2014) 10,3 *Journal of Information System Security* <<http://www.proso.com/dl/Samonas.pdf>> accessed 17 August 2021.

clearly see the need to go beyond issues related to the digital sphere in order to comprehensively protect information stored and processed in law firms.

3. Information Security Planning to Secure Law Firm

3.1 General Comments. Sources of Information Security Best Practices.

Both the field of information security and protection, as well as adversarial hacking techniques are constantly evolving. Every day new methods of breaking control mechanisms appear, and media headlines describe subsequent incidents involving companies whose databases were hacked using these techniques. In this context, taking into account that focusing solely on the information security process is not the main goal of the business, which is after all focused on conducting and developing business in the legal area, the question of where to draw current sources of knowledge becomes justified. An equally important and serious problem is the phenomenon of outdated best practices in this area. The answer to these questions will be presented below, together with reference on particularly important and universally best practices.

As indicated above, one of the fundamental problems in information security and protection is the complexity of the subject matter. It makes sense, therefore, to refer to proven guidelines to make sure that none of the topics necessary for laying the foundations for security is overlooked. At present, however, there is a vast number of standards, norms, regulations, and guidelines available - dozens of different frameworks for security are readily identifiable. On top of that, some of them are less popular and recognizable only in selected geographic areas, and not necessarily tailored to smaller and medium-sized entities. Minding that (as an assumption) the subject of this discussion are typically relatively small organizational units (from individual practices to subject matter experts (SMEs)), and trying to reasonably minimize the complexity of the addressed topics (as reasonably structured a catalogue of guidelines as possible), we have to reduce such a large number of recommendations and indicate that the following standards, good practices and framework guidelines are worthy of particular attention: ISO 27001, NIST Cybersecurity Framework, CIS Controls/CIS Benchmarks and industry guidelines *sensum largissimo*.

3.2. ISO 27001

ISO 27001 is a norm created by the International Standard Organization. Its purpose is to standardize an information security management system. The standard is recognized globally (with particular popularity in the geographical area of Europe) and is the basis for many other guidelines and regulations that take it as their baseline/fundamentals. ISO 27001 allows to obtain certification of compliance with its guidelines - you can formally confirm that you are complying with the recommendations set out in the standard. Such certification can be done periodically by an independent auditor. Within the framework of the standards described in the 27000 series, it is also worthwhile to get acquainted with the guidelines described in ISO 27002; this standard is under continuous development.

3.3. NIST Cybersecurity Framework (CSF)

These are guidelines created by the US National Institute of Standards and Technology (NIST). They were constructed for the private sector to assess the risks it faces when processing data in cyberspace. The guidelines remain internationally recognized, with a particular popularity in the US. The NIST CSF is widely regarded as a "lighter" version of NIST 800-53, and these guidelines provide the basis for requirements to be met for companies working with U.S. government entities. The framework is being actively developed and incorporates the needs of self-diagnosis. An additional plus is that they address vendor (supplier) management as a critical component of ensuring information security and protection. These issues are becoming increasingly important due to the increased use of trust relationships with companies that perform subtasks for other entities.

3.4. CIS Controls/CIS Benchmarks

The Center for Internet Security (CIS) is a non-profit organization that promotes open standards and guidelines related to information security. From the perspective of building security in a law firm, the most useful framework standards developed by CIS include CIS Controls - 20 guidelines that allow taking into account the most typical areas requiring security attention, and CIS Benchmark - a set of recommended settings and configurations for various systems and products. These tools will allow you

to verify the correctness of your assumptions and pay attention to most of the necessary elements important from the perspective of information protection.

3.5. *Industry Guidelines*

3.5.1. *International Bar Association*

The legal community, in response to the increasing number of threats, has reacted by creating catalogues of best practices. One of the very popular one is that created by the International Bar Association (IBA), an organization of hundreds of thousands of legal practitioners and organizations in the field worldwide. In 2018, IBA, pointing out that law firms are a significant target for attack, particularly due to not making cybersecurity a priority, created a task force to build a catalogue of best practices to help law firms protect themselves from information security and protection breaches. The result was the Cybersecurity Guidelines⁴ report, which addresses both technological and organizational challenges. Certainly, noteworthy is the attempt to divide and prioritize requirements according to the size of the law firm and the inclusion of individual legal practices.

3.5.2. *Council of Bars and Law Societies of Europe*

The Council of Bars and Law Societies of Europe⁵ (CCBE), as the association representing affiliated lawyers from 45 countries in the wider Europe, issued its recommendations in 2016 related to protection against unlawful surveillance. These guidelines were created both to protect against threats from cybercriminals and directed at protection in relation to threats from poorly regulated processes at the national level. Despite the specific focus, the recommendations refer both to the basics of information security and protection, including the aforementioned ISO 27001. Noteworthy is the

4 International Bar Association, 'LPRU Cybersecurity' (*Ibanet.org*, 2018) <<https://www.ibanet.org/LPRU/Cybersecurity>> accessed 17 August 2021

5 CCBE, 'CCBE GUIDANCE On Improving The IT Security Of Lawyers Against Unlawful Surveillance' (*ccbe.eu*, 2016) <https://www.ccbe.eu/fileadmin/speciality_distribution/public/documents/IT_LAW/ITL_Guides_recommendations/EN_ITL_20160520_CCBE_Guidance_on_Improving_the_IT_Security_of_Lawyers_Against_Unlawful_Surveillance.pdf> accessed 17 August 2021

recognition and strong justification of the criterion of confidentiality as paramount to the profession of legal practice, also indicating as an imperative the acquisition of skills in information protection and security.

4. Other Law Firm Information Security and Protection Challenges

4.1. Roles and Responsibilities

One of the most frequently observed mistakes connected with information security and protection is appointing one (the only) person, often performing at the same time completely different primary duties, responsible for this area. Undoubtedly, it is worth indicating who bears responsibility for a given subject - nevertheless, ensuring security should be a duty of every employee and it is both a basic and a necessary condition. Responsibility for information protection and security should be introduced into employee and other contracts, including contracts with suppliers whose services the law firm uses. However, it is worth noting that the responsibilities should also be accompanied by appropriate knowledge gained during training and education. These trainings should be conducted periodically (a significant facilitation may be the use of regularly updated platforms where employees can improve their skills in avoiding and repelling attacks). Investment in security knowledge becomes particularly important if we consider that social engineering attacks are still among the most popular methods of breaking into companies.

When mentioning roles and responsibilities, it is important to ensure that each employee (similarly, trainee, etc.) has access only to the information necessary for his or her job. The need-to-know principle, sometimes also called the principle of necessary/justified knowledge, allows to minimize the effects of security breaches. Additionally, all tools used should be configured in a way that enables clear identification of the person responsible for each action (see: accountability).

4.2. „Digital Hygiene”

In the age of the information society and increasing digitization, to avoid cybercrime problems, every law firm partner, employee, and associate should train a set of habits to safely navigate and survive in the digital world. It is not uncommon for cybercriminals to forgo breaking through

more complex security measures, focusing instead on areas that are not challenging and where there is less risk of identification or failure. These habits are forming into a kind of catalogue of behaviours that we can refer to as digital hygiene. In particular, we should pay attention to behaviours such as:

- 1) Regularly updating the operating system and software, both on computers and mobile devices, as well as any other electronic/IoT devices (smart TVs, "smart speakers", lighting controls, "smart light bulbs", sensors, weather stations, electronic locks, etc. - such devices can also provide an "entry" point for cybercriminals.
- 2) Encrypt data on all media and devices wherever possible, using proven algorithms and strong passwords (preferably keys).
- 3) Use two-factor/multi-factor authentication wherever possible:
 - a) U2F tokens should be used where possible - these will also help in the context of preventing phishing - actions aimed at compromising security by impersonation methods,
 - b) where possible, use authentication applications such as Microsoft Authenticator (instead of SMS codes).
- 4) Use of different passwords for each service/web page.
- 5) Use of "password managers" - special programs that allow storing and generating unique passwords for each website used and can additionally ensure that the password is entered only on the correct page. Some of them also inform about improper practices related to the use of passwords and their compromise/leakage.
- 6) Preventing the use of personal electronic devices by other people/third parties.
- 7) Preventing other people/third parties from attaching USB-type media - in particular, care should be taken to prevent of allowing plugging charging cables (something what looks like an ordinary USB cable may in fact be a specialized device designed to break security and gain unauthorized access to information stored on the device).
- 8) Refusing to request to make 'courtesy calls' to other people using personal telephone or other communication devices.
- 9) Consideration of setting up a separate wireless network for the needs of the chancellery and a separate one for the needs of clients and visitors; prohibition of the use of free public wireless networks.
- 10) When using Wi-Fi (wireless fidelity) technology, the need to ensure that the network belongs to the true and honest service provided, particularly if a message is displayed requesting the user to enter a password.

- 11) Use of VPN (Virtual Private Network) solutions - especially when travelling.
- 12) To refrain from passing on important information and data, even to those closest to you, e.g., by telephone while travelling.
- 13) Use of privacy filters (also for mobile devices), especially in trains, planes and other means of transport that allow work.
- 14) Providing solutions for secure data disposal, both in traditional form (shredders with appropriate certificates) and digital (tools for secure data disposal, encryption).
- 15) The need to configure security mechanisms when working in a cloud environment (the responsibility for configuring security mechanisms is usually shared/transferred to the end user - the so-called shared responsibility security model).
- 16) Making back-up copies and regularly verifying data on it.
- 17) Encryption of backup copies using appropriate algorithms.
- 18) Use of reputable services such as "Have I Been Pwned" to monitor if those accounts and password from various services have not been compromised by attacks.
- 19) To regularly complete and update knowledge of information security (e.g., by reviewing industry portals).
- 20) Use only devices (mobile phones/tablets/mobile devices) that have current manufacturer support for security patch updates.
- 21) Using a separate profile on your phone (or other phone/mobile device) for your private matters.
- 22) Limiting trust towards people/third parties initiating contact (e.g., via telephone, Internet).
- 23) Verification of requests for electronic favours (e.g., return contact to a 'friend').
- 24) Limiting the natural desire to help other people (e.g., not allowing people you don't know enter into the building; the person may, for example, be faking an important phone call, have their hands "full", etc., in order to exploit the natural desire to help and get into the building without following security procedures/access badge).
- 25) Never open links with an offer that you have not previously ordered.
- 26) Turn off bluetooth (this recommendation may be difficult in an era of widespread device integration, e.g., car kits, smart watches, but it is worth remembering in special situations).
- 27) Using different browser to connect to the bank, law firm or websites where you have access to confidential data.
- 28) Prohibition on communicating login data, passwords and disallowing account sharing with anyone.

- 29) Verifying account numbers on invoices (they may be false) and requests to change contractor numbers etc.
- 30) Prohibiting leaving devices, media, documents, and other items containing data in a car or other risky location.

4.3. *Insider Threats*

Insider threats is also an important, but not easy and usually a rather sensitive topic. We are talking here about both current and former employees, trainees, persons, and companies cooperating with and having regular access to the office/data, etc. In the context of threats, we are talking about both intentional and unintentional actions caused by insiders. According to research⁶, more than half of organisations are confronted with this type of phenomena, and most are in no way prepared for it. The difficulty in dealing with this type of problem stems from several reasons - both the delicate nature of (inter)employee relations and legal constraints (verification of an employee's background, scope of control possibilities, etc.). The ease of access from the inside also encourages cybercriminals to use this method - after all, there's nothing easier than turning up for an internship or job interview and gaining virtually unlimited access to the inside of an organisation, if only for a moment.

In order to efficiently deal with insider threats, it is worth preparing a detailed security plan, taking into account such mechanisms as: limiting privileges in the access to information to a necessary minimum (taking into account the above-described principle of indispensable knowledge), full accountability of actions while processing information, auditing and monitoring systems taking into account the detection of unusual events. Additionally, awareness-raising activities and open communication in the above-mentioned scope should be conducted. Particularly sensitive data should also be marked, and attention should be paid to their flow within the company (and external systems, e.g., cloud systems used by it). These topics are important not only because of cybercrime, but also because of the potential for conflicts of interest.

6 Crowd Research Partners and Cybersecurity Insiders, 'Insider Threat Report 2018' (Crowd Research Partners, 2018) <<https://www.veriato.com/resources/whitepapers/insider-threat-report-2018>> accessed 17 August 2021

4.4. Multi-layer Security

In the process of building security, it is also worth mentioning a principle which definitely works well in the practice of a lawyer, especially when we regularly see security mechanisms being broken and newer and newer attack techniques. We are talking about building multi-layered security mechanisms - even if we already have one layer of protection for a given system/information, it is also worth building and including all other available mechanisms. Such an approach allows you to protect yourself from an attack when a single protection mechanism is breached. It also gives a chance to avoid unauthorised access to the information through an additional control mechanism that may not have a publicly available "weaknesses" at the time.

4.5. Outsourcing

Considering the complexity of the subject of information protection and the rapid development of this area and juxtaposing this with the above-described fact of business priorities, it is worth considering whether all identified risks and designed security mechanisms can be implemented and supervised in-house. Many even large enterprises do not necessarily have (want to have) the necessary staff to create and maintain security measures - outsourcing may be a strategy in such a case. It should be remembered, however, that not every type of mechanism can be implemented externally (just as not every risk can or should be transferred outside the organisation). The unquestionable advantage of outsourcing part of the security elements is the automatic scaling along with the growth of demand/development of the organisation, as well as greater daily and knowledge coverage in the case of specialised entities. Often this type of investment allows us to see how regularly security attacks are attempted.

5. Summary. Security Is a Process.

Summing up the considerations related to information security in a law office, it is important to mention that security is by no means a fixed state once and for all - we can only talk about managing it as a process and it should be regularly evaluated, monitored, and developed. Also, a proper understanding of audits and reviews will help us avoid erroneous

loss of vigilance - a security assessment only gives us a kind of "snapshot" for a given moment in time, and by no means a guarantee of security until the next audit. The current approach to security compliance increasingly points to the sensibility of developing continuous monitoring of the required security parameters, often combined with mechanisms for implementing changes, software, etc., rather than conducting only periodic audits.

PART TWO
**Use of Information Technology Tools in the
Administration of Justice of Selected Countries**

1. Introduction

A constitutionally adequate analysis of the development and use of new technologies in the legal field is not limited to the verification of the results achieved, which should always be in line with the objectives established by art. 3 of the Brazilian Constitution of 1988 (CB/88, from its acronym in Portuguese), which point to the construction of a social State. It should also observe the respect for all the principles and rules that make up and structure the democratic State of law, among which are the fundamental rights and guarantees, norms of first magnitude.

According to the norm that is extracted from the statement of the caput and subsection XLI of art. 5 of CB/88, all are equal before the law, without distinction of any nature, and the law must punish any discrimination that violates fundamental rights and liberties. Furthermore, subsection X of the same article, also with fundamental rights status, establishes that people's privacy, private life, honor, and image are inviolable. Constitutional Amendment No. 45/2004 introduced into the list of fundamental rights set forth in the aforementioned art. 5 the right to speedy proceedings which, under the terms of subsection LXXXVIII, assures everyone, in the judicial and administrative spheres, that the proceedings will last a reasonable length of time and that means will be provided to guarantee the speed of the proceedings.

In a society that maximizes connections between people, the number of disputes that will require the intervention of lawyers and the Judiciary to solve them is also increasing. In this context, the tools made available by information technology cannot be ignored in order to speed up and make the resolution of disputes more efficient. However, procedural expeditiousness cannot be achieved at any cost, being limited to the necessary respect for all elements of the fundamental rights system, such as the right to equal treatment and the right to privacy.

In addition to this, some figures of the Brazilian reality need to be considered. At the end of 2019 there were 77.1 million lawsuits in progress in

the Brazilian Judiciary¹. During that year, 35.3 million cases were closed, which means that each of the Brazilian judges decided an average of 2107 cases in that period, that is, approximately 8.4 cases sentenced by each judge every working day². During the same year, the Judiciary's spending on information technology (IT) was approximately 480 million Euros³. According to data from 2018, the courts of the Judiciary had approximately 6,000 IT professionals, a third of whom were software developers⁴.

It is under this perspective that the present work proposes to expose, without claiming to be exhaustive, the main normative instruments concerning the current stage of use and regulation of legaltech tools in Brazil, in order to allow some critical considerations for the future. To this end, the study made use of research in normative texts from official databases, analysis of reports with quantitative and qualitative data on the theme, as well as analysis of juridical bibliography.

2. *Legaltech in Brazil*

Technological innovation has shown itself capable of producing standardized solutions in the delivery of services in various areas of legal activity, allowing the overload of administrative tasks to be eliminated and freeing up human capital to provide better quality service to the end user.

Thus, in addition to the activities directly developed by public services, one can notice the emergence of legaltechs in the private sector, i.e., companies especially dedicated to offering innovative products or services through the use of technological resources for the legal area. A good indicator of this is the fact that the Brazilian Association of Lawtechs and Legaltechs (AB2L), a private entity created in 2017 with the aim of, among others, contributing to the development of a technology and innovation environment in legal practice, has already 388 member companies.

1 Conselho Nacional de Justiça, 'Justiça Em Números 2020' (Conselho Nacional de Justiça 2020) 93 <<https://www.cnj.jus.br/wp-content/uploads/2020/08/WEB-V3-Justiça-em-Números-2020-atualizado-em-25-08-2020.pdf>> accessed 9 February 2021.

2 *ibid* 105.

3 2.18 billion Brazilian Reais. *ibid* 77.

4 Conselho Nacional de Justiça, 'Inteligência Artificial No Poder Judiciário Brasileiro' (Conselho Nacional de Justiça 2019) 37 <https://www.cnj.jus.br/wp-content/uploads/2020/05/Inteligencia_artificial_no_poder_judiciario_brasileiro_2019-11-22.pdf> accessed 7 February 2021.

As reported by AB2L, its associates are organized into 13 service categories: a) analytics and jurimetrics - platforms for data analysis and compilation and jurimetrics; b) automation and document management - software for the automation of legal documents and management of the life cycle of contracts and processes; c) compliance - companies that offer the set of disciplines to enforce the legal norms and policies established for the institution's activities; d) legal content, education and consulting - portals of information, legislation, news and other consulting companies with services ranging from information security to tax advice; e) extraction and monitoring of public data - monitoring and management of public information such as publications, court proceedings, legislation and notary documents; f) management of offices and legal departments - information management solutions for offices and legal departments g) Artificial Intelligence (AI) in the public sector - AI solutions for courts and public authorities; h) networks of professionals - networks connecting legal professionals, enabling people and companies to find lawyers throughout Brazil; i) Regtech - technological solutions to solve problems generated by regulatory requirements; j) online conflict resolution - companies dedicated to online conflict resolution by alternative means to the judicial process such as mediation, arbitration and negotiation of agreements k) Taxtech - platforms that offer technology and solutions for all your tax challenges; l) Civic Tech - technology to improve the relationship between people and institutions, giving more voice to participate in decisions or improve service delivery; and m) Real Estate Tech - application of information technology through platforms focused on the real estate and notary market⁵.

3. *Blockchain and DLT in Government Systems*

In September 2020, based on Judgment 1,613/2020 of its plenary session, the Federal Audit Court (TCU), a body that assists the National Congress in exercising the constitutional function of external control of the Federal Government, published a guide for public administration in order to understand what are the blockchain technologies and Distributed Ledger

5 AB2L, 'Radar de Lawtechs e Legaltechs' (ab2l.org.br) <<https://ab2l.org.br/radar-lawtechs/>> accessed 10 February 2021.

Technology (DLT), as well as analyze the potential and uncertainties of these technologies for digital government services⁶.

Always keeping in mind the goal of avoiding waste of public resources, to help deciding whether or not a blockchain/DLT solution is applicable to an institution's use case, this guide presents a needs assessment model, which consists of direct questions about the characteristics of the organization's business process⁷.

Also according to the TCU guide, the benefits of blockchain/DLT technology for the public sector are the government's ability to deliver services with greater efficiency and security, enhanced automation, transparency and auditability, thus benefiting society. The guide also sets out the main critical factors in implementing a project, and a risk matrix, including suggestions for controls to mitigate them. Moreover, among the various areas in which this technology can be applied to expand and improve government services are the tax process, the universalization of health services, the creation of self-sovereign digital identities, the management of agreements, the digital inclusion of the unbanked, the monitoring of financial transfers, the disintermediation of notary services, the implementation of a more robust electoral process and the prevention of fraud and money laundering⁸.

Appendix I of that guide provides information on 15 cases of application of blockchain/DLT by Brazilian public entities, in projects that are in various stages of development and use. By way of example, mention should be made of the "Brazilian Powers System", which consists of a blockchain network created in partnership by Banco do Brasil and Petrobras, with the aim of digitizing the powers registration process, replacing the manual paper-based processes that define, for example, who has powers to operate an institution's accounts. The system is being accelerated into production and, among the cases listed in Appendix I, is the only one involving a branch of the Judiciary, the Superior Electoral Court, which, in the system, has the prerogative of granting powers to newly elected mayors⁹.

6 Tribunal de Contas da União, 'Levantamento Da Tecnologia Blockchain' (TCU 2020) <<https://portal.tcu.gov.br/levantamento-da-tecnologia-blockchain.htm>> accessed 9 February 2021.

7 *ibid* 22–23.

8 *ibid*.

9 Tribunal de Contas da União, 'Apêndice 1 -Aplicações Blockchain No Setor Público Do Brasil', (TCU 2020) <<https://portal.tcu.gov.br/levantamento-da-tecnologia-blockchain.htm>> accessed 9 February 2021.

4. *Online Court Proceedings*

The computerization experience of the Brazilian courts can be traced back to Law No. 11,419/2006, which amended the Code of Civil Procedure (CPC) and introduced other normative measures for the computerization of the judicial process, regulating the use of electronic means in the processing of judicial proceedings, communication of acts and transmission of procedural documents. As of this law, it became acceptable to send petitions, appeals and the practice of procedural acts in general by electronic means, upon the use of an electronic signature and prior registration with the Judiciary, as regulated by the respective bodies (art. 2). The electronic signature is admitted both by means of a digital signature based on a digital certificate issued by an accredited Certification Authority, and by means of user registration with the Judiciary, as regulated by the respective bodies (art. 1, § 2).

It is important to note that, since 2020, the use of electronic signatures in interactions with public entities is regulated by Law No. 14,063, a result of the conversion of Provisional Measure No. 983/2020. However, this law does not apply to judicial proceedings, as expressly stated in subsection I of the sole paragraph of its article 2, so that the digital signature in such proceedings is regulated by the provisions of Law No. 11.419/2006.

It should be noted that the electronic signature is not to be confused with the digitized signature, which is usually done by means of a scanning process. Unlike the former, which guarantees the authenticity of the act, the latter, as already decided by the Federal Supreme Court (STF), is a mere electronic stamp without any regulation and whose originality cannot be asserted without the aid of technical expertise¹⁰.

With regard to the communication of procedural acts, Law No. 11.419/2006 allowed the courts to create its electronic Justice Daily (DJe), available on the internet, for publication of their own judicial and administrative acts and those of their subordinate bodies, as well as communications in general (art. 4, caput). The site and the content of such publications must be digitally signed based on a certificate issued by a Certification Authority (art. 4º, § 1º), and the electronic publication replaces any other means and official publication, for any legal effects, except in cases that, by law, require personal summons or examination (art. 4º, § 2º). If users are registered in the system, the subpoenas, except in a few exceptional cases, will be served electronically, dispensing with publication in the official or-

10 STF. First Panel. AI 564.765-RJ, DJ 17/3/2006.

gan, including electronically (art. 5). In addition to providing that in the electronic process all citations, summonses and notifications will be made by electronic means (art. 9, caput), it established that the citations, summonses, notifications and remittances that allow access to the full text of the corresponding process will be considered personal view of the interested party for all legal purposes (art. 9, caput and § 1º).

Regarding the electronic process, Law No. 11,419/2006 authorized the Judiciary to develop electronic systems for processing lawsuits by means of totally or partially digital records, preferably using the world computer network and access through internal and external networks, with all acts signed electronically (art. 8, caput and sole paragraph).

Thus, once the system for the electronic process was created, the distribution of the initial petition and the filing of the defense, appeals and petitions in general, all in digital format, may now be made directly by the public and private lawyers, without the need for the intervention of the registry or the court clerk's office, a situation in which the filing is done automatically, providing an electronic receipt of protocol (art. 10). However, it is the Judiciary's duty to keep scanning equipment and access to the worldwide computer network available to interested parties for distribution of pleadings (art. 10, § 3º).

Regarding the conservation of the records of the electronic process, the law provides that it may be done totally or partially by electronic means and, in the latter case, the records must be protected by means of access security systems and stored in a medium that ensures the preservation and integrity of the data, being dispensed the formation of supplementary records (art. 12, § 1º). The law also provides that the systems must use, preferably, open-source programs, accessible uninterruptedly through the internet, prioritizing their standardization, and will seek to identify the occurrence of prevention, *lis pendens* and *res judicata* (art. 14).

Since both individuals and legal entities can be parties, as a general rule, the plaintiff must, as soon as it files the initial petition, inform the number in the registry of individuals or legal entities, as the case may be, with the Federal Revenue Service (art. 15).

With the publication of the new CPC (Law No. 13.105/2015), the practices introduced by Law No. 11.419/2006 were incorporated into it and, to a large extent, improved. Its art. 194, for example, states that the procedural automation systems shall respect the publicity of the acts, the access and participation of the parties and their attorneys, including in hearings and trial sessions, subject to the guarantees of availability, independence of the computing platform, accessibility and interoperability of the systems,

services, data and information that the Judiciary administers in the exercise of its functions.

When dealing with the registration of electronic procedural acts, article 195 states that it must be done in open standards, which will meet the requirements of authenticity, integrity, temporality, non-repudiation, preservation, and, in cases of judicial secrecy, confidentiality, observing the nationally unified public key infrastructure, under the terms of the law.

Art. 196 on the other hand, attributes to the National Council of Justice (CNJ)¹¹, and, suppletively, to the courts, the competence to regulate the practice and official communication of procedural acts by electronic means and to watch over the compatibility of the systems, disciplining the progressive incorporation of new technological advances.

It is important to note that the new CPC also dealt with the duty of the Judiciary to ensure to people with disabilities accessibility to its websites, to the electronic means of practice of judicial acts, electronic communication of procedural acts and electronic signature (art. 199). In this same sense, Resolution No. 185/2013, as amended by Resolution No. 245/2016, both of the CNJ, establishes that the Judiciary shall provide in-person technical assistance not only to people with disabilities, but also to those over sixty years of age (art. 18, § 2º).

Also according to the new CPC, the use of electronic documents in conventional proceedings, that is, in proceedings in printed matter, will depend on its conversion to printed form and verification of its authenticity (art. 439), being the judge's duty to assess the probative value of the electronic document not converted, ensuring to the parties access to its content (art. 440). Even in conventional processes, electronic documents produced and preserved in accordance with specific legislation are admitted (art. 441). Moreover, the signature of the judges, in any of their acts in the process and in all levels of jurisdiction, will be done electronically (art. 205, § 2º).

In 2013, through Resolution No. 185, considering the need to regulate the implementation of the use of electronic tools for the judicial process, in order to confer uniformity to the practices of the various bodies of the Judiciary, the CNJ instituted and established the parameters for the

11 The CNJ is the body of the Brazilian Judiciary in charge of developing judicial policies that promote the effectiveness and unity of the Judiciary, oriented to the values of justice and social peace, created by Constitutional Amendment No. 45 of 2004, that introduced article 103-B in CB/88, and installed on June 14, 2005.

implementation and operation of the Electronic Judicial Process System (PJe), an information processing system and practice of procedural acts.

According to art. 2 of Resolution No. 185/2013, the PJe is responsible for the control of the proceedings, the standardization of all data and information comprised by the judicial process, the production, registration and publicity of procedural acts, and the provision of essential data for the management of the information required by the various supervisory bodies, control and use of the judicial system.

In turn, article 4 of Resolution No. 185/2013 deals with important elements for the verification of authenticity of electronic documents, by determining that the procedural acts will be registered, visualized, processed and controlled exclusively in electronic means and will be digitally signed, containing elements that allow the identification of the user responsible for its practice. According to paragraph 1 of the same article, the reproduction of a document from the digital records must contain elements that allow verification of its authenticity in an electronic address made available for this purpose on the websites of the CNJ and of each of the PJe's user courts. Furthermore, the user is responsible for the accuracy of the information provided during the registration process, as well as for the safe-keeping, confidentiality, and use of the digital signature, and, in any case, no allegation of improper use can be made (§ 2º).

PJe allows digital signatures of individuals and legal entities with the use of A1 and A3 digital certificates, in accordance with ICP-Brasil regulations (art. 4, § 3º of Resolution No. 185/2013, as amended by Resolution 281/2019). Moreover, the signature and the registration of the procedural act may be split, in order to allow the signature of digital documents to use secure authentication standards and the registration of the procedural act to be promoted by an A1 certificate, institutional, in accordance with the ICP-BR standard. In such cases, the secure authentication model will use a two-factor authentication standard, by means of a disposable password (token), with prior registration (pairing) of the user's mobile device in the PJe system (art. 4-A, caput and § 1º, of Resolution No. 185/2013, as amended by Resolution No. 281/2019).

As measures to ensure access to the system, the PJe websites of the Councils and the Courts should only be accessible through a secure HTTPS connection (art. 6, § 2º, of Resolution No. 185/2013, as amended by Resolution No. 281/2019). In the same sense, for the respondents of a judicial proceeding, access codes to the proceeding must be generated, with limited validity period, allowing them to access the entire content of the electronic records, in order to enable the exercise of the adversary and full defense (art. 6, § 3º, of Resolution No. 185/2013).

It is up to the user to acquire, by himself or by the institution to which he is linked, the digital certificate, ICP-Brasil standard, issued by an accredited Certificate Authority, and the respective portable cryptographic device (art. 9, § 2º, III, of Resolution No. 185/2013).

5. *Artificial Intelligence in the Justice System*

In February 2019, through Ordinance No. 25, the CNJ established the Innovation Laboratory for Electronic Judicial Process (Inova PJe), with the goal of creating a primarily virtual environment for PJe, which acquires the characteristic of a microservices platform with extensive use of Application Programming Interfaces (APIs).

The central idea of the implementation of Inova PJe is the development of research in AI that allows solutions to give more speed and effectiveness to the judicial process. The environment created by this laboratory permits collaboration between several courts, building an ecosystem of AI services, aimed at optimizing the work in the PJe system and saving human and financial resources, in addition to contributing to the procedural speed. Among the premises of Inova PJe is that the AI models used in decision making or production of artifacts should be auditable, through a process defined by the CNJ, to analyze the results based on ethical and legal criteria¹².

In this environment, the Sinapses Project is made available to the PJe. Sinapses is a technological solution originally conceived by the Court of Justice of the State of Rondônia which, acting as an AI model factory, allows the research and production of intelligent services to assist in the construction of modules for the PJe and in its improvement.

In Sinapses, to train the model, the document base is fed by the client systems with new examples based on use. If a divergence is observed between the suggestion offered by the AI and the user's choice, the document object of the divergence is stored in a "reinforcement" area, recording the deadlock so that it can be resolved by a third party (human). Once it is defined who was right, the new example becomes part of the new training base¹³.

According to the 2019 report, the CNJ describes 14 use cases of Sinapses, among which are, for example: a) large mass triage, which classifies

12 Conselho Nacional de Justiça (n 4) 16–18.

13 *ibid* 28.

cases so that they can be grouped into previously defined classes; b) intelligent procedural movement, which performs predictions about decisions, suggesting to the user the best option applicable to the case; c) prevention analysis, which searches the procedural bases and identifies possible cases of similarity of procedural elements that may impact the competence to judge the cause; and d) Victor, the artificial intelligence platform of the STF¹⁴.

Taking into account the absence of specific rules in Brazil regarding governance and ethical parameters for the development and use of AI, as well as the need to respect fundamental rights by courts in the development and implementation of tools that use AI, the CNJ published Resolution No. 332 in August 2020. This resolution is influenced by the "White Paper on Artificial Intelligence: a European approach to excellence and trust", published by the European Commission in February 2020, and expressly considers the "European Ethical Charter on the use of AI in judicial systems and their environment".

Resolution No. 332/2020 applies not only to new projects, but also to those that at the date of its publication were already being developed or implemented in the courts, except for those acts that had already taken full effect (art. 30), and the courts must immediately notify the CNJ as soon as research, development or implementation of AI models begins. However, in the case of the use of AI for facial recognition techniques, these may only be initiated after authorization from the CNJ for implementation (art. 22).

To make clear the scope of its application, the Resolution considers as an AI model the set of data and computational algorithms, conceived from mathematical models, whose purpose is to offer intelligent results, associated or comparable to certain aspects of thought, knowledge or human activity (art. 3, II).

Such Resolution demonstrates the concern with the respect for the principle of isonomy, determining that the use of AI models should seek to ensure legal certainty and collaborate so that the Judiciary respects the equal treatment of absolutely equal cases (art. 5). Thus, although the suggestions of AI tools are not binding, the judicial decisions supported by them must preserve equality, non-discrimination, plurality, and solidarity, assisting in the fair trial, with the creation of conditions that aim to eliminate or minimize oppression, the marginalization of human beings, and errors of judgment resulting from prejudice (art. 7). To this end, before being put into

14 *ibid* 29–36.

production, the AI model must be approved in order to identify whether its development was influenced by prejudices or generalizations, resulting in discriminatory biases in its operation (art. 7, § 1) and, if any discriminatory bias of any nature or incompatibility with the principles provided in the Resolution is identified, corrective measures must be adopted (art. 7, § 2). If it is impossible to eliminate the discriminatory bias of the Artificial Intelligence model, it must be discontinued (art. 7, § 3).

As a measure to prevent the development of discriminatory biases, the Resolution determines that the composition of teams for research, development, and implementation of computer solutions that use AI will be guided, at all stages of the process, by the search for diversity in its broadest spectrum, including gender, race, ethnicity, color, sexual orientation, people with disabilities, generation, and other individual characteristics (art. 20).

Another element present in Resolution No. 332/2020 is transparency, which supposes the provision of a satisfactory and auditable explanation by a human authority regarding any proposed decision presented by the AI model, especially when it is of a judicial nature (art. 8, VI). Therefore, the bodies of the Judiciary involved in an AI project must inform the CNJ of the research, development, implementation or use of AI, as well as the respective objectives and the results intended to be achieved, in addition to promoting efforts to act in a community model. The deposit of the model in Sinapses is mandatory, and parallel development is forbidden when the initiative has objectives and results achieved that are identical to an existing AI model or an ongoing project (art. 10).

Furthermore, computer systems that use AI models as an auxiliary tool for the preparation of judicial decisions will observe, as a preponderant criterion for defining the technique used, the explanation of the steps that led to the result, in addition to allowing the supervision of the competent judge (art. 19). The intelligent system must ensure the autonomy of the internal users, using models that enable the review of the decision proposal and the data used for its elaboration, without any kind of binding to the solution presented by the AI (art. 17, II).

The use of AI models in criminal matters is something especially sensitive, so that art. 23 of Resolution No. 332/2020 determines that it should not be encouraged, especially in relation to the suggestion of predictive decision models, except when it comes to the use of computer solutions intended to automate and provide subsidies for the calculation of sentences, prescription, verification of recidivism, mappings, classifications and sorting of records for collection management purposes. Especially in what concerns the verification of criminal recidivism, AI models should not

indicate a conclusion more prejudicial to the defendant than the one the judge would reach without its use.

In line with Resolution No. 332, in December 2020, the CNJ published Ordinance No. 271, which regulates the use of AI in the Judiciary. In addition to reaffirming and addressing some operational aspects of the aforementioned Resolution, the Ordinance establishes measures such as determining that Sinapses will be the common platform on which the AI initiatives of the Judiciary will be centralized (art. 4).

It is noteworthy that the Ordinance No. 271 also provides that the development and registration of models in the platform will be preceded by the installation of the extractor module to ensure that the data on which they are based are included in the central repository, including the cover of the judicial process (metadata), its procedural movements, and the documents duly converted to plain text format (art. 11). The AI models used to assist the Judiciary in the presentation of analyses, suggestions or content must adopt measures that enable the tracking and auditing of the predictions made in the flow of their application (art. 12) and return to the API registered in the platform the information of any disagreement as to the use of the predictions, so as to ensure the auditing and improvement of the artificial intelligence models (art. 13).

Beyond the normative framework, it is interesting to consider the data of reality. In 2019, the CNJ conducted a detailed study on the use of AI in the Brazilian Judiciary, in which it emphasizes that what is expected of AI in such scope is that it can contribute to the resolution of the huge number of cases pending solution, as well as give greater speed to their processing¹⁵.

As CNJ data indicates, only 10 % of all new cases initiated during 2019 were by physical means. That is, 90 % of the proceedings initiated in 2019 were digital, which is equivalent to 23 million new electronic cases. It should be noted that not all are through the PJe, since Resolution No. 185/2013 allows the use of other systems, provided they are integrated with the National Interoperability Model (MNI). In the 11 years of the historical series analyzed by CNJ, 131.5 million new cases were filed in electronic format¹⁶.

Of the 90 courts that, along with the CNJ, make up the Brazilian judicial structure, formed based on article 92 of the CB/88, 11 have already achieved 100 % of digital proceedings. Moreover, in a specific survey con-

15 *ibid* 10.

16 Conselho Nacional de Justiça (n 1) 112.

ducted in May 2020 with 62 courts, it was found that only 13 of them have less than 90 % of their collections digitized¹⁷.

More recently, the Center for Innovation, Administration and Research in the Judiciary of the Getúlio Vargas Foundation conducted, from February to August 2020, the first phase of a survey that aims to identify, understand, systematize, develop and improve technological solutions, with an emphasis on AI, aimed at improving the justice system. After researching a sample of 59 courts and the CNJ, a report published in December presents the data collected from each court, indicating the name of the system, its origin, current situation, functionalities and the problems it proposes to solve, as well as the results achieved¹⁸.

Besides the CNJ's Project Sinapses, the research indicated that there were 64 other artificial intelligence projects within the Judiciary, either already implemented, in the pilot project phase or under development. Of these projects, 47 were developed by the courts' internal staff, 13 in partnership with private companies, 3 through partnerships with universities, and one by other bodies¹⁹.

According to this research, the AI projects in Brazilian courts involve functionalities such as verification of the legal hypotheses of dismissal, suggestion of draft, grouping by similarity, realization of the judgment of admissibility of appeals, classification of cases by subject, treatment of mass claims, online attachment, extraction of data from judgments, facial recognition, chatbot, calculation of probability of reversal of decisions, classification of petitions, indication of statute of limitations, standardization of documents, transcription of hearings, automated distribution and classification of sentences²⁰.

6. *Plans for the Future*

In the scope of the agencies and entities of the federal public administration, Decree No. 10,332/2020 establishes the Digital Government Strategy for the period 2020 to 2022, in which the goal of implementing AI resour-

17 *ibid* 113.

18 Luís Felipe Salomão (ed) *Tecnologia Aplicada à Gestão Dos Conflitos No Âmbito Do Poder Judiciário Brasileiro* (FGV Conhecimento 2020) <<https://ciapj.fgv.br/publicacoes>> accessed 5 February 2021.

19 *ibid* 26 and 69.

20 *ibid* 69.

ces in at least twelve federal public services by 2022 stands out (initiative 8.2.).

Regarding the Judiciary, one cannot talk about the plans for the near future without referring to the National Strategy for Information Technology and Communication of the Judiciary (ENTIC-JUD) for the period 2021 to 2026, established in January 2021 by Resolution No. 370 of the CNJ, which is the main instrument for promoting agile governance and digital transformation of the Judiciary through innovative digital services and solutions that drive the technological evolution of the Judiciary. The ENTIC-JUD aims to reach at least 75 % of the Judiciary bodies with a satisfactory maturity level in the Information Technology and Communication Governance index (iGovTIC-JUD) by December 2026 (art. 2, II). To achieve the objectives of the Strategy, each body must prepare a Digital Transformation Plan that will contain, at a minimum, digital transformation of services, integration of digital channels, interoperability of systems and monitoring strategy (art. 15).

Still in the scope of the Judiciary, it must be taken into account Resolution No. 363, of January 2021, in which the CNJ establishes measures to be adopted by the courts for the process of adaptation to the General Law of Personal Data Protection (Law No. 13.709/2018).

With regard to private legaltech companies, there is great expectation with the approval of the Legal Framework for Startups. The topic is the subject of the Draft of Complementary Law No. 146/2019, already approved in the Chamber of Deputies in December 2020 and pending approval in the Federal Senate, which provides for startups and presents measures to encourage the creation of these companies and establishes incentives for investments by improving the business environment in the country.

About the initiatives that may impact the regulation of blockchain, it is worth mentioning the Draft Law No. 2876/2020, which is currently in progress in the Federal Senate and proposes to alter the Public Registries Law in order to establish that all registrations made by Real Estate Records and Registry of Deeds and Documents are also inserted in the National Electronic System of "Blockchain" to be made available by the CNJ. Draft Law n. 2303/2015, which is currently pending in the Chamber of Deputies, provides for the inclusion of virtual currencies and airline mileage programs in the definition of "payment arrangements" under the supervision of the Central Bank. Also worthy of mention is Draft Law n. 5051 of 2019, currently in progress in the Federal Senate, which, in very general terms, proposes to establish the principles for the use of AI in Brazil.

7. *Final Considerations*

Legaltech solutions can serve, in many cases, as a means to ensure fundamental rights in the Brazilian legal system, especially the right to speedy proceedings. However, although they are quite useful in the execution of administrative activities, such tools cannot be treated as a panacea for all the ills that afflict legal activities.

As Lênio Streck rightly points out, even when trying to rule out the problem that discretionary powers represent for legal activities, especially those related to judicial ones, elements of discretionary powers may remain in the definition of the data that feeds the robot algorithms, when differentiating what is and what is not relevant. Thus, it cannot be said that there is a true solution when the proposal presented shares the bases of the problem it intends to solve. Furthermore, considering that legal activities are interpretative, the Law cannot be seen as a mere matter of fact. Otherwise, under the argument of the standardization of decisions, the reproduction of standards previously adopted by courts would lead to a new form of legal realism²¹.

Moreover, even if the data used to inform the algorithmic decision is reliable, the operation of machine learning can generate discriminatory situations, harmful to the right to equality, which can result in many pernicious consequences until it is noticed that there is a flaw or bias. Thus, as a transparency measure, the algorithms used in public decisions need to be audited. In addition, a policy of accountability of algorithms needs to be taken seriously so that personal responsibility for the decisions they make can be established²².

Furthermore, the fundamental right to privacy presupposes the appropriate management of personal data by the public and private entities that hold them, making it necessary to prevent incidents such as the one that recently occurred at the Supreme Court of Justice, when the Court's activities were paralyzed after its servers were hijacked by ransomware, the

21 Lenio Luiz Streck, 'Um robô pode julgar? Quem programa o robô?' (Consultor Jurídico, 3 September 2020) <<https://www.conjur.com.br/2020-set-03/senso-incom-um-robo-julgar-quem-programa-robo>> accessed 10 February 2021.

22 Isabela Ferrari and Daniel Becker, 'Algoritmo e Preconceito' (JOTA Info, 12 December 2017) <<http://www.jota.info/opiniao-e-analise/artigos/algoritmo-e-preconceito-12122017>> accessed 10 February 2021.

worst cyber-attack ever against the information technology network of a Brazilian public institution²³.

According to the foregoing, one cannot deny the normative advance concerning legaltech activities in Brazil, especially those within the justice system. However, there are still several points that require a normative framework at the legislative level, in order to give greater protection to the system of fundamental rights and bring legal security to all those involved in legaltech activities. The technological sciences are very dynamic, and the legal sciences must be prepared for this.

23 According to an official announcement from the Presidency of the STJ: Ministro Humberto Martins Presidente de STJ/CJF, 'Comunicado da Presidencia do STJ' (STJ, 18 November 2020) <<https://www.stj.jus.br/sites/portalp/Paginas/Comunicacao/Noticias/18112020-Comunicado-da-Presidencia-do-STJ.aspx>> accessed on February 10, 2021.

China

Maddalena Castellani

1. LegalTech used in the country: courts, law firms, arbitration

Due to the constant and inevitable increase in litigation in China, arising from the massive and generalized use of the internet, the chinese government has decided to establish, for the first time on August 18, 2017, the world's first Court specializing in handling internet-related cases in the city of Hangzhou, Zhejiang Province, the central hub of e-commerce.

Initially this was a pilot project which, as we shall see, given its great success, has been replicated in various cities, thus becoming a true model of a court that uses new technologies.

The Hangzhou Internet Court (the "Court") trial internet related disputes on the Online Dispute Platform (www.netcourt.gov.cn¹).

The Court implements all procedures via the internet on the Platform².

The procedures to be followed by the Court are detailed in the Trial Rules of the Hangzhou Internet Court Dispute Platform.

The main issues of the Court were:

- 1) The Court has exclusive jurisdiction for the following cases (first instance):
 1. Disputes regarding contracts of online shopping, services, microfinance loans etc.;
 2. Disputes relating to the ownership and infringement of online copyright;
 3. Disputes relating to infringing other person's personal rights via internet;
 4. Disputes relating to product liability infringement of products bought online;
 5. Disputes regarding domain names;
 6. Administrative disputes raised because of administration measures on the internet;

1 <<https://www.netcourt.gov.cn/?lang=En>> accessed 21 August 2021.

2 <<http://english.court.gov.cn/>> accessed 21 August 2021.

7. Other internet related civil or administrative cases designated by the higher courts.
- 2) Online trial
All trial procedures were conducted by the Platform, including filing for litigation, the trial hearing, the delivery of the sentence and also the executing judgements.
- 3) registration for the verification
Parties involved in the dispute have to be registered with the Platform and be verified via online real name verification, face recognition or off-line verification.
- 4) Pre-mediation process
Before the case has been taken to court, a mediation process will be undertaken. The mediation period lasts for 15 days and can be extended. During this period, a mediator will help both parties to mediate the dispute.
- 5) Judges can use artificial intelligence technology to draft judgements.
The first case filed with the Court was an online copyright infringement case in which both parties agreed to mediate in the 20 minutes' video hearing.

From 2017, to April 15, 2018, the Hangzhou Internet Court accepted a total of 7.372 cases involving six types of network-related cases and concluded 4,532 cases. The online filing rate was as high as 96 %, and the related party cases were 100 % online. The online trial took an average of 25 minutes and the online trial averaged 46 days³.

At the end of 2018, the Hangzhou Netcourt accepted a total of 12.074 cases involving network cases and concluded 10,391 cases. All of the cases of related parties were heard online. The trials took an average of 28 minutes and the average procedure lasted 38 days.

Some authors noted that in the process of construction and development of Hangzhou NetCourt, notwithstanding the results of the practice were very fruitful, in the same time there were some weakness.⁴

3 Paolo Beconcini, 'More "NetCourts" Opening in China' (Squire Patton Boggs, 14 November 2018) <<https://www.iptechblog.com/2018/11/more-netcourts-opening-in-china/>> accessed 21 August 2021

4 Hanying Zhu, "'Zhejiang Experience': Problems and Countermeasures in the Construction of Internet Courts' (Atlantis Press, September 2019) <<https://www.atlantis-press.com/proceedings/jahp-19/125917489>> accessed 21 August 2021.

For example:

- a) The Innovation of the Litigation System Under the Online Trial Mode was not Compatible with the Rules of the Litigation Law. The rules for the regulation of the process and specific links of the traditional offline mode couldn't be fully applied to the online trial mode of the Internet court, and conflicts arose in the specific application process. The application of the online trial mode under these conflicts has raised the issue of the rationality of electronic delivery, the application of electronic evidence, the rationality of the proceedings in the second instance, and the negative impact on the litigants' right to appeal. Although the Hangzhou Internet Court has tentatively proposed a solution, the basic and principled standards involved in some issues, needed to be improved from the perspective of system design and legislative level. As will be seen, with the enactment of the founding legislation of the Beijing and Guangzhou NetCourts, the legislative system has managed to address the shortcomings described above.
- b) There was found to be a security risk to the data and the entire online process. The authors found that Hangzhou courts would need to improve their technical level and overall strength in order to secure the entire online process... First, it was found that it was necessary to strengthen the judges' and staff's sense of security responsibility to ensure that relevant confidential information does not leak out, and that the legitimate rights and interests of litigants are not harmed. Second, it was noted that it would be appropriate and necessary to cooperate with first-class domestic and foreign technology companies to improve litigation platforms and the technical system of online processes. The authors believe that "The security, stability and reliability of all aspects of the online litigation process should be ensured. Further improve digital encryption technology to ensure the authenticity and integrity of electronic documents and files." The third suggestion of the authors was to "keep up with the direction of big data development and ensure the stability and convenience of information interaction of storage data. With the help of the big data platform, the exchange and sharing of data information will be strengthened to ensure the authenticity of data sources." Therefore, the authors hoped that "Through the above points, it is necessary to improve the construction of technology platforms and avoid the risks brought by the application of Internet technologies."

As will be seen later, Cina Legal system was able to solve in a short time the technological imperfections of Hangzhou Internet Court, and so, given

the fast technological progress, on July 6, 2018, the Central Committee for Deepening Reform in China, reviewed and approved the “Proposal for the Establishment of the Beijing Internet Court and the Guangzhou Internet Court” (later referred to “law”), which has been the second and third internet courts⁵.

As indicated in the law establishing the Internet Courts of Beijing and Guangzhou, the purpose of the NetCourts is to adjudicate cases related to the Internet. NetCourts are grassroots courts, and cannot have jurisdiction over disputes of a high value, those involving foreign elements such as a foreign plaintiff or defendant, or those in the exclusive jurisdiction of other courts (e.g. trademark and patent disputes). Appeals against a NetCourts’ judgments must be filed with the territorially competent Intermediate Court or an IP court.

*Beijing Internet Court*⁶

The Beijing Internet Court was specially established with 8 internal departments, including the Case-filing Division (litigation service center), the 1st Comprehensive Division, the 2nd Comprehensive Division, the 3rd Comprehensive Division, the Enforcement Department, the Political Department (Party Affairs Committee), the Trial Management Office (Research Office), and the General Office (Judicial Police Brigade).

*The trial staff*⁷

The Beijing Internet Court, at the date of the information I got (end of 2019), has 35 post judges, 105 judge assistants and court clerks, 19 judicial administrators and 24 judicial police officers. The average age of the post judges is 40. 75.7 % of them hold a master's degree or above. They have been engaged in the trial work for more than 10 years averagely.

Jurisdiction: The Beijing Internet Court has jurisdiction over eleven types of specific Internet-related first-instance cases that should be accepted by the primary-level people's courts within the jurisdiction of Beijing.

5 Provisions of the Supreme People's Court on Several Issues Concerning the Trial of Cases by Internet Courts promulgation date 2018-09-06 effective date 2018-09-07_ document number: Fa Shi (2018) No. 16.

6 <<https://english.bjinternetcourt.gov.cn/index.html>> accessed 21 August 2021

7 <<https://english.bjinternetcourt.gov.cn/judges.html>> accessed 21 August 2021

The NetCourts in Beijing, according to article 2 of the “law” has ruled that:

“The following types of first-instance cases should be accepted by grassroots people’s courts, within the jurisdiction of the city where an internet court is located, will fall under the jurisdiction of the internet court in Beijing, Guangzhou and Hangzhou respectively:

1. Disputes arising out of signing or performing online shopping contracts on e-commerce platforms;
2. Disputes over online service contracts which were signed and performed on the internet;
3. Disputes over finance-lending contracts or small-amount lending contracts, which were signed and performed on the internet;
4. Disputes over the ownership of the copyright or neighboring rights of work initially published on the internet;
5. Disputes arising out of the online infringement of the copyright or neighboring rights of work published or disseminated online;
6. Disputes over the ownership, infringement, or contracts of internet domain names;
7. Disputes arising out of the online infringement of others' civil rights, such as personal and property rights.
8. Disputes over product liability as a result of the infringement of others' personal or property rights caused by defects of products bought on e-commerce platforms;
9. Internet-related public interest lawsuits brought by prosecutor’s organs;
10. Administrative disputes arising out of administrative behaviors of administrative organs in respect of the administration of internet information services, internet commodity trading and the management of relevant services; and
11. Other internet-related civil and administrative cases that fall under the jurisdiction of internet courts, as designated by superior people's courts.”.

It should be noted that, with respect to the jurisdiction of the Hangzhou court, the “law” has expanded the areas of competence of the NetCourt.

Although trademark, design and patent disputes are not within the jurisdiction of NetCourts, other relevant IP rights can be litigated before these new judicial bodies. Most important among these are copyright and domain name disputes.

NetCourts’ procedures are less formal than alternative procedures and do not require physical attendance. For example, filing, evidence submis-

sion, payment, and service of documents are all processed online. Court hearing and mediation are organized online as well, and the parties do not need to travel to the court to attend. Court hearings will be held via video conferencing technology on any available media utilized and approved by the court.

Aside from eliminating traveling and paper submissions, NetCourts are also supposed to operate efficiently. For this reason, hearings are scheduled for no longer than 20 minutes. Another important aspect is the preservation of evidence and filing authenticity. NetCourts will use and allow "blockchain" to synchronize evidence with a notary public and the other government bodies as well as commercial websites, so the parties cannot tamper with it.

The problems noted by some authors and indicated in footnote n. 4, have been solved through, for example, the harmonization of the regulation of online courts with "traditional courts" (the law), the use of a blockchain platform for the exchange and preservation of evidence, and the use of big data and artificial intelligence.

But not only.

A further interesting element that should be mentioned is the establishment of a new mediation platform with the characteristic of Beijing Internet Court.

The online "e-mediation platform" created by the Court, has realized real-time access to the "integrated dispute mediation-ruling" platform as well as the case filing and trial system of Beijing Court so that the case files and materials can be transferred online, the service of result is available online, the mediation result is confirmed online and the mediation files are generated online, just to name a few. The data concerning a case in the whole process is transferred online. With the aid of the online mediation platform, the mediator is able to conduct the mediation "screen to screen" with the litigants anytime and anywhere via mobile phone or computer throughout the entire mediation course, making it unnecessary for the litigants to communicate "face to face" with the mediators in the court.

From September 9, 2018 to August 31, 2019, a total of 29,728 mediation cases were conducted and 100% of them were handled online; 23,262 mediation cases were concluded and 5,572 of them were successfully settled, with a success rate of 23.9 %.

This new mediation system was called "*Fengqiao Experience*".

2. *Blockchain and DLT in government systems. Whether there are judicial systems or other registers using blockchain. Legal provisions linking a blockchain entry to a legal presumption.*

Taking a brief step back, it is necessary to point out that the positive push for the use of blockchain, has also been sealed by rulings from the Hangzhou court itself ⁸. For example on 2018 – 06 -28, the Court has established that "*we should maintain an open and neutral stance on using blockchain to analyze individual cases. We cannot exclude it just because it is a complex technology. Neither can we lower the standard just because it is tamper-proof and traceable*"⁹.

This particular case involved a copyright infringement claim (images and text) filed by a Chinese media company called The Claimant, known as Huatai Yimei, against a Shenzhen-based technology company Daotong.

According to the complaint, the defendant had reprinted Huatai Yimei's work on its website without permission. During the hearing, the plaintiff presented the court with screenshots of the allegedly infringing websites and source codes uploaded to a blockchain provider, called Baoquan (www.baoquan.com).

These items were used as evidence to convince the Court that the defendant was liable for copyright infringement.

Therefore, the Court argued that it was not possible to exclude the blockchain from the evidence just because it was a "complex technology," and ultimately based its decision on that element.

Specifically, the Court held that the evidence storage platform was legal, neutral, and qualified as such. The technology used to collect the evidence was said to be reliable and the electronic data complete, as the Court was satisfied that it had not been modified.¹⁰

Considering the above, now the "law" has formulated standards for electronic evidence and normalized the evidence determination process for the whole chain.

8 <<https://www.netcourt.gov.cn/?lang=En>> accessed 21 August 2021

9 Maddalena Castellani, Paola Pomi, Cesare Triberti and Alessandro Turato (eds) *Blockchain: Guida pratica tecnico giuridica all'uso* (Goware 2019)

10 <https://go.dennemeyer.com/hubfs/blog/pdf/Blockchain%2020180726/20180726_BlogPost_Chinese%20Court%20is%20first%20to%20accept%20Blockchain_Judgment_EN_Translation.pdf> accessed 21 August 2021

Firstly¹¹, the court has established a blockchain platform of credible electronic evidence to address the pain spot of preserving electronic evidence. A scientific blockchain ensure that the judicial blockchain has a high starting point. The judicial blockchain "Balance Chain" has been established under the leadership of the Beijing Internet Court in cooperation with the National Information Security Development Research Center, Baidu, Trust do Technology and other leading blockchain institutions in China. The Court keeps strict control of the blockchain and strengthens the systematic management of the blockchain. The *Detailed Regulations on Joining in Balance Chain and Related Management*, the *Testing Practices for Joining in Balance Chain* and other regulations were formulated to normalize the qualification requirements for joining in the "Balance Chain", the rules for preserving electronic data, the management mechanism of the platforms joining in, the use of electronic data, the supervision, review and exit of the institutions on the chain, and to ensure the security of the data linked to the "Balance Chain" and the effective protection of the privacy of the parties involved in various cases. The in-depth use of the blockchain helps improve the actual effectiveness of the blockchain. The application of the "Balance Chain" solved such issues as the information security of electronic data, joint verification and authentication, realized the "whole-process recording, all-chain creditability, and all-node witness" of electronic data, and enabled the "one-stop" solving of the preservation, obtainment and determination of electronic evidence. It has greatly enhanced the creditability and probative force of electronic evidence, significantly improved the efficiency of online trials, greatly reduced the parties' cost in safeguarding their rights, and boosted the development of the credit system. So far, the „Balance Chain” has completed the connection to 18 cross-chain nodes and the data joint with 25 application nodes of 9 categories, such as copyright and Internet finance; 6.96 million items of electronic data have been input into the chain; the number of cross-chain data items of preserved evidence has exceeded ten million.

Secondly, the Court has formulated the norms for the whole-process examination of electronic evidence and eliminated the barriers hindering the verification of electronic evidence. Regarding such issues as the generation, storage and submission of electronic evidence, our court has formulated the norms for the whole-process examination of electronic evidence. We will examine the qualifications of the third-party evidence-

11 <<https://english.bjinternetcourt.gov.cn/onlinelawsuitguide.html>> accessed 21 August 2021;

preserving platforms to help verify the effectiveness of electronic evidence. Before the test, measures are taken to make sure the computer (server) is clean and the time is correct so as to rule out the possibilities that such factors as the operator's improper intervention and false environment may lead to false evidence and to ensure the creditability of the approaches taken for the generation and storage of electronic evidence. In the case where the adprints.cn sued the eastday.com for infringing its copyright, our court determined that the plaintiff's evidence of timestamp was not credible as the plaintiff missed the critical step of examining the authenticity of the Internet connection when preserving the evidence. The handling of this case is a vigorous exploration for the improvement of the rules for verifying the evidence of timestamp. The blockchain ecology is expanded to promote the establishment of the blockchain standards and to generalize the use of blockchain in evidence preservation. During the trials, the court verified 1,301 items of cross-chain evidence involving 303 cases. Among them, 14 cases were closed by judgment, and no party involved raised any objection to the authenticity of the evidence.

Thirdly, Court has refined the rules for evidence determination and overcome the difficulties in electronic evidence determination. In combination with the characteristics of the new types of evidence collection in the Internet era, the Court normalized the standards for determining the authenticity, relevance and validity of the evidence stored by such new technical means as electronic notarization, blockchain, credible timestamp, and cloud evidence. According to the actual characteristics of electronic evidence, some standards are formulated for the online verification of the originals of such electronic evidence as pictures, videos, and audios. In combination with the storage subject, the storage and publicity methods, the period of electronic data and other aspects of the Internet-related cases, the court formulated the guidelines and interpretation about the burden of proof for the electronic evidence of the same-type cases to help find out the facts of each case. According to the types, characteristics and distribution of the cases handled by the Internet court, assisting experts and technical investigators are brought in to provide professional opinions for judges' reference regarding specialized and technical issues¹².

12 Art. 10 of the "law" states: "Where litigants and other individuals involved in litigation adopt technical approaches to electronically process such prosecution materials as their identifications, duplicates of business licenses, the power of attorney and identifications of legal representatives, and such evidential materials as written evidence, expert opinions and written records for inspections, and then submit the electronic copies, the internet court will deem that such electronic copies meet the requirements on originals,

Art. 11 of the „law” (3rd part) states that: *„Where the truthfulness of electronic data submitted by litigants can be proved through technical approaches for collecting, securing and preventing the falsification of evidence, such as the electronic signatures, trusted time stamps, hash verification, and block chain, or be verified on the electronic evidence collection and storage platform, the internet court shall accept and confirm such electronic data”.*

It was therefore legislated that the Court, without having to carry out further tests, in the event that a party deposits documents that are digitally signed, that have time stamp or, for example, that are stored in a blockchain, will accept these documents as compliant and usable in the process.

4. *Online court proceedings. Are it acceptable, in what way, the way of communication, what information systems are used. How is the judgment issued. Is the connection from the court or can it be made using a private computer?*

All documents and evidence must be placed on the platform.

No other deposit forms are accepted.

Noting that, in most lawsuits, at least one of the parties involved is a big digital platform, the Legislator, on the subject of identifying the parties involved, has established in Article 6 that:

“Where litigants and other individuals involved in litigation use a litigation platform to carry out litigation-related activities, their identities shall be authenticated through comparison with identifications and licenses, biometric features recognition, or the authentication on the national unified identity authentication platform, or by other online means, and they shall obtain an exclusive account to log into the litigation platform.

Any activities carried out by using an exclusive account to log into the litigation platform will be considered as those carried out by the authenticated individual in person, unless such activities are attributed to the system's malfunctions caused by technical problems with the litigation platform, or the authenticated individual is able to prove that his or her litigation platform account is illegally used by others”.

after they have been examined and confirmed. Where the opposing litigant raises an objection regarding the truthfulness of such materials with reasonable causes, the internet court shall require the litigant to provide the originals”.

It is evident, therefore, that all the personal and contact information that a subject enters - by authenticating himself to a portal (for example for the online purchase of products or services) - are considered as a valid starting point for the recognition of the subject involved in the litigation.

Article 8 of the "Law" provides that the Internet Court, after accepting a lawsuit, may use the contact information provided by the plaintiff, such as the mobile number, fax, e-mail, or instant message account, to notify the defendant and the third party to participate in the case and authenticate their identity on the litigation platform.

Still on the subject of service of documents and communications between the parties and the Court, Article 15 provides that with the consent of the parties, the court may communicate with the parties by the use of: the litigation platform, short messages, fax, e-mails, the instant message account, or by other electronic means¹³.

If a litigant has not given explicit consent to electronic service, it will be deemed as consenting to electronic service when it has been agreed that relevant documents will be served electronically in a lawsuit for any arising dispute, or electronic service is confirmed by issuing the return receipt or conducting the corresponding activities for litigation purposes, and it does not give its explicit disapproval of electronic service.

Article 16 states that: *"For electronic service purposes, the internet court shall confirm the specific means of electronic service and the address with each litigant, and inform them of the applicable scope of electronic service, effects, how to change their address for service, and other matters in respect of the service that should be notified."*

Where the receiver fails to provide an effective address for electronic service, the internet court may prefer an electronic address frequently used by the receiver, such as mobile number, email address and instant message account, if it is confirmed that such address has been in active use by the receiver in the last three months".

13 WeChat and Alipay have often been described as "super apps" because everything is integrated into one service. Instead of having to have one app for banking and another to request a cab service, many of these functions are built directly into WeChat so that the app becomes a one-stop shop for users.

If the account is linked to the bank account the app allows you to pay for anything. It is the most widely used payment tool in China.

Mini-programs have become more important than the app itself, as WeChat pushes harder to become a kind of one-stop shop.

Therefore, WeChat and Alipay offer much more than just messaging, allowing its users to do almost anything from payments to the ability to book flights and hotels.

Therefore, as we understand it, if a party fails to provide a correct and effective electronic address for the purpose of receiving service, the court may use other media that the party habitually uses (including instant messaging apps).

In any case, it is foreseen (art. 17) that where an internet court serves documents to the electronic address that is voluntarily provided by the receiver or has been confirmed with the receiver, the documents will be deemed as successfully served once they reach the receiver's certain system.

The Court does not verify of its own motion that the notice was actually received if:

- 1) the receiver party has confirmed receipt of the notice;
- 2) the receiver party performs activities related and consequential to the subject matter of the notification;

Finally there is a presumption of reception for the Court (art. 17 – 2.2): Where the receiver's medium system gives feedback that the receiver has read the message, or there is other evidence proving that the documents have been well received by the receiver, it shall be presumed that the documents have been successfully served, unless the receiver is able to prove that the medium system is at fault, the service address is not owned or used by himself or herself, the message was not read by him or her in person, or there exists another circumstance in which he or she has not received the documents served¹⁴.

With regard to notifications of judgments issued by the judge, article 15 statues that: *„The internet court may serve judgment documents electronically after it has informed litigants of their rights and obligations and obtained their consent to electronic service. Where a litigant raises a request that it needs the paper judgment documents, the internet court shall provide the paper judgment documents”*.

Finally, it should be noted that among the applications of NetCourt, the so-called “Mobile Micro Court”.

The “Mobile Micro Court” provides five litigation services including “intelligent litigation, filing cases at hand, online mediation, video trial and online evidence uploading.”

14 Instant messaging technology.

This App, which is built using instant messaging technology¹⁵, enables online filing, trial, evidence presentation and verification, and service on the mobile side.

The instant messaging technology allows the parties and judges to send, in real time, location and multiple types of message to each other, including text, emojis, pictures, voice recordings, and files. Moreover, it can send SMS notifications to the parties upon completion of submission of their evidence, and also notifications when they come online.

At present, Beijing Internet Court is carrying out system upgrade and adaptation work for high-quality online video trials in a 5G network¹⁶.

So, for example, only by using the app embedded in WeChat, the parties can realize online filing, case inquiry, online service, online mediation, online trial and other more than 20 functions, so as to enjoy the indiscriminate one-stop smart litigation self-services on the electronic litigation platform anytime and anywhere. As of August 8, visits to the Mobile Micro Court have exceeded 19,000, with an average of 224 per day. Most of the users are under 40 years old and come from 20 provinces or municipalities.

5. AI in the justice system. How is it used. Is it permissible to make automatic decisions. China's Netcourt use AI in the justice system.

The main application in AI is the automatic generation of usable documents to aid the work of judges.

15 Instant messaging identifies online users and allow them to communicate with each other effectively and diversely by using extensible messaging and presence protocol (XMPP), Flash SMS based on unstructured supplementary service data (USSD) and other technologies. At Beijing Internet Court, the instant messaging technology supports real-time communication across various platforms, significantly facilitates communication between judges and the parties, and accelerates the service of information by the court.

16 There is another interesting application of the Instant Messaging technology: the Pop-up notification service platform. This platform, built with Flash SMS software, can automatically display a notification served by the court at the top of the mobile phone screen when the screen is locked. The user must read the notification and click "Confirm" before continuing to use his/her phone. The pop-up notifications sent to the mobile phone of a party, regardless of whether the phone is being used or in standby mode, will not be blocked by common security anti-virus software or security settings on the phone. This ensures that notifications are served effectively. The receipt of a notification serves as one of the proofs of successful service of that notification.

It is necessary to underline again that all subsequent information relating to the new technologies was found from official documents present on the Netcourt's and the Supreme Court's websites¹⁷.

The typical technical application of the new tech are:

- 1) Legal knowledge Graph (AI – deep learning)
- 2) Blockchain
- 3) Instant messaging
- 4) Facial recognition
- 5) Image Recognition
- 6) Speech recognition
- 7) Cloud video

I've already talked about blockchain and Instant messaging so, now, the work will be focused in IA and in particular on the application and – said benefits – of the use of Legal knowledge Graph, Facial recognition and Image recognition.

The massive use of IA in the NetCourt's ecosystem is called Legal knowledge Graph that is described „The legal knowledge graph technology is designed for two-way deconstruction of the structure of legal provisions and documents, creating the basic logic of legal knowledge graph and document generation. The contents of electronic legal archives are processed to extract elements that are used to build the conceptual knowledge graph of semantic elements for generation of a legal document. The element information nodes are configured on a document generation template based on the case information obtained by intelligent evidence review. Then the natural language processing (NLP) technology is used to automatically synthesize the corresponding language text, from which a legal document can be generated automatically.

- 1) **The legal knowledge graph technology** supports online automatic generation of documents. This allows judges of Beijing Internet Court to write standard legal documents more efficiently and accurately”.

The principal application are:

- Automatic generation of documents for judges.
- The legal documents for judges can be generated automatically by using a combination of legal knowledge graph, NPL technology, and document assembly building technology. The generation of rules and template libraries helps standardize documents on the

17 <<https://english.bjinternetcourt.gov.cn/>> accessed 21 August 2021.

Internet-based litigation platform, and a standard document can be more authoritative. The structured contents and provisions of legal documents are generated quickly, enabling legal documents to be prepared efficiently.

- Automatic generation of documents for the parties. The facts of a case can be organized with the help of big data and artificial intelligence analysis, legal knowledge graph and cognition engine technology. These technologies also can support automatic generation of an appeal petition, a letter of confirmation of the address of a defendant to be served, a defendant's answer, a jurisdiction objection application, and a counterclaim.

From the analysis of the official documents, it is very clear that the system believes that deep learning has enormous advantages for judges, litigants and lawyers. In fact, in the subcharter of the appendix to the White Paper on technological applications in the judicial system it is asserted that there are many benefits of the Automatic Generation of the legal documents, most of all, it is stated that system sets judges free from repetitive work and allows them to devote more energy to case research. In addition, the system helps minimize the possibility of judging identical or similar cases differently and further alleviate the shortage of court officials.

“As of August 8, 2019, the electronic litigation platform of Beijing Internet Court’s has provided a total of 117.729 legal documents by using the automatic document generation service, which considerably accelerated case handling”.

2) Another application of the IA tech is the facial recognition system¹⁸.

In the Internet-based litigation platform of Beijing Internet Court, facial recognition technology enables online registration. Besides, facial recognition technology supports the digital management of personnel access control of Beijing Internet Court by intelligent access control and passive unconscious face-swiping attendance checking.

The main applications of this technology are:

- a. **Identity authentication.** “Identity authentication based on facial recognition technology is applied in many scenarios such

18 Facial recognition technology is a kind of biometric technology which detects and tracks the face in an image or video stream and then performs identification based on the facial feature information.

as platform registration, online court hearing, online mediation and security protection, effectively reducing the time spent in identity verification. In the registration process on the PC-end electronic litigation platform, users need to authenticate their real names and pass facial recognition to avoid registration with false account information. When litigants handle related litigation through the mobile client, the Mobile Micro Court App provides convenient authentication for litigants, agents and other litigation participants. The authentication can be completed in various forms such as face matching and liveness detection. The whole process takes less than 20 seconds, providing considerable simplicity and ease for mobile phone users.

- b. **Intelligent access control for the office building of Beijing Internet Court, and passive unconscious face-swiping attendance recording.** It also real-time collects data such as face images and feature attributes and record particulars of visits. Once an illegal entry is found, an alarm will be sent promptly. With passive unconscious face-swiping attendance recording, police officers do not have to stop at the attendance machine. The system automatically captures the facial information when police officers walk into or out of a door, and quickly performs identification and matching in millisecond level to complete attendance recording, thus remarkably improving work efficiency.

In the opinion of the editors of the "White paper" there are many benefits that derive from the use of facial recognition. For example this technology can eliminate the formalities of document examination and registration, as well as repeated input of information. The facial recognition system can remotely confirm the identity information of litigants. This allows litigants to participate in the court trial without appearing before the court, making litigation procedures convenient. „ As of August 8, 2019, the facial recognition system of Beijing Internet Court had provided remote identity authentication for various platforms for more than 200.000 times”.

3) The particular applications of the **Image Recognition technology**¹⁹ are:

- Image recognition, which can automatically identify litigation materials and documents, is applied to electronic case files and archives. With the help of the technology, the electronic litigation platform automatically identifies and categorizes the materials submitted by litigants and the documents prepared by judges in the process of handling a case. After the case is closed, the court clerk can archive electronic case files with one click, and replace paper files with electronic files for appeal transfer.
- It is used to help judges read files. To enable judges to quickly search for and locate files in a large volume of files, intelligent file reading supports functions of full-text search, page number locating and catalog locating. After judges enter keywords in the search box, such as litigation status, name of the litigant or name of evidence, etc., the system will perform automatic retrieval. The contents of case files are directly displayed in the area of search results on the reading interface. The page number can be input in the page number locating box, and the system automatically locates the page number in the image. The catalog of electronic case files clearly displays material names and their page numbers. By clicking on the material in the catalog tree, the system will automatically locate the material.

There is another application of the IA technologies that I did not find in the technical appendix to White paper for the new technologies in the Netcourts, but in another document called "20190820-B-0003-0904-F-trials-whitepaper²⁰" according to which the Netcourt of Beijing would have developed the first virtual AI judge and put it in use. According to this stringent subtitle entitled: *"Digging into the depth of litigation services and constantly upgrading the smart litigation services" the Netcourt: "Based on the extraction of more than 120 common questions and the answers of more than*

19 (n 17): "Image recognition is the technology that combines image angle recognition, text line detection, text line recognition, and detection of single-character coordinates to identify targets and objects in different modes in an image.

On the Internet-based litigation platform of Beijing Internet Court, image recognition supports online identification and extraction of the content of electronic files and assists judges in reading and writing documents daily. The technology enables judges to handling cases efficiently.

20 *ibid.*

20,000 words, the virtual judge identifies the key words of the questions asked by the parties involved in various cases and gives the corresponding answers. It provides an engaging experience for the parties, manifests the friendliness and liveliness of online services, makes intelligent dispute guidance more humane, and allows users to feel judicial friendliness the moment they access the website. As of August 31, 2019, the AI virtual judge had given a total of 662 responses to parties”.

Unfortunately, it is not possible to have more information about this new AI development. It would almost seem to be a public service that dispenses pro veritate opinions to individuals who would like to file a lawsuit or be sued in court.

This is one of the cases for which a greater effort of cooperation will be necessary to understand the innovative scope of the technology used by the Netcourts.

France

Iga Kurowska

Alongside other European countries, France has been trying to embrace the opportunities offered by LegalTech tools since the second decade of the XXI century. Although none of the technologies has proved disruptive for the legal sector, certain disruptive technologies have been successfully integrated into their daily work by French legal practitioners, such as blockchain, big data analytics, or Artificial Intelligence (AI).

1. A progressive but satisfactory Legaltech adoption by French law firms

When it comes to the use of Legaltech tools by the law firms, most of them, no matter the size, have been proficient in the use of the tools from the Legaltech 1.0 category, including basic office-related software for document creation and management, e-billing tools, video-, and tele-communicators, or legal search engines (rendered possible through legal open data project¹). Also, an important number of law firms have been using electronic signature, as well as communicators created especially for law firms, which presumably guarantee a higher level of security and confidentiality of information exchange.

Certain lawyers have also been implementing in their practices a big part of Legaltech 2.0 solutions, such as Document automation Software, Document Management Software, Customer Management Software, Software for Online Annual General Meetings of companies, or even AI-based document review tools, gradually tested in big international law firms. It can be generally stated that the interest in digitalization and advancement of the tools' adoption is greatly dependent on the lawyer's personal interest in the matter. Legal technology and legal innovation have been promoted by both private and public sectors for several years already through conferences, forums, master classes, and workshops of public access. Therefore, more tech-savvy individuals have had both time and opportunity to famil-

1 The loi pour une République numérique (Digital Republic bill), that entered into force on October 7, 2016 was an important step in opening public data in France.

iarize themselves with a vast offer, also of a national origin, and implement selected solutions in their workplace.

French Legaltech ecosystem has also come up with a number of more advanced solutions, such as blockchain registry for Intellectual Property (“IP”) rights, for company registries, or Artificial Intelligence (“AI”) for advanced legal expert systems (also commonly called “chatbots”). However, their use is still very seldom, and their utility is underrated.

2. An ambitious but underperformed digital transformation of the French justice system

Digitalization of procedural civil law has been gradually established in France for the last twenty years. The scope of that transformation includes, among others, recognition of digital evidence and electronic signature in 2000², a possibility of electronic exchange of procedural pieces between the parties in a judicial dispute in 2005³, the publication of judgments in a digital form in 2012⁴, electronic identification through eIDAS regulation in 2014; all of the above being a process of paving the road towards the establishment of a fluent and fully dematerialized legal framework for e-delivery of legal documents in France.

Although courts and public administration have been undergoing a digital transformation for many years now⁵, the Covid-19 crisis has demonstrated significant insufficiencies. Although some procedures have been fully dematerialized, such as the ones regarding the IP rights⁶, or peculiarly-small civil claims⁷, and communication is for most cases possible through email, or specially dedicated for that purpose platforms, a require-

2 Law no. 2000-230 of March 13, 2000 has introduced to the French Civil code digital proof. Articles 1 and 2 of the Decree no. 2001-272 of March 30, 2001 has specified the requirements for the electronic signature.

3 Decree no 2005-1678 of December 28, 2005.

4 Decree no 2012-1515 of December 28, 2012.

5 Many important initiatives improving efficiency and access to justice have been put in place starting from 2017, such as “Le portail du justiciable” with legal procedural rights written in plain language, downloadable forms serving as claims for civil procedures, as well as, from January 4, 2021, a possibility to make these claims, together with attachments, directly through the platform.

6 Both registration and amendments can be done fully online, through INPI website: <<https://www.inpi.fr/fr>> accessed 31 March 2021.

7 Since the reform of 23 March 2019, civil claims below 5000 euros can be done in a fully dematerialized manner.

ment of an original document in paper form is still a common reality for litigation. Nonetheless, and surprisingly⁸, curiosity and openness towards more high-tech solutions can be noticed among jurisdictions all over the country, which are testing AI-powered solutions⁹, and by the government, which have recently introduced a project for the creation of an algorithmic estimation of corporal damages in civil litigation¹⁰.

The recent Covid-19 pandemic has also been a chance to implement fully virtual court hearings. Starting on April 2, 2020¹¹, and concerning a limited number of matters, parties, judges, clerks, and attorneys were provided with a platform to participate in hearings in respect of security and procedural requirements. Also, due to a pandemic, new platforms enabling judicial claims, such as opening a liquidation process¹², or claims for judicial resolution of employee-employer conflicts¹³, have gained utility.

3. *E-delivery*

Since 2005, “The electronic communication”¹⁴ is a separate part of the French Civil Procedure Code applicable to procedures before most jurisdictions and instances, with that mode being explicitly permitted both

8 Also due to the fact that France was the first country in the world to prohibit in 2017 judicial analytics, which was a controversial decision commented all over the world. See more: Artificial Lawyer, ‘France’s Controversial Judge Data Ban – The Reaction’ (Artificial Lawyer, 5 June 2019) <<https://www.artificiallawyer.com/2019/06/05/frances-controversial-judge-data-ban-the-reaction/>> accessed 31 March 2021.

9 The first agreement of collaboration between Predictice, a predictive justice startup, and Lille Bar Association have been signed in 2017. More: Louis Larret-Chahine, ‘Lille, premier barreau à tester la justice predictive!’ (Predictice Blog, 1-August 2017) <<https://blog.predictice.com/lille-est-le-premier-barreau-%C3%A0-tester-la-justice-pr%C3%A9dictive>> accessed 31 March 2021.

10 Decree no 2020-356 of March 27, 2020 creating an automated personal data processing algorithm ,DataJust’.

11 Enabled by a series of *Ordonnances* of March 25, 2020, amending the rules of judicial procedures. More: <<https://www.gouvernement.fr/conseil-des-ministres/2020-03-25/faire-face-a-l-epidemie-de-covid-19>> accessed 31 March 2021.

12 <<https://www.tribunaldigital.fr>> accessed 31 March 2021.

13 <<https://www.saisirprudhommes.com>> accessed 31 March 2021.

14 La communication par voie électronique – Livre 1^{er} of French Civil Procedure Code, art. 748-1 to 748-7. Notification du droit commun et les notifications spéciales : titre XXI of Livre 1^{er} of French Civil Procedure Code.

for ordinary and special notifications, judicial procedures with mandatory representation, as well as in front of the French Court of Appeal and the highest Court of Cassation¹⁵. The articles have been amended on multiple occasions, completed by several purely technical orders, with a real revolution being made in 2015 by simplifying the formal requirements and focusing on two problematic matters: security and cost-sharing. After years of “reality checks,” richer in the knowledge of numerous particularities related to modernizing the legal justice system, today’s regime, as described recently by the French legislator¹⁶, is a mix of proper for paperless and traditional civil procedure rules, the latter applying also to conventional ways of service of documents in France.

Nevertheless, despite numerous efforts of progressive construction through extensive legislation, both practitioners and academia agree that the digitalization plane has been missing a pilot, and the recent crisis of Covid-19 has confirmed it. The actors of the French legal system point out the inconsistencies and contrarities, impeding a proper functioning of the justice system and creating legal insecurities, not to mention a missed chance to embrace the opportunities arising from legal technology.

The e-delivery of judicial decisions has been first allowed in 2008 and concerned exclusively the decisions given by the Cour de Cassation. The procedure has been extended to other jurisdictions in 2012, which allowed for a codification of e-delivery in the French Civil Procedure Code. In order for it to be served in conditions deemed equivalent to its paper version, the document needs to be elaborated by bailiff through specialized software, sealed, e-signed, and made available to the recipient in a secure way – through a virtual private network (“RPSH”) accessible exclusively after a correct encrypted identification through a platform “e-huissier”. The recipient is informed of the e-delivery by means of an email or through a text message (SMS) that is sent through a specially elaborated for this purposes platform and requires identification through a login and password. Both forms require a notice of receipt sent automatically by the system when the recipient logs into the platform.

However, for the e-delivery to be sufficient, the recipient needs to give prior consent to the method of e-delivery. It is a complex three-stage proce-

15 As for the Court of Appeal: Article 930-1 of French Civil Procedure Code, which has been modified by a recent *Arrêté* of May 20, 2020 in order to clarify the rules applicable to that electronic communication. As for Court of Cassation: order of June 17, 2008.

16 Law n° 2019-222 of March 23, 2019, of planning for 2018-2022 and the justice reform.

dure including a provision by a person of detailed information, including the email address of their choice and emission of a dematerialized confirmation of the consent. The subscription to e-delivery is thus voluntary. In the future, the prior consent requirement can be erased by creating personal judicial email addresses attributed to all legal persons. Since 2015, an e-delivery, with a more restricted material scope as limited to convocations and excluding judgments, can also be made to moral persons. In any case, for both natural and moral persons, a fault of such prior consent could be considered by a court as a substantial formality and thus sanctioned by the nullity of service of the judicial document within the court proceedings.

According to the article 662-1 al. 3 of the French Civil Procedure Code, a properly established e-delivery is equivalent to its highest form of service of judicial documents in France – personal service – if the notice of receipt is received by the bailiff on the day that the act had been sent. The date and time of sending (as opposed to receiving) of the document to its addressee are the ones that make run the procedural terms. On the contrary, if the person's prior consent to e-delivery is listed in the system, nevertheless, the notice of receipt has been received after the day of its issue or the message has never been read, the e-delivery is equivalent to a “service done at home”. Alike in a traditional material service, paperless delivery needs to respect the time constraints, that is, be delivered between 6 PM-9 PM on workdays. In case of a plurality of recipients, under the condition of all of the concerned having priorly consented to the e-delivery mechanism, a single bailiff is authorized to serve the parties, no matter of their geographical resort; and thus, creating a derogation from a general competence rule¹⁷ applicable to serving judicial documents. A similar exception of territorial principles of e-delivery applies if a third party is to intervene in the trial. Meanwhile, an interesting, simple but progressive initiative emerged from a student-founded legaltech: an online intermediary platform for traditional service¹⁸. It allows for finding and contacting the competent bailiff, managing the case through a SaaS tool, and receiving SMS updates on its progress

When it comes to e-delivery to French attorneys-at-law, which is covered by a different procedural legal framework than the one described above, an e-delivery has been rendered possible slowly but progressively,

17 L. 111-1 du Code des procédures civiles d'exécution. Such exception has been allowed by articles 5-1 and 5-2 of Decree no 56-222 of February 29, 1956, created by a Decree no 2012-366 of March 15, 2012.

18 <<https://isignif.fr>> accessed 31 March 2021.

starting from 2008 for proceedings before the Cour de Cassation¹⁹ and through an application known as “Comavo”. Today, the e-delivery and exchange of other judicial documents is done through RPVA (Réseau Privé Virtuel Avocats). Subsequently, a necessary legal arsenal has been put in place in order to allow for a dematerialized exchange of documents between lawyers at different levels of the procedure and before different jurisdictions. However, although the whole judiciary chain is theoretically possible to be performed online, imperfections, as mentioned above, and gaps still exist. For instance, although a court decision can be signed and delivered online, the enforceable copy of the court’s decision – an essential element for the execution of the judgment – has not yet received the technical specifications allowing for its practical execution by the French Courts.

Besides administrative procedures that have not been covered by that brief resume of the French legal framework, e-delivery is also possible in criminal matters if such choice is made by the bailiff and, if not expressly excluded by the Ministry of Justice in the name of the traditional serving method. Therefore, so far, both for civil and criminal procedures, electronic delivery stays optional. In practice, however, it is still far from being a preferred option of both judiciaries and legal persons, if not a marginal one, a conclusion drawn from its invisible presence in the day-to-day litigation reality.

4. Plans for the future

On the European scene, France is considered a relatively developed and dynamic Legaltech market. Indeed, it is still not comparable to the one of the United States of the United Kingdom, but for the last consecutive years, it has had a growing number of investments, private actors, and public engagement. Its expansion is expected to continue during the upcoming years, with more strategic acquisitions and maturing startups. The Covid-19 pandemic has definitely contributed to the review of many initiatives, led by and for the private and public sector, as well as to a significant shift of approach of all legal professionals – from dreaming of ambitious futuristic applications to more pragmatic, modest but realistic projects, with possible immediate implementation.

19 Order of June 17, 2008.

Germany

Wilfried Bernhardt

1. LegalTech used in Germany: courts, law firms, arbitration

The term "Legal Tech" is defined in different ways. In Germany, legal tech is sometimes reduced to the legal advice provided by lawyers using innovative technologies.¹ However, the following explanations are based on an expanded concept of legal tech. In this respect, legal tech refers to the use of innovative technologies, including artificial intelligence and blockchain/DLT, to support the legal professions and the judiciary².

Promoting the use of artificial intelligence is also the key focus of the German government's policy. The national AI strategy³ of the German government on how the use of AI and its implications (legal, ethical etc) does not specifically discuss implications related to the use of AI in the justice field, but it is part of the horizontal framework and is therefore of high relevance for the further use of innovative technologies also in the justice system. The strategy sets three main goals:- a.) Making Germany and Europe a leading center for AI and thus helping safeguard Germany's competitiveness in the future (e.g. by developing existing Centres of Excellence for AI at supra-regional level, establishing additional Centres of Excellence for AI, and developing them into a national network of at least 12 centres and application hubs), b.) Integrating AI in society in ethical, legal, cultural and institutional terms in the context of a broad societal dialogue and active political measures (e.g. by elaborating guidelines for developing and using AI systems in a way that is compatible with data protection rules), c.) Foster responsible development and use of AI to

1 Christina-Maria Leeb, *Digitalisierung, Legal Technology und Innovation* (Duncker & Humblot, 2019) 59.

2 Isabelle Désirée Biallaß in Stephan Oryand Stephan Weth (eds) *Elektronischer Rechtsverkehr* (1st edition, juris Allianz, 2020); Jens Wagner, Legaltech und Legal Robots. Der Wandel im Rechtswesen durch neue Technologien und Künstliche Intelligenz, (Springer 2020).

3 Die Bundesregierung, 'Künstliche Intelligenz (KI) ist ein Schlüssel zur Welt von morgen.' (Die Bundesregierung), <www.ki-strategie-deutschland.de> accessed 26 February 2021.

serve the good of society (e.g. by setting up a German observatory for AI). Therefore, high priority is also given to the future use of AI in the judiciary and among the judiciary's communication partners.

There are several possible uses of modern technologies for the judiciary and lawyers:

1.1. Courts

In the **judiciary**, specialized programs offer templates for the different jurisdictions. These range from simple court orders (such as for scheduling a hearing, inviting witnesses) to text modules for judicial decisions on the case itself. The electronic text modules were mostly created by external developers, but also offer the option of adapting input masks or text modules to individual requirements or supplementing them with free text. Due to the constitutional principle of judicial independence, the judge is free to develop further templates himself for his own work, provided that he has the underlying knowledge in this respect.

Electronic programs (such as Judica in the North Rhine-Westphalian judiciary or in the states of the forumSTAR network) and calculation programs also support judges in the application of certain legal norms. For example, judges who must decide on family court disputes have access to complex calculation programs (e.g., for calculating alimony or pension equalization). Special programs are also available for other legal calculations - for example, in the context of legal aid proceedings or in the calculation of attorney's fees and court costs. Programs can also be used to determine the local jurisdiction of a court⁴. The support provided by information technology extends to suggestions for substantive legal decisions. However, it is legally doubtful to what extent the judge may have automatic decision proposals submitted to him by an automatic system. If, because of high work pressure, a judge feels compelled to accept proposed decisions without closer consideration, this could be seen as an attack on judicial independence. Further (constitutional) concerns arise from the fact that proposed decisions are not transparent for the judge due to complex programs. However, transparency is not only important for the

4 Abschlussbericht der Länderarbeitsgruppe 'Legal Tech: Herausforderungen für die Justiz' (Schleswig-Holstein, 2019), <https://www.schleswig-holstein.de/DE/Landesregierung/II/Minister/Justizministerkonferenz/Downloads/190605_beschluesse/TOPI_11_Abschlussbericht.pdf;jsessionid=403E9295A2AF9CB0FBA9909024CD2AFA.d elivery2-replication?__blob=publicationFile&cv=1> accessed 26 February 2021.

judge himself, but also for the parties to the proceedings: they, too, must be able to understand judicial decisions. Therefore, it is also important that the judge can justify his decisions and does not just have to refer to suggestions made by a non-transparent AI-supported program.

Less legally problematic is the use of automatically operating programs in the service offices of the courts. Automation also helps judicial officers, especially in the processing of register matters. Registers (such as the commercial register, the register of cooperatives and partners, the insolvency register, the land register, the criminal register) are the responsibility of the judiciary in Germany. Other registers (such as the register of wills and the central register of precautionary measures) are the responsibility of the Federal Chamber of Notaries, but notaries are also integrated into the German judicial system. Entries, changes and deletions in the registers rely heavily on IT automation, although judicial officers are still involved in decisions. Since 2007, communication with most registry courts has been shifted to the so-called "electronic court and administrative mailbox -EGVP-", an encrypted platform with an integrated signature function.

1.2. Law firms

The lawyer can enter individualized texts into dynamic document templates, sometimes assigning individual facts to predefined categories or entering answers in selection boxes. In this way, the lawyer can create independent contract texts or lawyer's briefs. In doing so, he can access databases in which he will find pre-formulated and adaptable texts for various case scenarios. Programming skills are not required, but knowledge of how to use the document generator is.

Expert systems (Legal Process Automation) help lawyers to run through recurring legal review steps in a semi-automated manner for the purpose of advising clients, starting with simple deadline and fee calculations, and extending to more intensive subsumption of frequent case constellations under the appropriate legal norms. In addition, lawyers provide corresponding systems on online platforms on which clients must answer predefined questions themselves and the answers result in an automatic legal evaluation for which a fee is charged.

Furthermore, the number of legal tech platforms operated by companies is growing in Germany, which citizens can use to have legal rights checked in various standard situations without having any legal knowledge

of their own.⁵ For example, there are online platforms for calculating possible compensation in the event of flight cancellations or delays, the permissible amount of an apartment rent, the amount of social welfare claims, the legality of terminations of employment contracts or the calculation of claims for damages in traffic accidents. Simple legal questions are thus answered quickly and reliably according to a standardized model without the need for court proceedings, or if court proceedings are still required, these proceedings are prepared.

There are no specific regulations on legal tech applications in Germany. However, the German Legal Services Act (*Rechtsdienstleistungsgesetz*) only permits individual legal advice if it is provided by licensed lawyers.

The question of the admissibility of legal tech platforms therefore depends on whether the platforms have the character of legal advice within the meaning of § 2 (1) of the Legal Services Act.⁶ The Federal Court of Justice recently ruled that a platform which could be used to calculate the permissible amount of apartment rents did not constitute an impermissible legal service because the legal platform merely enabled an initial - rough and preliminary - assessment of claims.⁷

In some cases, contract texts can be drawn up at www.smartlaw.de.

A working group of the German Bar Association (DAV) is conducting an in-depth dialogue with its members, 63,000 lawyers, to analyze the current use and potential use of AI, but also with AI providers. Options are changes in BRAO (act on the legal profession) and RDG (legal services act).

5 See Wagner (n 2) 2; Isabelle Biallaß in: Ory/Weth, *jurisPK-ERV* Band 1, 1st. edition., chapter 8, as of 28.08.2020, para. 10. Examples: <www.flightright.de> accessed 26 February 2021; <www.fairplane.de> accessed 26 February 2021; <www.helpcheck.de> accessed 26 February 2021; <www.geblitzt.de> accessed 26 February 2021; <www.hartz4widerspruch.de> accessed 26 February 2021; <www.myright.de> accessed 26 February 2021; <www.wenigermiete.de> accessed 26 February 2021.

6 Examples: www.flightright.de, www.fairplane.de, www.helpcheck.de, www.geblitzt.de, www.hartz4widerspruch.de, www.myRight.de; www.wenigermiete.de „Legal service is any activity in concrete third-party matters as soon as it requires a legal examination of the individual case". However, § 10 para. 1 RDG allows certain institutions to provide legal services if they act on the basis of special expertise and are, for example, registered as debt collection service providers with the competent authority.

7 Judgement of the Federal Supreme Court (BGH) from 27 November 2019, VIII ZR 285/18, NJW 2020, 208.

1.3. Arbitration

Non-governmental dispute resolution platforms (online dispute resolution) have existed for a long time, mostly offered by companies active in the field of online commerce.⁸ Most of these are American companies, but they also offer their services in Germany. Blockchain arbitration, for example via Kleros⁹, is also used in Germany. There has been no specific development in Germany in this regard.

2. Blockchain and DLT in government systems. Whether there are judicial systems or other registers using blockchain. Legal provisions linking a blockchain entry to a legal presumption.

Currently, no blockchain and DLT are used in the jurisdiction of the judiciary in Germany. However, there are projects in which the use of blockchain and DLT is being examined for the benefit of judicial applications and for which pilot applications already exist:

A project aimed at assessing whether supplementary integrity assurance can be provided for the land register database by means of blockchain technology.¹⁰

In another cooperation project of the Federal Chamber of Notaries with the Bavarian State Ministry of Justice and as a technical partner the Fraunhofer FIT in the judiciary were examined potentials of blockchain regarding an **electronic validity register**.¹¹ The project aimed to examine the possibilities to establish a public electronic register confirming the validity status of documents (valid/revoked) based on blockchain technology. Two examples/uses cases to be examined in detail are the certificate of inheritance and the notarized certificate of authority. This has resulted in

8 Wagner (n 2) 37, refers to the examples of eBay and PayPal.

9 *ibid.* 34.

10 European Commission, 'Study on the use of innovative technologies in the justice field – Final Report' (2020) 120, <<https://op.europa.eu/en/publication-detail/-/publication/4fb8e194-f634-11ea-991b-01aa75ed71a1/language-en>> accessed 25 February 2021.

11 <https://www.edvgt.de/wp-content/uploads/2020/10/Protokoll_EDVGT_2020_Blockchain-not-Vollmacht.pdf> accessed 26 February 2021; see also the presentation of the Federal Chamber of Notaries at <https://www.egovernment-wettbewerb.de/praesentationen/2020/Blockchain_fuer_notarielle_Vollmachten_und_Erbscheine.pdf> accessed 26 February 2021.

an operational prototype of a central register based on blockchain, which enables the simple verification of the validity of documents (for example, via smartphone), such as the registration of a notarized power of attorney in the register from scan to upload, the verification of the validity of powers of attorney from the user's perspective, and the administration of a power of attorney. Now the legal basis for its use in real operations is to be created, which does not yet exist in Germany.

According to the German Bar Association the use of blockchain/DLT technology stands in conflict with some legal topics. For instance, the protection of minors under §§ 107, 108 German Civil Code (BGB) would have to be extended. And the correction, deletion (including the right to forget) and blocking of personal data (Art. 15, 16 and 17 GDPR) is not technically possible because all transactions are interlinked.¹² However, there are also technical and legal proposals to solve this problem.¹³

3. *Electronic communication with the court. Legal basis, method of communication, transmission of documents.*

- a. The procedural codes prescribe **certain formal contents for the communication of litigants** with the judiciary, in particular for pleadings by attorneys initiating proceedings. Section 130(1) of the Code of Civil Procedure (ZPO), for example, requires the specification of the digital post office box to which the court may transmit information. § 2 Electronic Legal Transactions Ordinance (ERVV) also stipulates that the electronic document must be transmitted to the court in printable, copyable and, as far as technically possible, searchable form in PDF file format. Furthermore, the electronic document shall be accompanied by a structured machine-readable record in XML file format corresponding to the definition or schema files specified in § 5. The XML structuring of lawyers' briefs ("Xjustice") has already been possible for 16 years -

12 The Report of the European Commission: European Commission, 'Study on the use of innovative technologies in the justice field. Final report' (Publication Office European Union 2020) "Study on the use of innovative technologies in the justice field", (Brussels, September 2020) 167.

13 Dariusz Szostek, *Blockchain and the Law* (1 ed., Nomos 2019) 108; Anne-Sophie Morand 'So kollidiert die DSGVO mit der Blockchain' (Netzwoche, 1 September 2020) <<https://www.netzwoche.ch/news/2020-09-01/so-kollidiert-die-dsgvo-mit-de-r-blockchain/0lt0>> accessed 25 February 2021.

albeit on a voluntary basis. ("Xjustice"¹⁴) has already been possible for 16 years - albeit on a voluntary basis. For electronic communication, the procedural codes prescribe a so-called writ-replacing form¹⁵. Here, potential plaintiffs can choose between various written form substitution options. One option is to provide the electronic with a qualified electronic signature in accordance with the eIDAS Regulation¹⁶ of the person responsible and send it to the electronic mailroom of the court. There, the qualified electronic signature is validated and a note to that effect is included in the court file.

- b. Another option is to provide the document with a simple signature and submit it to the court via a **secure transmission channel**. The law specifies secure transmission channels in detail: using the mailbox and dispatch service of a so-called **De-Mail account**, which can be set up by any citizen with a mail address valid for life, provided that the sender is confirmed as a legal user by the De-Mail provider with an electronic signature when sending the De-Mail message. Authorized attorneys, notaries, and public authorities can also communicate with the courts via **special electronic mailboxes** without having to affix a qualified electronic signature to the documents sent. These special mailboxes have been established legally based (for attorneys by the German Federal Bar). The electronic mailboxes are intended to enable secure electronic communication with the judiciary that cannot be viewed from the outside; this is then also considered a "secure transmission channel". However, lawyers can also use the special electronic mailbox among themselves. Since January 1, 2018, Section 31a (6) of the Federal Lawyers' Act (Bundesrechtsanwaltsordnung) has imposed a so-called passive use obligation on lawyers: they must have the technical equipment required for P.O. boxes ready and take note of deliveries and accesses of communications via the P.O. box. By January 2022

14 XJustiz (XML Schemata for the Judiciary) forms the basis for the exchange of procedural data in judicial proceedings and is laid down in organizational-technical guidelines that were already released for use throughout Germany in 2005. It consists of a basic module with generally required data (e.g., court name, file number) as well as specialized modules with subject-specific data (e.g., criminal proceedings, dunning procedures, registers).

15 § 130a Code of Civil Procedure, § 46c Labour Court Act, § 55a Code of Administrative Court, § 52a Code of Fiscal Court, § 65a Code of Social Court, § 32a Code of Criminal Procedure.

16 (n 996).

at the latest, attorneys, notaries and public authorities are required to communicate exclusively electronically with the courts.¹⁷

- c. In addition, the Federal Ministry of Justice and Consumer Protection may, by statutory order, introduce electronic forms and require that all or part of the information contained in the forms be transmitted in structured machine-readable form.¹⁸ The forms shall be made available for use on a communication platform on the Internet to be specified in the statutory order. The forms may be completed electronically and sent to the courts electronically. In doing so, the use of the electronic ID of the identity card or the electronic residence permit for foreigners shall be attached for the identification of the form user. Transmission of an electronic form by the user to the court together with identification by an ID is also considered to replace the written form, so there is no need to additionally affix a qualified electronic signature. The transmission of documents from the courts back to the user is in principle carried out by the same electronic means as for filing. However, so far only lawyers, notaries and public authorities can be addressed electronically by the courts via special electronic mailboxes. It is planned¹⁹ to set up a special electronic mailbox for citizens, companies, and other professional groups on a statutory basis, which can then be used both for submitting official documents to the courts and for court documents to citizens and organizations without having to affix a qualified electronic signature. Finally, it is also planned to use digital user accounts, which are currently being set up for citizens and companies as part of the administrative portal network of the federal and state governments in Germany, for document transmission to the

17 § 130d Code of Civil Procedure (ZPO), § 46d Labour Court Act (Arbeitsgerichtsgesetz), § 55d Administrative Procedure Code (Verwaltungsgerichtsordnung), § 52d Fiscal Court Act (Finanzgerichtsordnung), § 65d Social Court Act (Sozialgerichtsordnung), § 32d Criminal Procedure Code (Strafprozessordnung).

18 § 130d Code of Civil Procedure (ZPO), § 46d Labour Court Act (Arbeitsgerichtsgesetz), § 55d Administrative Procedure Code (Verwaltungsgerichtsordnung), § 52d Fiscal Court Act (Finanzgerichtsordnung), § 65d Social Court Act (Sozialgerichtsordnung), § 32d Criminal Procedure Code (Strafprozessordnung).

19 Government Draft of an Act on the Expansion of Electronic Legal Communication with the Courts dated 10 February 2021 (Regierungsentwurf eines Gesetzes zum Ausbau des elektronischen Rechtsverkehrs mit den Gerichten und zur Änderung weiterer prozessrechtlicher Vorschriften vom 10 Februar 2021), <https://www.bmjv.de/SharedDocs/Gesetzgebungsverfahren/Dokumente/RegE_Ausbau-ERV_V.pdf;jsessionid=B31215410FC393DA7D68555E8429DE1F.2_cid289?__blob=publicationFile&cv=2> accessed 25 February 2021.

courts as well as for electronic returns from the courts to citizens and companies. To log in to the user account, the citizen must identify himself electronically with the ID; for companies, the use of the electronic tax ID is planned.

4. *Online court proceedings. Are they acceptable, in what way, the way of communication, what information systems are used? How is the judgment issued? Is the connection from the court or can it be made using a private computer?*

In Germany, there are no fully **virtualized online trials** yet. However, the lockdown phase of the COVID-19 pandemic and the requirement to reduce physical contact with people have intensified efforts to use videoconferencing systems for judicial proceedings as well. As early as 2002, § 128a of the German Code of Civil Procedure (ZPO)²⁰ has allowed parties to proceedings to participate from a location other than the courtroom and to take evidence with distant witnesses or experts. The decision to enable video transmission is at the discretion of the court, so the parties to the proceedings cannot force such a way of conducting the proceedings. The discretionary decision on the use of video conferencing systems takes into account, in particular, the motives expressed by the applicant for the video conference (for example, medical reasons, but also financial or time-related interests) as well as, from the court's point of view, wishes for acceleration and concentration. Under German procedural law, however, the judge cannot conduct the hearing from his home study but must be present in the courtroom during the videoconference hearing. The constitutional principle of publicity of the court hearing is thereby established by transmitting the procedural actions via videoconference to the courtroom at the place of the hearing. Video conferencing leads to a host of legal, organizational, and technical issues. For example, it must also be clarified whether data protection regulations allow cloud solutions or require on-premises solutions.

20 This provision shall apply by way of reference norms in the other procedural codes (pursuant to § 46 (2) of the Labour Court Act (Arbeitsgerichtsgesetz - ArbGG), § 4 of the Insolvency Code (Insolvenzordnung - InsO) and § 15 of the Voluntary Jurisdiction Act (Gesetz über Angelegenheiten der Freiwilligen Gerichtsbarkeit - FGG) as well as in § 110a of the Social Court Act (Sozialgerichtsgesetz) and § 102a of the Administrative Court Code (Verwaltungsgerichtsordnung).

During the critical pandemic phase 2020, there was a legal option in Germany from May 29 2020 to 2021 in labor court²¹ and social court²² proceedings, to allow a volunteer judge "in the event of an epidemic situation of national significance" to participate in oral proceedings in the courtroom from another location by video conference if it is unreasonable for him or her to appear in person at the courtroom due to the epidemic situation. Video participation by the volunteer judge was also possible for the deliberation, voting and pronouncement of the decision, provided that the confidentiality of the deliberation was ensured.

It is conceivable that the online participation of judges in oral proceedings, which is legally only temporarily made possible by the law, could also be provided for permanently and also in proceedings of other jurisdictions outside of epidemic situations of national scope, and possibly also in certain situations to grant judges the possibility, e.g., of conducting a virtual court hearing from their home office. However, the question of how the public is to be involved would then have to be clarified. There are scientific studies on this subject that advocate the possibility of Internet transmission - but with strict adherence to data protection principles and IT security requirements.²³

So far, the law has not explicitly specified which video systems are to be used and how private systems can be integrated. However, judicial responsibility for compliance with data protection principles and IT security means that judges cannot use their private devices. However, the litigants who are allowed to participate in the court proceedings via videoconference are not provided with court-owned hardware. Judicial decisions are not yet delivered via videoconference. However, decisions can be made electronically and delivered to the litigants electronically.

The courts in Germany are currently being equipped with the electronic court file. From Jan. 1, 2026, the file must be introduced in all courts.²⁴

21 via the outlined § 46 para. 2 Labor Court Act (AGG) in conjunction with § 128a of the Code of Civil Procedure (ZPO).

22 § 110a Social Court Act (SGG).

23 Anne Paschke, *Digitale Gerichtsöffentlichkeit* (Duncker & Humblot, 2018) 412.

24 Gesetz zur Einführung der elektronischen Akte in der Justiz und zur weiteren Förderung des elektronischen Rechtsverkehrs dated 5. 7. 2017, Bundesgesetzblatt I 2017, 2208.

5. *AI in the justice system and automatic decisions.*

- a. Artificial intelligence has been used only to a limited extent in the German **justice system**. Electronic file systems partially support the recognition of metadata of documents received by the court, such as document type, sender or creation date in documents (so-called metadata extraction) and considerably simplify the work processes in the judiciary, because documents can thus be automatically assigned to judges and existing files. However, this is not yet being used across the board. AI helps in the processing of mass proceedings by enabling trained systems to systematize and structure extensive documents, thereby making them easier to access for human processors.²⁵
- b. Tools based on artificial intelligence are already being used to some extent **in criminal investigations**, for example to identify child pornography images among other pornographic or non-pornographic pictures or to identify hate crime on social media²⁶ (see below).
- c. There is a largely automated procedure in German procedural law, the **order for payment procedure**, which involves the assertion of mostly uncontested monetary claims. There are standardized forms for use in simplified proceedings - i.e., applications for an order for payment (Mahnbescheid) or order for enforcement (Vollstreckungsbescheid) in money claims. These forms must be used. If an application is not filed on the appropriate form within the deadline, it will be rejected as inadmissible. The applicant has various options for conducting the order for payment procedure electronically. He or she can use the eID function of his or her ID card for authentication and identification and enter the data directly into the prescribed masks, which are then formally checked by software, thus largely ruling out incorrect entry. The notice is sent either by affixing a qualified electronic signature or (if a lawyer is acting) without a signature via a special electronic mailbox that is electronically linked to the court. The order for payment is issued automatically. The payment order court only checks the information for completeness, but not for accuracy, which makes electronic processing relatively easy. Although the judicial officer officially bears responsibility for the procedure, in fact the judicial officer relies on the result of the automatic check. If an objection is filed after the automatic

25 <https://www.edvgt.de/wp-content/uploads/2019/10/Protokoll-EDVGT_Algorithmen-Justiz.pdf> accessed 25 February 2021.

26 (n 12) 121.

issuance and service of the order for payment, the order for payment procedure is deemed to be terminated. To pursue the claim further, contentious proceedings must be opened before the civil court, but these are not handled automatically; instead, they are handled before a (human) judge.

- d. The **European order for payment procedure**, which is similar to the domestic order for payment procedure and can be used in Germany across borders in relation to some EU member states, is also based on forms that can be filled out electronically and translated into all official EU languages and on digital transmission. Here, too, the procedures largely manage without human intervention. The same applies to the small claims' procedure. For fully automated processing without human involvement, a new process standard would have to be created - as is already provided for in the Administrative Procedure Act²⁷ for the issuance of automatic administrative acts.
- e. Partially automated processes are based on so-called **Model Declaratory Proceedings**. According to § 606 (1) of the German Code of Civil Procedure (ZPO), qualified consumer association can use the action to request a determination of the existence or non-existence of factual and legal prerequisites for the existence or non-existence of claims or legal relationships between consumers and an entrepreneur. When the action is admitted, individual consumers can join the lawsuit by entering their name and address in a register of actions, which is set up by the Federal Office of Justice in accordance with § 609 (1) of the German Code of Civil Procedure (ZPO). The entry is made exclusively electronically without incurring any financial expense. Only the participating consumers benefit from the effect of the action while being bound by the resulting model declaratory judgment.

6. *The plans for the future.*

The proposals developed by the working group "Modernization of Civil Procedure", consisting of the presidents of the Higher Regional Courts, the Court of Appeal, the Bavarian Supreme Regional Court and the Federal Court of Justice, go beyond the current legal possibilities.²⁸

27 § 35a Administrative Procedure Act (VwVfG).

28 Thomas Dickert, 'Modernisierung des Zivilprozesses Diskussionspapier' (justiz.bayern.de) <<https://www.justiz.bayern.de/media/images/behoerden-und-gerichte/ob>

- a. According to this, (in general) the possibility of a **"virtual trial"** by video conference is to be created, in which the court does not have to be present in the courtroom either. The public is to be included by the fact that the hearing is transmitted simultaneously in picture and sound to a room designated by the court. So the proposal is not aimed at the court itself working in the home office and process being completely virtualized
Other proposals involve new techniques, such as using voice recognition to create the record of proceedings, reviewing the record on a monitor in the courtroom, and then filing the record electronically.
- b. The **active obligation** to use electronic communication channels is to be **extended** to publicly appointed experts, publicly appointed interpreters, tax consultants, auditors, insolvency administrators, professional advisors as of 01.01.2026.
- c. The **fax** is to be abolished in the future for judicial communication and replaced by purely electronic legal communication.
- d. A legally regulated electronic **"message room"** for judicial communication is to ensure faster and more up-to-date communication between the court and the parties to the proceedings but is initially to be used for the informal exchange of electronic messages with lawyers and other parties to the proceedings, e.g., for making and rescheduling hearing dates or exchanging settlement proposals. In the future, it will be expanded to include the reliable and rapid exchange of electronic documents between parties and the court.
- e. An **accelerated, complete online procedure** with electronic communication by means of an intelligent input and query system for amounts in dispute up to €5,000 is to be introduced and centralized at certain courts. This type of procedure is primarily intended for mass dispute proceedings between plaintiff consumers on the one hand and defendant companies on the other. Short deadlines and the limitation of oral hearings to exceptional cases, if necessary, video with evidence or telephone conferences, are intended to speed up the process.
- f. The **structuring of the documents of the parties to the proceedings with the help of XML files** shall be expanded: In civil proceedings, the subject matter of the dispute is to be represented by a common "basic document", the design and technology of which are defined by standards and which is binding in the legal proceedings, in which the

erlandesgerichte/nuernberg/diskussionspapier_ag_modernisierung.pdf accessed 26 February 2021.

complete party submissions in factual and legal terms, are presented side by side in the sense of a table of relations. Supplements of the process parties are inserted adjusting place. At the end of the hearing, this document should then be binding for the judge to record the facts of the case.

- g. The **procedure for determining court costs and attorneys' fees** shall be fully automated, incorporating elements of artificial intelligence, and a legal basis for this shall be created in the procedural laws.
- h. The Commission of the federal Ministry of justice and the representatives of the federal states for information technology in the judiciary (workgroup use of cognitive systems in the judiciary) has established a project for the use of artificial intelligence in the creation of the electronic, fully searchable land register.²⁹ This project aims to automate the analysis of existing PDF files with **land register information**. Afterwards the tool will fragment the file and assign the values to a database field in order to be able to store the contents in a structured manner in a database. In terms of technology, the solution is based on expert systems and rule-based systems. The PROSAR-AIDA tool can help where classification and data extraction is needed from unstructured and semi-structured documents, especially when the inherent logic of the documents is extremely complex.
- i. Furthermore the Commission for information technology in the judiciary in a project (January 2020 to October 2021) will examine and identify the specific demands and requirements needed for the **anonymization/pseudonymization of court decisions**. The aims are to be able to produce a corpus of anonymized/pseudonymized court decisions, in which the information and details requiring anonymization will be marked and annotated. Sometimes a pseudonymization is preferable, because an anonymization complicates the readability and the capture of the meaning of a document.³⁰ The solution will be based on expert and rule-based systems and natural language processing.
- j. The number of cross-border legal proceedings is growing. Therefore, the need for automatic translations is also increasing. Therefore, a project of the Commission for information technology in the judiciary is examining the possibility of a **Legal Translation Machine Service**. This project will provide a secure machine translation service so as to improve the process efficiency and acquire insights from available data,

²⁹ (n 12) 190.

³⁰ Wagner (n 2) 25.

- reporting and visualization (e.g. dashboards). In terms of technology, the solution is based on machine learning and expert systems and rule-based system technology.³¹
- k. There is great potential for the use of artificial intelligence in the criminal investigation process, in which the police and prosecutors work together. The Central Cybercrime Department of North-Rhine-Westphalia started a research project to fight child pornography with methods of AI³². The main objective is to identify child pornography images among other pornographic or non-pornographic pictures. A manual examination would take a very long time. With the help of AI (machine learning) it is possible to reduce the time needed and to increase efficiency.
 - l. Also the Germany Central Cybercrime Department of North-Rhine-Westphalia together with university experts started another project in 2013 to identify hate crime on social media. The AI tool will include a scoring system **for hate crime identification**. The project rates online postings and the probability that they will be qualified as illegal offences. In terms of technology, the solution is based on machine learning.
 - m. Also the Germany Central Cybercrime Department of North-Rhine-Westphalia deals with the **future criminal court room for Criminal Proceedings**³³. To save time and expenses, the project aims to create modern court rooms which allow videotaping and speech-to-text recognition. All participants will receive a transcription and the audio file embedded. 3D-projection of crime scenes is under consideration.³⁴
 - n. In another project of Central Cybercrime Department of North-Rhine-Westphalia possibilities of a **hybrid cloud for document and electronic evidence** are examined.³⁵ Regarding overall project results according to the current state of research, in the first stage the AI fulfils the demand placed on it for the ability to differentiate and recognize deconstructed image content in a hybrid cloud scenario. The hybrid

31 (n 12) 121.

32 Start was in April 2019.

33 (n 12) 45.

34 Redaktion beck-aktuell 'EDV-Gerichtstag sieht Fortentwicklung der Justiz-IT als wesentliche Zukunftsfrage' (beck-aktuell Heute im recht, 20 September 2019). <<https://rsw.beck.de/aktuell/daily/meldung/detail/edv-gerichtstag-sieht-fortentwicklung-der-justiz-it-als-wesentliche-zukunftsfrage>> accessed 26 February 2020.

35 (n 12) 146.

cloud concept in this case could be reused in document and electronic evidence (emails) investigation.

- o. Finally, there are also various fields of application for AI-based **interactive chatbots** in the judiciary. For example, citizens can use a developed chatbot "Justitia" to file criminal charges at a low threshold, for example on the topic of hate and incitement on the Internet, by requesting the necessary information from the person filing the complaint, retrieving related data from social platforms, and taking screenshots to preserve evidence for checking the initial suspicion.³⁶ However, chatbots are also to be used in the civil justice system and can be combined with robotic process automation. To this end, an application for applying for a certificate of inheritance was presented at the German IT Court Day 2020.³⁷

36 (n 34).

37 See presentation at <<https://www.edvgt.de/wp-content/uploads/2020/11/2020010-EDVGT-Praes.pdf>> accessed 26 February 2021.

Hungary

Zsolt Zódi

1. The Use of Legal Technology in Hungary – General Picture

1.1. Introduction

The digitization of the justice sector started in Hungary in the early 2000s and was rather uneven. Some organizations, such as prosecutors, notaries, or some registration court proceedings, used state-of-the-art technology relatively early on, while litigation courts were lagging behind for quite some time. This lag amongst the attorneys is still existing.

The main reason for the court's lag was that in 1998 an organizational structure was established in which the third branch was completely separated from the rest of the central administration and government. This was favourable in terms of judicial independence, but not in other respects. The lobbying and fundraising power of the courts has diminished in the absence of government representation, and the closed organization has not perceived the technical challenges intensively enough, so it has not been able to keep up with them.

The main reason for the lag of advocacy was the extremely fragmented structure that still exists today. More specifically, the reason is that more than 98 % of law firms has fewer than 9 employees, and 80 % of the total attorney population works in such offices.¹ The number of cases in these offices is not large enough and the complexity of the division of labour is not worth it to automate the office. Moreover because of the average small size, and lack of complexity is not economical for manufacturers to develop software for such small practices. The digitization of the legal sector has therefore taken place almost exclusively as a result of legal rules imposing duties to the state and the third branch.

1 Péter Homoki: Overview on the average state of the art of IT capabilities of small law firms in the European Union. Presentation within the framework of A14Lawyers Project (Council of Bars and Law Societies of Europe, 2021. under publication) 6., 8. I am grateful for Péter Homoki, to hand me his presentation in a draft form.

In the following, I present the legal technological status of the three major judicial sub-sectors separately.

1.2. Technology at the Courts

Until 2011, the Hungarian court system was characterized by island-like developments. However, digitization has already started in four areas. 1. JIIS (Judicial Integrated Information System- BIIR in Hungarian) was introduced in the beginning of the 2000s. This system performed basic administrative tasks (registration of documents – without digital document management functions, and production of basic statistics). 2. Hungarian courts have been using electronic legal databases since the late 1990s because relatively advanced market solutions were available. 3. The use of traditional office software (word processors) gained momentum when, in 2005, the Hungarian Freedom of Information Act made it mandatory to publish judgments in large numbers. 4. A registration-type court procedure, the company procedure, was started to be digitized very early, so this procedure became almost completely electronic from the end of the 2000s. (see section 3.4.1)

2011 was an important year in court informatics. This is when the new judicial organization was created, in which the administrative tasks were taken over by a separate organization, with a president dedicated to digitization. It was then that four developments were launched that still characterizes court informatics today. 1. Development began, and from 2018 onwards, the so-called E-trial system has been introduced. E-trial is an integrated case management solution that enables simultaneous electronic communication and in-house court case management. (see point 3.)² 2. The court's own video conferencing system, the VIA VIDEO system, has been put in place.³ 3. As a significant part of the Hungarian judiciary still dictates the text of judgments and other documents, the court has purchased a speech-to-text system (dictation software) that facilitates the

2 “E-per 2018” on the website of National Office for the Judiciary. (“E-trial” 2018 in Hungarian) <<<https://birosag.hu/elektronikus-kapcsolattartas/e-2018>> accessed 1 March 2021, and a shorter English version: “Digital Courts” <<https://birosag.hu/en/digital-court>> accessed 1 March 2021.

3 “VIA VIDEO projekt” (in Hungarian) <<https://birosag.hu/video-projekt>> accessed 1 March 2021.

digitization of documents.⁴ 4. The information surfaces of the court have also been renewed, so new search software helps the clients to find out about the publicly available app. 170,000 judgments.⁵ In addition to the four major directions, minor improvements have been launched, such as simple document assembly solutions in certain fields. I will talk about the details of the current court system in point 3., and about the future plans in point 6.

1.3. Technology at the Public Prosecutors' Organisation

Although the office of the public prosecution does not publish information on the IT systems of the organisation, what can be known from the limited resources is that the IT equipment of the prosecution is generally better than that of the courts. This is partly due to the fact that the prosecution is part of the law enforcement system, and here at the turn of the millennium serious developments took place, e.g. it was then that the “RoboCop” system was introduced⁶ in the police and then in the prosecutor's office a software to analyse the information stored in it. As it is visible from the parliamentary budget protocols, the prosecutor's office started the Introduction of an Integrated Records and Document Management System (IIDR), which will replace records management stored in individual island-like systems. The same material notes that the increase in electronic records and data exchange as a result of the pandemic has highlighted the difficulty of data exchange between organizations.⁷ In point 6, I will talk briefly about this trend.

4 “A beszédfelismerő és –leíró szoftverek” (“Speech recognition and speech-to-text software” – in Hungarian) <<https://birosag.hu/beszedfelismero-es-leiro-szoftverek>> accessed 1 March 2021.

5 “Bíróági Határozatok Gyűjteménye” – in Hungarian – “Collection of Judicial Decisions” - <<https://birosag.hu/birosagi-hatarozatok-gyujtemenye>> accessed 1 March 2021.

6 See 18/2011. (IX. 23.) ORFK utasítás a Robotzsaru integrált ügyviteli, ügyfeldolgozó és elektronikus iratkezelő rendszerről (in Hungarian – No. 18/2011 directive of the National Captainty of the Police [NCOP] on the „Robocop” integrated case- and document management system) <<https://net.jogtar.hu/getpdf?docid=A11U0018.0RF&targetdate=&printTitle=18/2011.+%28IX.+23.%29+ORFK+utas%C3%ADT%C3%A1s&getdoc=1>> accessed 1 March 2021.

7 Parliamentary protocol on the explanation of the 2020 budget. Public prosecution section. <<https://www.parlament.hu/irom41/10710/adatok/fejezetek/08.pdf>> accessed 1 March 2021.

1.4. *Technology at Law Firms*

As I mentioned above, the legal profession is extremely fragmented and the gap between large offices and lots of small ones is huge. While large international law firms use relatively sophisticated case and document management software and many already experiment with artificial intelligence (natural language processing) based solutions, for 98 % of law firms the digitization is limited to standard office software and free software used due to state-imposed procedures. I will talk about these in point 3.

2. *Blockchain within the Government*

Neither the public administration, nor the judiciary use blockchain (distributed ledger) technology for registration purposes, and cryptocurrencies are in the grey zone in terms of legality too. Although they are not banned, the Hungarian National Bank has drawn attention to the dangers posed by cryptocurrencies and ICOs several times, most recently in 2020⁸.

3. *Electronic Communication on the Courts*

3.1. *A Short History of Electronic Litigation in Hungary*

Electronic communication gradually appeared in the Hungarian court system. The “E-trial” became effective from 1 January 2013, although it was originally optional only in cases falling within the jurisdiction of the county courts. From 1 July 2015, it has been possible to file an application and other pleadings, as well as their annexes, electronically in all courts and at any stage of civil proceedings. Although the mandatory use has been *de iure* introduced already by the old civil procedure code in the 2009, *de facto* the use of the electronic procedure started after more prolongations only in 2016 with the entering into force of the new code on Civil Procedure. (Act CXXX of 2016.)⁹

8 Magyar Nemzeti Bank, 'Kriptoaluta, nyereségrészesedési jog: fokozott befektetői kockázatok' (mnb.hu, 14 February 2020) <<https://www.mnb.hu/sajtoszoba/sajtokozlomenyek/2020-evi-sajtokozlomenyek/kriptoaluta-nyeresegreszesedesi-jog-fokozott-befektetoi-kockazatok>> accessed 1 March 2021.

9 PéterSzalai, 'Elektronikus kommunikáció a polgári perben' in Gergely G. Karácsony (ed) *Az elektronikus eljárások joga* (Gondolat, 2018)

3.2. Legal Basis

In Hungarian law, electronic communication and administration are a regulated process on two levels. The general basis of the procedure is the law covering all proceedings (ie not only court, but proceedings within all public administration) by Act CCXXII of 2015. on *General Rules for Electronic Administration and Trust Services*.

Section 8 (1) of the law states in general that "The client - (...) - is entitled to perform his / her administrative acts electronically and to make his / her statements electronically before the body providing electronic administration." Accordingly, it makes the electronic process essentially entirely mandatory (Section 9 (1)) saying that electronic administration is the responsibility of all public bodies and legal representatives (lawyers).

On the second level of regulation there are specific laws regulating specific procedures. One of this is the already mentioned Act CXXX of 2016 on Civil Procedure. The law refers to electronic procedure in several places, but Part Ten deals with the use of electronic technologies and devices. The essence of the provisions is that lawyers are obliged to follow the electronic path and can only communicate on paper in exceptional cases.

Another main procedural act is Act XC of 2017 on Criminal Procedure, which regulates the electronic procedure in criminal matters. Chapter XXVII of the Act settles the issue, similarly to the Civil Procedure Act: lawyers are required to communicate electronically with all organization involved to the procedure, including with the courts.

3.3. Details of the electronic communication with courts¹⁰

In this subsection, I deal with the court (electronic trial - E-trial) system in more detail, I only touch on the other two, less important electronic procedures.

<http://real.mtak.hu/80535/1/e-elj%C3%A1r%C3%A1s-jog_Tank%C3%B6nyv_LO.pdf> accessed 1 March 2021.

- 10 The most comprehensive practical guide of the procedure: Péter Homoki: „Tájékoztató az elektronikus ügyintézésről az ügyvédi tevékenységet végzők számára” (in Hungarian: “Guide to Electronic Case Management for Attorneys”) <http://www.homoki.net/images/180901_Tajekoztato_eugyintezes_2018_tc.pdf> accessed 1 March 2021.

The system of judicial electronic communication consists of two subsystems. 1. A central government system and a 2. court system. The two subsystems are further broken down into sub-subsystems.

Ad 1. The central system performs authentication, hosting, and has a form-filling module. Customers download and use the General Form Filling Software¹¹ and the official forms on their own machines.

All other documents (attachments, documents not submitted in printed form) must be converted to .pdf. The documents containing the forms and attachments must then be packed together and signed. This must then be electronically signed and uploaded as a package to the customer gateway, which the customer gateway forwards to the court subsystem. Compliance with the document is guaranteed by the electronic signature.

It should be noted here that instead of the electronic signature, the Document Verification Based on Central Identification function performed by the Central Identification Agent can also be used.

Ad 2. The package is then forwarded to the court subsystem, which then distributes it to the relevant court. This subsystem performs the registration, and it also has certain workflow management and document management functions like search and metadata handling.

3.4. Special Electronic Procedures that are Highly Automatised

3.4.1. Company Registration Procedure.¹²

The company procedure (registration of companies in the business register - and change of its data) is one of the oldest electronic procedures in Hungary. This is an advantage, but also a disadvantage. Since it was first developed, it still represents a completely unique solution.

In Hungary, the business register is maintained by a special court. The procedure in this court is one of the oldest electronic procedures and in some parts fully electronic, fully automated. Its specialty is that it differs

11 Description of the software in Hungarian: „Tudnivalók a nyomtatványkitöltő programokhoz” (in Hungarian – „User Guide to the form filling software”) <https://www.nav.gov.hu/nav.gov.hu/nav/letoltesek/tudnivalok_nyomtatvanykitolto_progra_mokhoz.html> accessed 1 March 2021.

12 Guide of the Company Service of the Government (Cégszolgálat) – “Elektronikus cégeljárás” (in Hungarian – “Electronic Company Registration Procedure”) <<https://ceginformaciosszolgalat.kormany.hu/elektronikus-cegeljaras>> accessed 1 March 2021.

from the e-litigation procedure described above, because it is not done through the central address (client gateway or enterprise gateway), but via normal e-mail. While the process for e-litigation looks like this

Filling out forms> attaching attachments> logging in and identifying in the central system> pre-checking data in the central system> uploading documents to the central system

Until then, the order in the company procedure is as follows

Filling out forms> attaching attachments> packing and signing documents on your own machine> sending the signed file package to the central system, or a dedicated email address > the system checks the data.

3.4.2. *Order for Payment Procedure.*¹³

An order for payment procedure is a pre-litigation non-litigation procedure in which the applicant requests the issuance of an order stating the reasons and, unless the debtor objects, it becomes an enforceable instrument and, if it does, it becomes a lawsuit. The specialty of the procedure is that it is performed by a system operated by the Chamber of Notaries and is only suitable for the enforcement of small monetary claims (less than HUF 3 million).

The payment order procedure is a kind of hybrid system, because the application must be uploaded to the system of the Chamber of Notaries, not by e-mail, but not to the central system operated by the central IT company (NISZ Nemzeti Infokommunikációs Szolgáltató Zrt. – National Infocommunication Corporation¹⁴), but it must be uploaded to a system operated by the Chamber of Notaries.

13 See the dedicated website of the service on the website of the National Chamber of the Hungarian Public Notaries (in Hungarian) <<https://fmh.mokk.hu/#x>> accessed 1 March 2021.

14 <<https://www.nisz.hu/>> accessed 1 March 2021.

The three electronic procedures above can be described in the table below:

	E-trial	Company registration procedure	Order for payment procedure
Method of requesting data: via form / document / mixed (form + attachment option)	Mixed	Mixed	Form
Filling out forms: online or offline	Offline	Offline	Online
Authentication of parties: with electronic signature / otherwise / both possible	Both	Only electronic signature	Both
Submission of documents: uploaded by e-mail / system	By system	By email	By system
Once uploaded, there is a central submission or to the organization's own hosting	Central	Central	Own

It can be seen from the table that the picture is rather mixed regarding the three electronic procedures and well reflects the divergence of the procedures developed independently at different times, which poses a big challenge for lawyers, and especially for small law firms.

4. Online Procedures

We need to divide the subject of online hearings into two, on the one hand, hearings that are held entirely online, and on the other hand, hearings where certain procedural acts are conducted online. (Hybrid systems.) The latter has been used since the enactment of the VIA VIDEO ¹⁵ a video system set up in 2018, which allows certain procedural acts, mainly witnesses, to be heard and recorded. In recent years, Hungarian courts have started to use the system, though not en masse. (200 times in 2019, which is minimal, compared to the some hundred thousand hearings per year.)

Completely online hearings cannot be held in Hungary under the current rules of procedure. However, as a temporary rule in the wake of a

¹⁵ see point 1.2.

pandemic emergency, 74/2020. (III. 31.) Regulation of the Government made it possible to hold e-hearings in both civil and criminal cases. In practice, this has only been applied in civil cases by courts again in very small numbers using Skype for Business. In addition, in civil proceedings, the law allowed proceedings to continue without trial.

There are no more advanced online procedures (such as online dispute resolution systems) in Hungary.

5. Use of Artificial Intelligence, and Automated Decision-making

There is currently no artificial intelligence-based (if we consider machine learning as a distinguishing feature of AI) application in the justice sector. There are currently no fully automated decisions in the justice sector, such are only available in some areas of public administration in Hungary. In the company registration procedure there is a theoretical possibility to make automated (3.4.1) registration, but this has not been used in the past few years.

6. Future Plans

As I indicated earlier, the Prosecutor's Office is currently working on a project to standardize records management. IT developments in the courts are currently underway with much less force than in recent years, with no major development projects on the horizon. There will be developments because of the pandemic on the video systems, and on the extension of the scope of the document assembly system. Although no plans have been made public yet, the development of the current company process, which was developed in the late 1990s and then in its late form in the late 2000s, has been in the air for years. Most law firms have so far been only sufferers and not controllers of digitization, a trend that is likely to continue in the future, as well as the huge IT development gap between large and many small law firms.

Italy

Pierpaolo Marano, Mario Zanin, Enrico Maria Scavone

1. Introduction

Legal Tech¹ is or at least is becoming a structural aspect in the conduct of legal affairs, in particular regarding dispute resolutions in Italy.

Governmental and regulatory initiatives aimed at better defining the legislative framework of Legal Tech have emerged. Moreover, promotional initiatives supported by public and private subjects have been launched. Also, several use cases have been experimented with and developed in legal practice.

This chapter, therefore, explores the state-of-the-art of the Italian legal framework concerning Legal Tech issues, having regard to blockchain and dispute resolution systems².

-
- 1 Legal Technology or "LegalTech" is a term that broadly refers to the adoption of innovative technology and software to streamline and enhance legal services; other synonyms which are used interchangeably are "law tech", "LegalIT", "legal informatics", Marcelo Corrales, Mark Fenwick and Helena Haapio, 'Digital Technologies, Legal Design and the Future of the Legal Profession' in Marcelo Corrales, Mark Fenwick and Helena Haapio (eds) *Legal Tech, Smart Contracts and Blockchain* (Springer, 2019) 1.
 - 2 In this context, Legal Tech refers to platforms, IT services, and software that make law firms and lawyers more efficient in performing their activities and can be defined as the integration of information technology services and software in a legal context, as well as the development of legal platforms and their applications, Mark Fenwick, Wulf A. Kaal and Erik P. M. Vermeulen, 'Legal Education in a Digital Age. Why Coding Matters for the Lawyer of the Future' in Marcelo Corrales Compagnucci, Nikolaus Forgó, Toshiyuki Kono, Shinto Teramoto and Erik P. M. Vermeulen (eds) *Legal Tech and the New Sharing Economy* (Springer, 2020) 110. LegalTech, therefore, comprises information technology services applied to court proceedings and disputes resolution mechanisms, which represent crucial aspects of the legal context and the provision of legal services, since "*judgement is the fundamental act of law as well as the fundamental act of thought*", Francesco Carnelutti, *La prova civile. Parte generale. Il concetto giuridico della prova* (Giuffrè, 1992) 9. In other words, the advent of digital justice, which offers online resolution of disputes and conflicts, is to be considered Legal Tech, Giuseppe Zaccaria 'Figure del giudice:

The structure of the chapter is as follows. Paragraph 1 focuses on blockchain and distributed ledgers technologies. Paragraphs 2 focuses on digital tools applied to court proceedings in civil law matters, and paragraph 3 highlights novelties emerging in this concern due to the COVID-19 pandemic. Paragraph 4 concerns alternative dispute resolution mechanisms in financial sectors and applying technology within this field. At least, Paragraph 5 presents concluding remarks.

2. *Blockchain and distributed ledger technologies (DLTs)*

Blockchain technology fall within the more general concept of distributed ledger technologies ('DLTs')³, even though both terms are often used interchangeably. The Italian legislator introduced a legal definition of DLTs and smart contracts, and institutional actors' initiatives were launched to define the relative legislative framework and promote their uses. In the meantime, several projects were developed in legal practice to exploit the benefits of DLTs. Each of these issues will be explicitly examined in the present Paragraph, starting from the definition of DLTs adopted by the Italian legislator.

2.1. *Legal definition of DLTs and smart contract*

'DLTs' and smart contracts are defined under Italian law⁴.

In particular, DLTs means IT technologies and protocols using a ledger that is shared, distributed, replicable, simultaneously accessible and structurally decentralised on a cryptographic basis to allow the recording, validation, updating and storage of both not encrypted and encrypted data, which may be verified by each participant and which may not be altered and modified. A smart contract is defined as a computer program that

calcolabilità, precedenti, decisione robotica' in *Rivista di diritto ir. civile.*, (Cedam, 2020) 2, 277.

3 Gregorio Gitti and Marisaria Maugeri, 'Blockchain-Based Financial Services and Virtual Currencies in Italy' in *EuCML*, 2020, 43; for further information, see Technical Committees ISO TC 307 available at <<https://www.iso.org/committee/6266604.html>> accessed 24 February 2021.

4 See Art. 8-ter of Decree-Law no. 135 of 14 December 2018, as converted with amendments by Law no. 12 of 11 February 2019.

operates on DLTs and whose execution automatically binds two or more parts based on predefined effects from the same.

Both definitions have been criticised as they violate the principle of technological neutrality. Also, the definition of a smart contract binds the fulfilment of the written form requirement to the parties' identification. Identification that occurs according to a process that will have to be regulated by the Agency for Digital Italy (AgID)⁵.

Storing information with DLTs produces the legal effects of electronic time stamps under Art. 41 of EU Regulation no. 910/2014 of the European Parliament and the Council on electronic identification and trust services for electronic transactions in the internal market ('eIDAS Regulation')⁶. Similarly, it is provided that smart contracts meet the requirement of written form following computer identification of the parties involved through a process with the requirements set by the AgID⁷.

Unfortunately, AgID has not yet adopted the provided guidelines. Notwithstanding this, the storing of information with DLTs creates the same legal effects of electronic time stamps, with the consequence that such storing can be meant as creating data in electronic form, which binds

5 Giusella Finocchiaro, 'Intelligenza artificiale e responsabilità' (2020) 2 Contr. impr. 713; see also Giusella Finocchiaro, 'Intelligenza artificiale e protezione dei dati personali' (2019) Giurisprudenza Italiana.1670-1677, which affirms that *"Instead the Italian definition attempts to describe blockchain technology and smart contract applications, at their current state, crystallising them. In addition to this, it carries out a further operation that is useless and, indeed, harmful. It attributes to smart contracts, after having uselessly defined, according to that process contrary to the principle of technological neutrality that was explained earlier, the written form, only if the parties are identified according to a process that will be regulated by AgID. Now, the identification of the parties, according to general principles, is not a requirement of the contract. Besides that, the written form of computer document is a matter already extensively regulated by the Digital Administration Code, which certainly does not require further clarification"*.

6 See Art. 8-ter, par. 3, Decree-Law no. 135/2018. The following par. 4 provides that *"within 90 days from the entry into force of the law, the Digital Italy Agency sets the technical standards that technologies based on distributed ledgers must possess in order to produce the effects referred to in paragraph 3"*.

7 The Agency for Digital Italy ('AgID') is an Italian public agency established by Decree-Law no. 83 of 22 June 2012, converted with amendments by Law no. 134 of 7 August 2012. AgID performs tasks to pursue the highest level of technological innovation in public administration's organisation and development. Among its tasks, AgID accredits or authorises subjects (public or private) that carry out certain digital field activities (such as electronic storage, digital certificates, time stamps, certified electronic e-mail, PagoPA system of payments to public administrations).

other data in the electronic form to a particular time, establishing evidence that the latter data existed at that time⁸.

The eIDAS Regulation provides two different time stamping mechanisms, i.e. "qualified electronic time stamp" and simple electronic time stamp. The "qualified" time stamp shall enjoy the presumption of the (i) accuracy of the date and the time it indicates and (ii) the integrity of the data to which the date and time are bound. A simple electronic time stamp does not enjoy the same legal presumption but shall not be denied legal effect and admissibility as evidence in legal proceedings solely because it is in an electronic form or because it does not meet the qualified electronic time requirements stamp⁹.

The AgID's guidelines should help set out and clarify the requirements to assess when and whether DLTs storing of information is considered a time stamping mechanism or a qualified time stamping mechanism, with the consequences deriving from there. Until adopting such guidelines, it is left to the judiciary to consider on the specific circumstances of the case at hand what kind of legal effect DLTs storing of information creates.

In conclusion, the Italian legal system explicitly recognises DLTs and smart contracts and sets forth a legislative framework governing their uses and legal effects, even though the same is currently incomplete. In this contest, the subsequent Subparagraph illustrates institutional and governmental initiatives that have been launched and aimed at better defining the legislative framework of DLTs and promoting their uses.

2.2. Institutional and governmental initiatives

The Italian Government plans to develop a strategy strictly focused on DLTs and blockchain. Several institutional actors have been active in the Italian digitalisation process, in connection to which DLTs are considered to be a relevant tool.

The Ministry of Economic Development ('MiSE') has been actively involved in blockchain and DLTs development, supporting the Italian Government in identifying a national strategy for blockchain and DLTs. The MiSE started a public consultation concerning a summary of a document drafted by appointed experts to gather comments, suggestions or other

⁸ Art. 3, par. 1, num. 33), eIDAS Regulation.

⁹ Art. 41, eIDAS Regulation. Art. 42, eIDAS Regulation, sets forth the requirements to be met for an electronic time stamp to be "qualified".

useful elements about DLTs.¹⁰ At the end of the consultation period, the Italian Government was meant to complete a national strategy draft for blockchain and DLTs, based on the comments received. However, such a national strategy is still to be adopted¹¹.

The Ministry of Economic and Finance ('MEF') set up the FinTech Coordination Committee¹² to identify objectives, define programs and implement actions to promote techno-finance development, together with

10 MiSE appointed 30 experts to provide an overview of the current situation, to identify possible developments and the consequent socio-economic fallout from the introduction of solutions based on DLTs. Based on the analyses and observations made, the experts developed a document named "Proposals for an Italian strategy on technologies based on shared registers and Blockchain". The document contains the guidelines to be followed to enable the development and diffusion of the technology and define the national strategy's reference context; see the summary of the document *Proposte per la Strategia italiana in materia di tecnologie basate su registri condivisi e Blockchain. Sintesi per la consultazione pubblica*, published by MiSE and available at <<https://www.mise.gov.it/index.php/it/consultazione-blockchain#documento>> accessed 25 March 2021.

11 In April 2018, the 28 EU Member States founded the European Blockchain Partnership, a form of political cooperation to develop a European infrastructure for services circulating on the blockchain ('EBSI'), for further information see (n 1206); Italy participated in the first phase of the creation of EBSI infrastructure with three nodes managed respectively by Infratel Italia (the in-house company of the MiSE), Istituto Nazionale della Previdenza Sociale (INPS) and the Politecnico di Milano. Moreover, in May 2020, the use case supported by Italy on blockchain management of social security data was chosen for implementation on EBSI in 2020-2021, see *Proposte per la Strategia italiana in materia di tecnologie basate su registri condivisi e Blockchain. Sintesi per la consultazione pubblica*, published by MiSE and available at <<https://www.mise.gov.it/index.php/it/consultazione-blockchain#documento>> accessed 25 February 2021. Also, AgID and Infratel Italia are promoting, together with other entities, the IBSI (Italian Blockchain Service Infrastructure) project, which aims to test the design and development of an ecosystem-based on DLT for the delivery of digital public services, in line with the European strategy concerning EBSI, for further information see <<https://www.infratelitalia.it/archivio-news/notizie/innovazione-blockchain-nasce-l-infrastruttura-nazionale>> accessed 25 February 2021.

12 FinTech is considered as "a term used to describe technology-enabled innovation in financial services that could result in new business models, applications, processes or products and could have an associated material effect on financial markets and institutions and how financial services are provided", European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions. FinTech Action plan: For a more competitive and innovative European financial sector' (eur-lex.europa.eu, 2018).

the introduction of FinTech regulatory sandboxes¹³. The Committee was institutionalised by Law no. 58 of 28 June 2019¹⁴, which also introduced into the national legal system a tool to allow experimentation of FinTech applications¹⁵. Through new technologies, such as artificial intelligence and DLTs, these applications can enable innovation of services and products in the financial, credit, insurance and regulated markets sectors. Conditions and methods for carrying out these experiments are regulated by the MEF. A public consultation on the draft regulation concerning the FinTech experimentation was launched by the MEF and concluded on the 31 March 2020. The draft regulation lays down rules on the composition, operating procedures and powers of the Committee and identifies the subjective and objective requirements and the methods of access to experimentation. The final regulation was adopted through MEF Decree no. 100 of 30 April 2021, published in the Official Gazette no. 157 of 2 July 2021: it is expected that several FinTech projects may increase also involving DLTs.

Furthermore, the Minister for Technological Innovation and Digital Transition of the Italian Republic was established in 2019. The Minister is placed in charge of the Department for Digital Transformation ('DTD')¹⁶. The Department for Digital Transformation is a department of the Presidency of the Council of Ministers responsible for defining policies for

13 Regulatory sandboxes are referred to as experimentation related to techno-finance (FinTech) activities aimed at the pursuit, through new technologies such as artificial intelligence and distributed registers, of the innovation of services and products in the financial, credit, insurance and regulated markets, see Art. 36, par. 2-*bis*, Decree Law no. 34 of 30 April 2019, converted with amendments by Law no. 58 of 28 June 2019.

14 Art. 36, par. 2-*octies*, Decree Law no. 34 of 30 April 2019, converted with amendments by Law no. 58 of 28 June 2019, provides for the establishment of the FinTech Committee at the Ministry of Economy and Finance (MEF). The Committee brings together as permanent members: MEF, MiSE, the Minister for European Affairs, the Bank of Italy, Italian Supervisor on Financial Markets ('Consob'), the Institute for Insurance Supervision ('IVASS'), the Competition and Market Authority (Agcm), the Guarantor for the Protection of Personal Data, AgID and the Revenue Agency. The Fintech Coordination Committee was created initially with the signing of a memorandum of understanding between the entities above.

15 Decree-Law no. 34 of 30 April 2019, converted with amendments by Law no. 58 of 28 June 2019, introduced the discipline of so-called FinTech regulatory sandboxes (see Art. 36, par. 2-*bis* to 2-*septies*).

16 The competencies of this Minister are similar to those of the Department for Innovation and Technology (DIT) active from 2001 to 2011. The structure was established by the Decree of the President of the Council of Ministers of 19 June 2019.

the country's modernisation with digital technologies and coordinating and implementing digital transformation programs. This Minister supported projects concerning, in particular, the “Sistema Pubblico di Identità Digitale” (‘SPID’) and the “Carta d'Identità Elettronica” (‘CIE’). They are identification tools for accessing the Public Administration's online services and some services provided by private individuals¹⁷. The Minister, however, could play a role together with other institutional actors in the development of DLTs, especially within the Public Administration. The Italian legislator recently introduced rules concerning a platform for digital notifications of acts, measures, notices and communications of the Public Administration. The legislator admits the use of DLTs in implementing such a platform to ensure the authenticity, integrity, non-modifiability, readability and retrievability of IT documents made available by administrations¹⁸.

In conclusion, several institutional actors have played a role in developing a better legal framework concerning DLTs and promoting their uses in the legal sector. However, the initiatives are far from being considered complete. Nonetheless, different applications of DLTs in the conduct of legal affairs have been experimented and developed, and the most relevant will be discussed in the next Subparagraph.

2.3. Applications of DLTs in the legal sector

The use of blockchain and DLTs has found remarkable development in some sectors of legal affairs. The notarial sector launched DLTs and blockchain related projects. These technologies were experimented about Alternative Dispute Resolution (‘ADR’) mechanisms, in particular within the banking sector and with specific reference to bank guarantees. No blockchain or DLTs use is made within judicial proceedings.

As anticipated, the use of blockchain has found remarkable development in the notarial sector. The notary's task is to attribute public faith to documents received¹⁹. For individual acts or prudential reasons, citizens

17 All public administrations shall integrate SPID and CIE in their information systems, as the only digital identity systems to access digital services. Thanks to SPID and CIE, access to public services becomes uniform throughout the country; for further information, see <<https://innovazione.gov.it/>> accessed 25 February 2021.

18 Art. 26, Decree-Law no. 76 of 16 July 2020, converted with amendments by Law no. 120 of 11 September 2020.

19 Art. 1, Law no. 89 of 16 February 1913.

need to recur to authentication services provided by the notaries. This authentication causes costs and the necessary intermediation of notaries in the carrying on of transactions and business. For these reasons, within the national congress of notaries held in October 2017, a project to create "Notarchain" was presented. The project consists of a blockchain in which information is not managed by anonymous subjects but by Italian notaries²⁰. This technology aims at ensuring speed, absence of costs for the citizen and diffusion on a global scale while at the same time correctly facing the potential criticalities of a decentralised register model with no checks on the accuracy of the data entered. "Notarchain" technology intends to provide the certainty of the unchangeability of the data entered. Also, it aims to provide a prior check on the parties' identity and the correctness and completeness of the data entered in the chain. Notarchain was thought for storing and managing all types of digital files, and therefore its use may be extended to many fields of application (e.g. drawings, works of Art, movable property in general).

The same blockchain technology is based on a second project presented on the same occasion with SIAE²¹, which involves managing the deposit and archiving of source codes. The latter project aims at enabling citizens to deposit with any Italian notary the source code of a new program, obtaining in real-time the insertion in a register shared with SIAE, which allows the immediate attribution of a timestamp and therefore the certainty that no one will be able to challenge its authorship in the future.

Blockchain and smart contracts were experimented by ADR mechanisms and mediation. An agreement²² between Jur, an international reference in the field of blockchain legal tech, and Teleskill On-Line Mediation, an ADR system application in agreement with the Cassa Nazionale Fo-

20 For further information see: <<https://www.notariato.it/it/content/il-notariato-presenta-%E2%80%9Cnotarchain%E2%80%9D-la-blockchain-certificata-dei-notai-e-i-registri>> accessed 25 February 2021. see also Massimo Palazzo, 'Informatica e diritto. Un dialogo necessario' (2019) 5 *Notariato*, 497; Cesare Licini, 'Il notaio dell'era digitale: riflessioni gius-economiche' (2018) 2 *Notariato* 142; Michele Nastri, 'Registri sussidiari, Blockchain: #Notaio oltre la lezione di Carnelutti' (2017) 4 *Notariato*, 369.

21 SIAE (Società Italiana degli Autori ed Editori) is the Italian copyright collecting agency.

22 For further information, see <<https://www.teleskill.it/elearning-blog/mediazione-on-line-presto-anche-su-blockchain>> accessed 25 February 2021; see also <<http://convenzioni.cassaforense.it/attivita%C3%A0-professionale/strumenti-informatici/mediazione-online/teleskill>> accessed 25 February 2021.

rence²³, intends to allow parties to access binding arbitration or mediation at the click of a button, resulting in significant savings in time and costs²⁴. Teleskill On-Line Mediation currently allows to conduct and define mediation on the internet, leaving the parties and the lawyers comfortably in their offices, or at home, with no need to install any software. Teleskill On-Line Mediation represents a virtual meeting room that allows the practice's management at a distance, without travel costs and optimising users' time. If the mediation is successful, Teleskill On-Line Mediation is prepared to manage the exchange of documents by signing them digitally and concludes the procedure contextually and electronically. Unfortunately, no data is publicly available on the actual use of this tool.

The Italian Institute for insurance supervision (IVASS) and CeTIF (a research center operating within the premises of the Università Cattolica of Milan) collaborated for the development of the first experimentation of blockchain technology in the insurance field, thanks to an initiative also led by ANIA, the Italian Insurers Association. The project entailed an ADR service to resolve disputes between customers and insurance companies dealing with motor liability in the pre-litigation phase. The main phases of the ADR project envisaged the exchange of the amounts entered into the platform by the counterparties for the resolution of a dispute with legal value settled based on the parameters defined for the experimentation, accepted by the client/legal representative and guaranteed by the "Trusted Smart Contract" on the blockchain (a computer protocol that facilitates the execution of the contract)²⁵. Two issues were predominant among those arising within the experimentation. The first one concerned how to reconcile the legal terms provided for by the law for the settlement of

23 The Cassa nazionale di previdenza e assistenza forense (also known as Cassa Nazionale Forense) is the Italian social security institution for lawyers. All Italian lawyers registered with the Bar must be registered and covered with such an institution.

24 Michele Giaccaglia, 'Considerazioni su blockchain e smart contracts (oltre le criptovalute)' (2019) 3 *Contr. impr.*, 941; see also Zaccaria (n 2), which affirms that the mediation culture was created to remind us of the possibility of dialogue and doubts on the dialogue and empathy that can arise from computer automation's cold impersonality. During COVID-19 Pandemic, Law no. 70 of 25 June 2020, converting Decree-Law no. 28 of 30 April 2020, has introduced a new case of so-called "compulsory" mediation in addition to those enshrined in Legislative Decree no. 28 of 4 March 2010, by adding par. 6-ter to Art. 3 of Decree-Law no. 6 of 23 February 2020, converted with amendments by Law no. 13 of 5 March 2020.

25 For further information, see <<https://www.cetif.it/le-assicurazioni-avviano-la-sperimentazione-blockchain/>> accessed 25 February 2021

the dispute through mediation based on the traditional "physical mediation" – with the immediacy of blockchain technology in the agreement's execution reached. The second one concerned how to ensure that the people acting through the blockchain were correct representative of parties involved.

The use of DLTs and connected smart contracts is also increasing in the financial sectors. In recent years, the European surety market has notably grown. Estimates made by CeTIF showed that in 2019 alone, the value of the surety market in Italy, in terms of premiums and commissions, reached around €1 billion. In contrast to the European situation strongly led by banks, in the Italian market the situation is the opposite, with insurance companies accounting for more than 64% of the market²⁶. However, problems emerged given the lack of digitalization of surety process phases; indeed, the latter are completely paper-based, and this makes it difficult for the beneficiary to verify the authenticity of the surety and the information contained, thus exposing him/her to a high risk of fraud. In this respect, the Bank of Italy center of innovation, "Milan Hub" is launching together with CeTIF, a blockchain-based project concerning "digital" sureties. The project aims at significantly reducing fraud by dematerialising surety documents and providing reliable information to all supply chain actors²⁷. The project would entail the creation of a digital item called "asset" that can be transmitted and manipulated via DLT through the use of smart contracts and that describes a relevant subset of characteristics of the surety act and life cycle (e.g. references to the digital identities involved in the process, economic and temporal details, information on milestones for release, enforcement). Blockchain technology would then play a fundamental role in allowing the digitalisation of sureties managing process. The testing of

26 Source: Impact Study CeTIF – SIA.

27 For further information see <<https://www.ilsole24ore.com/art/fintech-fideiussioni-digitali-e-onboarding-primi-test-milano-hub-banca-d-italia-ADt5VaFB>> accessed 25 February 2021.

blockchain technology, conducted with leading technology partners²⁸, has been successful and should be ready for industrialisation²⁹.

In conclusion, some sector of legal affairs showed individual activism in the implementation of DLTs and blockchain-related projects. Economic operators and professionals, in some instances together with trade associations and Supervisory Authorities, are willing to experiment and develop DLTs in order to gain their benefits and face correctly potential criticalities. Although some achievements have been so far collected, the process is currently at its starting phases and yet not consolidated.

Having ascertained the above regarding DLTs, the present chapter goes on examining in the next Paragraph how digital tools are affecting judicial proceeding in civil law matters.

3. *Legal Tech and dispute resolutions*

This Paragraph explores the Italian e-justice experience of developing the Processo Civile Telematico ('PCT'), that is the civil trial on-line. The term PCT substantially means the set of dispositions intended to adapt the procedural rules (in their specific fields of operation) to the new technologies³⁰. The PCT project represents a critical e-Government plan in Italy, aiming fundamentally at simplifying formalities, including notification, in the judicial proceeding³¹.

28 According to the CeTIF website, more than thirty organisations from the insurance, banking and financial markets sectors, the Public Administration and businesses, as well as associations and institutions - including the Guardia di Finanza – took part in experimentation phase of the national "Fideiussioni Digitali" project promoted by CeTIF, in collaboration with the Bank of Italy and IVASS and other economic operators; for further information see <<https://www.cetif.it/fideiussioni-digitali-oltre-30-realta-italiane-insieme-per-il-progetto-di-cetif-universita-cattolica-sia-e-reply>> accessed 25 February 2021.

29 Another initiative of Bank of Italy Milan Hub, together with CeTIF, currently in the testing phase, is called O-KYC (that stands for: Onboarding - Know Your Customer), which aims to simplify, streamline and reduce, through DLT/blockchain technology, the time and costs of the customer onboarding process, allowing the control of personal data by the citizen/user, with advantages for customers in terms of simplified processes and data processing by banks, public authorities, utilities and telephone companies; for further information see (n 1223).

30 Claudio Consolo, *Spiegazioni di diritto processuale civile*, (2nd ed., Giappichelli 2014) II, 393.

31 Vito Amendolagine, 'Percorsi di giurisprudenza - il processo civile telematico a cinque anni dalla sua introduzione' (2020) 1 *Giurisprudenza Italiana*, 211; The

The PCT has been the result of various legislative interventions over time³². The first discipline was introduced by the Decree of the President of the Republic no. 123 of 13 February 2001 ('D.P.R. 123/2001')³³. Other regulations followed³⁴, including the Legislative Decree no. 82 of 7 March 2005 (the 'Digital Administration Code') that sets forth rules concerning computer documents' legal effects³⁵.

PCT project was developed by the IT Department of the Ministry of Justice since 2001: the PCT strives to increase the availability of online services through a two-way data and document interchange communication system. It provides applications to allow interoperability among a considerable number and variety of external users (lawyers, experts, public administrations officials, citizens, private companies executives, etc.), and courts' internal users (judges, clerks, etc.) involved in civil cases, using a high-security PKI architecture with up-to-date technical features compliant with specific legal provisions and general legislation on the matter, Davide Carnevali, 'Great Success that Was on the Brink of Failure: The Case of a Techno-Legal Assemblage in the "Civil Trial On-Line" System in Italy' (2019) 8(2) EQPAM, 21-35.

- 32 A summary is provided by Francesca. Ferrari, 'Il processo civile telematico' in Lotario Ditttrich (ed) *Diritto Processuale Civile* (Utet Giuridica, 2019) I, 1245.
- 33 Named "Regulation on the use of computerised and telematic tools in civil proceedings, in administrative proceedings and in proceedings before the jurisdictional sections of the Court of Auditors". Then, Art. 51, Decree-Law no. 112 of 25 June 2008, converted with amendments by Law no. 133 of 6 August 2008, provided that "notifications referred to in the first paragraph of Art. 170 of the Code of Civil Procedure, notification referred to in the first paragraph of Article 192 of the Code of Civil Procedure and any other communication to the consultant shall be effected by electronic means to the electronic address communicated pursuant to Art. 7 of Regulation referred to in Presidential Decree no. 123 of 13 February 2001", while Art. 4 of Decree-Law no. 193 of 29 December 2009, converted with amendments by Law no. 24 of 22 February 2010, established, among other things, that communications and notifications by telematic means in civil and criminal proceedings shall be made by certified electronic mail.
- 34 See Decree-Law no. 179 of 18 October 2012, converted, with amendments, by Law no. 221 of 17 December 2012 ('Decree Law 179/2012'), and Decree-Law no. 90 of 24 June 2014, converted with amendments by Law no. 114 of 11 August 2014.
- 35 Decree of the Minister of Justice no. 44 of 21 February 2011, named "Regulation on the technical rules for the adoption of information and communication technologies in civil and criminal proceedings" ('d.m. 44/2011') and its implementing provisions shall also be taken into account, in particular the Order of the Director-General for Automated Information Systems of the Ministry of Justice of 16 April 2014, named "Technical specifications provided for in Article 34 par. 1 of the Decree of the Minister of Justice dated 21 February 2011 no. 44" ('Technical specifications of 16 April 2014').

The PCT offers subjects the possibility of managing the various procedural activities in dematerialised form, allowing: (i) the notification and communication of judicial and procedural documents through certified electronic mail³⁶; (ii) the filing of procedural documents and documentary shreds of evidence in telematic mode; (iii) the creation of computer trial dossier; (iv) the creation of procedural documents or copies thereof in digital format; and (v) through the telematic transaction, the payment of the fees due for access to justice services³⁷.

It is undeniable that some procedural institutions are undergoing a veritable palingenesis that forces a rethinking of the same, as a result of the application of the new technologies³⁸.

The PCT produces some practical benefits that may simplify access to justice and lawyers' provision of services³⁹.

However, after few years from the adoption of the PCT, exponents of the legal sector highlighted some critical issues for aspects concerning its underlying mechanism⁴⁰ and interpretation of its rules⁴¹. Furthermore, the

36 According to Art. 1, par. 1, lett. *v-bis*), Digital Administration Code, certified electronic e-mail means "a communication system capable of attesting the sending and delivery of an e-mail and providing third-party receipts"; see also Art. 1, par. 1, lett. g), Decree of the President of the Republic no. 68 of 11 February 2005.

37 Art. 30, d.m. 44/2011.

38 Giuseppe Ruffini, 'Il Processo Civile di fronte alla svolta telematica' (2019) 4-5 Riv. dir. proc 973.

39 In particular, it: helps to avoid long queues for the filing of documents at the Court's Registry; allows implementing paperless and environmentally friendly procedures; according to some, ensures the certainty of filing documents at the Registry; makes it possible to extract copies from the computer trial dossier, guaranteeing certification even for personal notifications and also judges' orders are easily downloaded; notifications take place between lawyers without the intermediation of other subjects (such as postal agents), and lawyers can make several deposits of documents at Courts located in different districts without the need to move.

40 For example, it has been highlighted that, when filing a procedural document within an already formed computer dossier trial, PCT cannot allow direct uploading through remote access. In such cases, telematic filing occurs through the transmission of a certified electronic mail message to the address of the Court's clerk. Therefore, the Court's clerk's activity is indispensable for the insertion of documents in the computer trial dossier, see Ruffini, (n 38). Indeed, only when the Court's clerk accepts the filing, the document enters the computer dossier and become visible to the other party and the judge, see Ministry of Justice Directorate General Circular of 23 October 2015, par. 5.

41 Critical issues have been highlighted concerning the judiciary's formalistic approach in the interpretation of the rules governing the PCT. For example, notifi-

incomplete digitalisation of the procedure has been considered to be a problem. Indeed, it has been highlighted that, as a general rule, the parties continue to have the right to file their introductory acts and attached documents in paper format at the Registry; similarly, the judge has the right to file his measures in paper format⁴². It is then a practice often adopted by lawyers at a local level to handle a "courtesy copy" (i.e. in paper format) of the procedural documents to the judge, in addition to the telematic filing of the computer version of the documents⁴³.

In civil matters, Italy has been considered to have relatively highly developed IT facilities⁴⁴. Notwithstanding this, there is still a problem with the length of civil proceedings⁴⁵. Therefore, the explanation for these results may lie in the structural difficulties with which Italy is faced. Judicial time is dependent on specific procedural features, which may account for some delay in the processing of cases⁴⁶, not necessarily connected with the application of digital tools to judicial proceedings.

cations of procedural acts can be made at certified electronic mail (PEC) addresses resulting from public lists identified by the law in this respect. Therefore, the Italian Supreme Court ruled that notifications made to a PEC address referable - depending on the cases - to the party personally or to the defender, but different from the one entered in the public lists are always declared null and void by the judiciary, see Cassazione civile, sec. III, 8 February 2019, n. 3709. The consequence is that even when the notification is made at a PEC address indicated by the party personally or by the defender, it shall always be null and void if different from that resulting from public lists, see Ruffini, (n 38).

42 Ministry of Justice Directorate General Circular of 23 October 2015, par. 2; furthermore, Art. 16-*bis*, par. 9, Decree-Law 179/2012 states that the judge may order the filing of hard copies of individual acts and documents for specific reasons.

43 Ministry of Justice Directorate General Circular of 23 October 2015, par. 4. Also, PCT has not been implemented for disputes before "Giudice di Pace", which is an honorary judge competent for civil disputes that do not overcome a certain amount of value, see Cassazione Civile, Sec. II, 29 September 2020, n. 20575.

44 Council of Europe European Commission for the efficiency of justice ('CEPEJ'), 'European judicial systems – Efficiency and quality of justice' (CEPEJ, 2016), 60.

45 In 2016, it amounted to 1.4 years in the first instance, 2.7 years in the second instance and four years in the third, European Commission, 'Country Report Italy 2018 Including an In-Depth Review on the prevention and correction of macroeconomic imbalances' (eur-lex.europa.eu, 2018) 46.

46 CEPEJ. See also European Commission, (n 45); CEPEJ 'Length of court proceedings in the member states of the Council of Europe based on the case-law of the European Court of Human Rights' (CEPEJ, 2018). However, according to (n 1240), the situation is slowly improving with the implementation of Italy's reforms in this concern. On the 5th December 2019, the Italian Council of Ministers approved a draft law entitled "Draft bill delegating authority to the

In conclusion, PCT is a developed reality in Italy. It provides beneficial effects but some exponents highlighted critical issues following its implementation. PCT rules were substantially affected during the COVID-19 pandemic, as better described below in Paragraph 3; it should be then assessed how PCT functioning will be definitely shaped for the future and correctly face critical issues still emerging, in order to ensure the proper functioning of the process and achieve better results.

The following Subparagraphs present a more detailed overview of the functioning of certain aspects of the PCT.

3.1. *Notifications of procedural documents by electronic means*

The PCT refers to certified electronic mail as the "place" of communication through which the addressee can be reached with reasonable legal certainty and technological ease⁴⁷.

Art. 4 of Decree-Law no. 193 of 29 December 2009⁴⁸, indeed, sets forth that communications and notifications by telematic means in civil proceedings shall be made by PEC. Transmission of documents through PEC is considered equivalent to notification by mail, and the date and time of transmission and receipt of a document may be relied upon against third parties⁴⁹.

Therefore, notifications can nowadays be carried out directly by lawyers⁵⁰. They can send a PEC message to the addressee whose PEC address appears in the public lists identified by the law⁵¹. The lawyer can

government for the efficiency of the civil process and for the revision of the regulation of alternative dispute resolution systems": the bill has been submitted to the Senate for discussion at no. 1662 and its under consideration

47 Ferrari (n 32) 1278. In this sense, Art. 1, par. 1, lett. n-ter), Digital Administration Code, defines digital domicile as "an electronic address elected at a certified electronic mail service or a qualified certified electronic delivery service", as defined by eIDAS Regulation, "valid for the purposes of electronic communications having legal value".

48 Converted with amendments by Law no. 24 of 22 February 2010.

49 Art. 48, Digital Administration Code.

50 Art. 3-bis, Law no. 53 of 21 January 1994.

51 These are the General Register of Electronic Addresses managed by the Ministry of Justice ('ReGInde'), the National Index of Digital Domiciles of Companies and Professionals ('INI-PEC register'), the Register of Companies, the Register of Public Administrations ('PA register') and the National Index of Digital Domiciles of Natural Persons and other private law entities not required to be registered in

notify his acts (i.e. writ of summons) and acts of a judicial nature (i.e. judgments, orders)⁵². In case the document to be notified does not consist of a computer document, the lawyer can extract a computer copy of the original document on an analogue medium, certifying that it conforms to the original document and proceed by sending it through PEC.

The PEC contains the document to be notified in .pdf format, any power of attorney in .pdf format, the notification report prepared on a separate computer document and signed with a digital signature. The procedural documents notified together with the receipt of acceptance and delivery will be part of the “telematic bag” to file in the Court’s Registry, as better explained below.

Notification by PEC shall be completed for (i) the notifying party, at the moment when the receipt of acceptance is generated by the PEC service’s operator and (ii) the addressee, at the moment when the delivery receipt is generated by the PEC service’s operator⁵³.

In all cases in which the lawyer has to provide proof of notification, and it is not possible to provide such proof by electronic means, the lawyer can extract an analog copy of the PEC message and the receipt of acceptance and delivery. The lawyer attests the conformity with the documents from which they are taken under Art. 23 of the Digital Administration Code⁵⁴.

Furthermore, when the law provides that notifications of acts to the lawyer are to be performed, at the request of the party, at the Registry of the judicial office, notifications by the means mentioned above can be made only when it is not possible, for reasons attributable to the addressee, to execute them at the PEC address shown in public lists⁵⁵. In order to

professional registers or in the register of companies, see Art. 16-ter, Decree-Law no. 179/2012; Ruffini (n 1234), note 15; see the changes made by Decree-Law no. 179/2012, which introduced Art. 3-bis to the Digital Administration Code providing for the “digital domicile of the citizen”.

52 Art. 3-bis, par. 2, of Law no. 53 of 21 January 1994, as amended under art. 16-undecies, Decree-Law 179/2012.

53 Art. 3-bis, par. 3 to Law no. 53 of 21 January 1994. See also Decree of the President of the Republic no. 68 of 11 February 2005, which sets forth rules governing the use of certified electronic mail. For timely executed notifications, according to Art. 16-septies, Decree-Law 179/2012, telematic notifications shall be subject to Art. 147 of the Code of Civil Procedure; therefore, if notification occurs after 9 p.m., it shall be deemed to have been made at 7 a.m. on the following day.

54 Art. 9, par. 1-ter, to Law no. 53 of 21 January 1994.

55 Art. 16-sexies, Decree-Law 179/2012.

avoid that, in the presence of a digital address in the public lists, notification to the lawyer is made at the Registry and not by PEC⁵⁶.

Following the same approach, Art. 16 of Decree-Law 179/2012 sets forth that, in civil proceedings, communications and notifications by the clerk's office shall be made exclusively by electronic means to the PEC address appearing in public lists or any case accessible to public administrations. Also, it provides that notification to persons required by law to have a PEC address and who have not provided or communicated such an address is made by filing the documents with the Court's Registry. The same procedures shall be adopted in non-delivery of the PEC message for reasons attributable to the addressee. Lastly, the party whose PEC address is not included in a public list but appears in Court in person may indicate the PEC address at which he/she wishes to receive communications and notifications relating to the proceedings. These dispositions are meant to ensure that communications and notifications are always executed by PEC, apart from specific circumstances.

3.2. *Filing of procedural documents and evidence by electronic means*

According to Art. 16-*bis*, Decree-Law 179/2012, in civil proceedings, filing of procedural acts and documents by lawyers of the parties that have already appeared before the Court shall take place exclusively by telematic means, in compliance with the rules and regulations concerning the signing, transmission and receipt of electronic documents⁵⁷. However, the President of the Court may authorise the filing of the mentioned documents by non-telematic means when the computer systems of the justice domain are not functioning, and there is an urgent need.

For documents other than those just mentioned, it is possible but not mandatory to proceed with their telematic filling: this would be the case for the introductory acts and the first act of defense of a civil proceeding⁵⁸. The Supreme Court of Cassation has specified that the digital signature

⁵⁶ Ruffini (n 38).

⁵⁷ The same is provided for civil appeal proceedings, as enshrined in Art. 16, par. 9-*ter*, Decree-Law 179/2012, even though a different initial date of application of the disposition was established. Regarding proceedings before the Court of Cassation (i.e., Italian Supreme Court), see Art. 16, par. 10 and Art. 16-*bis*, par. 4-*bis*, Decree-Law 179/2012.

⁵⁸ Art. 16, par. 1-*bis*, Decree-Law 179/2012.

- like the signing of the document in paper format - is a requirement of validity for the judgment's introductory act⁵⁹.

Telematic filing is carried out using the transmission of a PEC message to the PEC address of the judicial office, thus making the activity of the Court's clerk indispensable for the insertion of documents in the computer dossier of the trial⁶⁰.

The telematic deposit takes place through the packaging of a "telematic bag" to be sent, as an attachment, to the PEC address of the relevant Court's clerk. The envelope contains the procedural documents, the eventual attachments and, eventually, an XLM file⁶¹. Procedural documents shall be in .pdf format and obtained "by transforming a textual document, without restrictions on the operations of selecting and copying parts"⁶². Also, scanning of images is not permitted, and a file shall also accompany the documents in XML format that contains all the information of the registration note if any⁶³. Attachments shall observe formats allowed⁶⁴. The documents are signed with a digital signature or qualified electronic signature⁶⁵.

59 Cassazione Civile, Sec. VI, 8 June 2017, n. 14338.

60 Art. 14, Technical specifications of 16 April 2014.

61 Once the telematic envelope has been created with the appropriate software and sent via PEC, four separate receipts are generated, which the party will receive following the sending of the message: (i) receipt of acceptance, which certifies that the message has reached its destination at the PEC system operator; (ii) delivery receipt, which certifies that the message has reached the addressee's e-mail operator (the same is relevant for the completion of the filing and should be kept in computer format to provide proof of filing); (iii) receipt of the outcome of the automatic controls which are inherent to the formal checks of the filing carried out by the operator of the telematic services of the Ministry of Justice; (iv) receipt of acquisition by the Court's clerk which certifies the outcome of the check carried out by the receiving clerk's office.

62 Art. 12, Technical Specifications of 16 April 2014.

63 Art. 12, Technical Specifications of 16 April 2014.

64 Art. 13, Technical specifications of 16 April 2014.

65 CADeS and PADeS digital signatures are both accepted and equivalent according to Art. 12, par. 2, Technical specifications of 16 April 2014; see also Cassazione, Sezioni unite, 27 April 2018, n. 10266. Also, Art. 16-bis, par. 9-octies, Decree-Law 179/2012, provides that "*party documents and court orders filed electronically shall be drafted in summary form*"; furthermore, according to Art. 4, par. 1-bis, Decree of the Minister of Justice no. 55 of 10 March 2014, fees for lawyers in judicial proceedings shall, as a rule, be further increased by 30 per cent: the additional fee is due where the documents filed by electronic means are drawn up using information technology techniques designed to facilitate their consultation or use.

Filing by telematic means shall be deemed to have been made when the receipt for delivery is generated by the PEC service operator of the Ministry of Justice. Also, it shall be deemed to have been timely affected when the receipt for delivery is generated before the end of the day on which it is due⁶⁶.

3.3. *Computer trial dossier*

Computer trial dossier is defined as the computer version of the trial dossier, containing the trial documents as computer documents or computer copies of the same documents if they have been filed on paper, under the Digital Administration Code⁶⁷.

The keeping and conservation of the computer trial dossier is among the tasks assigned to the Court's clerk and is equivalent to the keeping and conservation of the trial dossier on paper⁶⁸. The presence of the computer trial dossier does not entail the elimination of the trial dossier on paper. Indeed, notwithstanding the obligation to file certain procedural documents through telematic means as seen above, the clerk's office may need to form and keep the paper files by the methods provided for by the laws, given that the law provides for cases in which the parties still have the right to file documents in paper format. Similarly, there are cases in which the judge has the right to file his measures in paper format⁶⁹.

The computer dossier management system is part of the Ministry of Justice document system dedicated to the storage and retrieval of all computer documents. In this regard, the Ministry of Justice is in charge of managing proceedings using information and communication technologies, collecting in a computer dossier the acts, documents, annexes, receipts of PEC and data of the proceedings themselves whoever formed them, or computer copies of the same acts when they have been filed on paper⁷⁰.

66 Art. 16-*bis*, par. 7, Decree-Law no. 179/2012; see also Art. 155, par. 4 and 5 of the Italian Code of Civil Procedure.

67 Art. 2, par. 1, lett. h), d.m. 44/2011.

68 Art. 9, par. 3, d.m. 44/2011.

69 Ministry of Justice Directorate General Circular of 23 October 2015, par. 2.

70 Art. 9, d.m. 44/2011.

3.4. Creation of computer document

A computer document is defined as an electronic document containing the electronic representation of acts, facts or data which are legally relevant⁷¹ and is different from an analog document, which is the non-computer representation of such information⁷².

Therefore, in addition to the written and oral forms of procedural documents, there is also the digital form, a *tertium genus* not precisely corresponding to the written or oral form, based on the use of a different language, intelligible only through a computer, obtained by converting electrical impulses into binary data⁷³.

Computer documents comprise documents in digital format (digital native documents) obtained through the transformation into .pdf format of a textual document created through a word processor, but also computer copies, mere or by image, of procedural documents in analog format (analog native documents): the former obtained through the complete transcription of the analog document through a word processor and then transformation of the file into .pdf; and the latter obtained through the scanning of the analog document.

The computer document satisfies the requirement of written form and has the efficacy envisaged by Art. 2702, Italian Civil Code⁷⁴, when it bears a digital signature⁷⁵, another type of qualified electronic signature⁷⁶ or an advanced electronic signature⁷⁷ or, in any case, is formed, after computer identification of its author. The latter identification must be done through a process having the requirements established by AgID, pursuant to Art. 71

71 Computer document represents a species of the broader genus of electronic documents, Ferrari, (n 1228); Art. 3, par. 1, num. 35), eIDAS Regulation, states that electronic document means any content stored in electronic form, in particular text or sound, visual or audiovisual recording.

72 Art. 1, par. 1, lett. p) and p-bis), Digital Administration Code.

73 Ruffini (n 38).

74 Art. 2702, Italian Civil Code, “A private deed shall constitute full evidence, up to the point of perjury, of the provenance of the declarations of the person who signed it, if the person against whom the deed is produced acknowledges the signature or if it is legally recognised as having been signed”.

75 Art. 1, par. 1, lett. s), Digital Administration Code.

76 Art. 3, par. 1, num. 12), eIDAS Regulation.

77 Art. 3, par. 1, num. 11), eIDAS Regulation.

of the Digital Administration Code⁷⁸ to guarantee security, integrity and non-modifiability of the document and, manifestly and unequivocally, the traceability back to the author⁷⁹. The use of the qualified electronic or digital signature device shall be presumed to be attributable to the electronic signature holder unless he proves otherwise⁸⁰. In all other cases, the suitability of the computer document to satisfy the requirement of written form and its probative value is freely assessable in Court, provided that the date and time of formation of the electronic document may be relied on against third parties if they are affixed under the Guidelines⁸¹.

A computer copy of an analog document is defined as a computer document whose content is identical to that of the analog document from which it is taken, while a computer image copy of an analog document means a computer document whose content and form are identical to those of the analog document from which it is taken⁸². In civil proceedings, the Italian legislator deems it necessary to carry out an authentication procedure to recognise the copies' validity in question. Indeed, according to Art. 16-*decies*, Decree-Law 179/2012, when proceeding with the filing of computer copy, including an image copy, of a party's procedural document or of a court order which has been drawn upon an analog medium and is held in the original or a certified copy, it shall be certified that the copy corresponds to the original document⁸³.

78 AgID, *Linee Guida sulla formazione, gestione e conservazione dei documenti informatici*, September 2020, which shall be applicable from 7 June 2021, available at <https://www.agid.gov.it/it/linee-guida>. accessed 25 February 2021.

79 Art. 20, par. 1-*bis*, Digital Administration Code.

80 Art. 20, par. 1-*ter*, Digital Administration Code.

81 Art. 20, par. 1-*bis*, Digital Administration Code; see also Art. 20, par. 1-*quarter*, Digital Administration Code, according to which the provisions relating to the filing of documents by electronic means under the PCT legal framework shall remain unaffected.

82 Art. 1, par. 1, lett. i-*bis*) and i-*ter*), Digital Administration Code; see also Art. 1, par. 1, lett. i-*quater*), Digital Administration Code, according to which computer copy of a computer document is a computer document having the same content as the document from which it is taken on computer support with a different sequence of binary values.

83 See in this respect Art. 16-*undecies*, Decree-Law 179/2012. Also, concerning computer copies, Art. 22, Digital Administrative Code, establishes that computer documents containing copies of public deeds, private deeds and documents in general, including administrative deeds and documents of any kind initially drawn upon an analogue medium, sent or issued by authorised public depositories and public officials, shall have a full effect within the meaning of Artt. 2714 and 2715 of the Italian Civil Code. This effect arises if the above documents are drawn up

3.5. *Communication of the sentence and access to consultation services*

As provided for in Art. 133, Italian Code of Civil Procedure, the judgment shall be made public by lodging it at the Registry of the Court that delivered it and the Court's clerk shall notify the parties within five days, through a note containing the full text of the judgment. Such communication⁸⁴ can be executed through a PEC message to the parties, even though it does not have any effect on starting the time limits for appeals⁸⁵.

Among its many functions, the PCT also allows users to consult information regarding civil proceedings at any judicial office, allowing them to know in real-time the status and course of the proceedings and the computer trial dossier documentary content. Access to consultation services takes place through an access point or the portal of telematic services⁸⁶. The portal of telematic services consists of a "public area" and a "reserved area". Only qualified users - lawyers, judges, court clerks, etc. - will be able to access the reserved services area after identification through a cryptographic token. The qualified users can consult, therefore, the status of the proceedings and have access to register data and other information. Besides, citizens and other users can access the public area without having to authenticate themselves. These non-qualified users can consult anonymously and impartially the data of the procedure and other information of the Registry, in compliance with the data protection legal framework⁸⁷.

under Art. 20, par. 1-*bis*, first sentence, Digital Administration Code. At the same time, it establishes that computer image copies of documents originally generated on an analogue medium shall have the same probatory effect as the originals from which they are extracted. This effect arises if their conformity is certified by a notary public or other public official authorised to do so per the Guidelines. If not certified, such copies of original documents originally generated on an analogue medium under the Guidelines shall have the same probatory effect as the originals from which they are taken if their conformity with the original is not expressly disavowed.

84 For a distinction between communications and notifications under Italian civil procedure law, see Ferrari (n 1228) 1277, note 81.

85 In the same line of reasoning, see Cassazione Civile, Sec. IV, 5 November 2014, n. 23526.

86 Artt. 22 and ss., d.m. 44/2011

87 Artt. 5 and 6, Technical specifications of 16 April 2014.

4. Civil judicial proceedings during epidemiological emergency

Dispositions adopted by the Italian legislator to face the outbreak of the COVID-19 pandemic have deeply affected judicial proceedings and access to justice, including civil proceedings. The legislator has enacted several legislations that constitutes a real and autonomous normative body: the so-called civil procedural law of the epidemiological emergency⁸⁸.

Such rules increased the application of digital tools to civil judicial proceedings to correctly face and break down COVID-19 spread among the population. It is questionable whether some of the new dispositions would become definitive dispositions governing civil proceedings.

More in detail, Art. 83 Decree-Law no. 18 of 17 March 2020, converted, with amendments, by Law no. 27 of 24 April 2020 ('Decree-Law 18/2020'), introduced different emergency civil proceedings, alternative to the ordinary one (i.e., in person-hearing). These proceedings are (i) the conduct of civil hearings by remote connections⁸⁹ (in such cases, the judge may also be connected from a place other than the judicial office⁹⁰) and (ii) the conduct of civil hearings by exchanging and filing electronically written notes containing only the parties' requests and conclusions⁹¹. The first proceeding is applicable for hearings that do not require the presence of subjects other than the parties and court auxiliaries, while the second one is applicable for hearings that do not require the presence of subjects other than the lawyers⁹².

Art. 221 of Decree-Law no 34 of 19 May 2020, converted, with amendments, by Law n. 77 of 17 July 2020 ('Decree-Law 34/2020'), modified the emergency proceedings just mentioned, setting more clearly their functioning. The judge has the faculty to decide which civil proceedings is to be adopted (ordinary in-presence hearing, telematic exchange of written notes

88 Roberto Masoni, 'Diritto processuale civile dell'emergenza epidemiologica (a seguito della conversione in legge del decreto ristori)', (2021) Giust. civ., available at <<https://giustiziacivile.com>> accessed 25 February 2021.

89 Art. 83, par. 7, lett. f), Decree-Law 18/2020.

90 Art. 23, par. 7, Decree-Law no. 137 of 28 October 2020, converted with amendments by Law no. 176 of 18 December 2020.

91 Art. 83, par. 7, lett. h), Decree-Law 18/2020.

92 Art. 23, par. 6, Decree-Law n. 137 of 28 October 2020 (converted, with amendments, by Law n. 127 of 18 December 2020) extends the applicability of the last-mentioned proceeding to proceedings concerning mutual separation agreement and joint petition for divorce. These proceedings would otherwise be out of the provision's scope, since the parties are required to participate in the relative hearings.

or remote hearings)⁹³, provided that for civil hearings through a remote connection, the prior consent of the parties is also necessary⁹⁴. It has also been established that, in civil proceedings, collective judicial deliberations may be adopted through remote connections. The Court's clerk may issue an enforceable copy of a judgment in the form of an informatic document on the application of the party in whose favor the judgment was given⁹⁵.

In conclusion, the epidemiological emergency forced the legislator to adopt rules facing the criticalities of the COVID-19 pandemic and ensure continuity to the functioning of the justice system. Such rules increased the application of digital tools to civil judicial proceedings but were enacted on an exceptional basis.

5. *Alternative dispute resolution systems*

In addition to civil judicial proceedings, digital tools are also used in ADR systems in financial sectors. Obviously, ADR systems are alternative and not substitute to the ordinary proceeding⁹⁶: decisions taken by ADR systems are not binding, since they do not preclude the client/consumer who has initiated the procedure from going to Court. If ADR systems are compared to the ordinary proceeding, they are less likely to guarantee respect for the rule of law and due process⁹⁷.

About consumer disputes, in particular, the regulatory framework at the European Union level comprises EU Directive no. 11/2013, which was

93 Masoni (n 88).

94 Art. 221, par. 4 and 7 of Decree-Law 34/2020.

95 Art. 23, par. 9 and 9-bis, Decree-Law n. 137 of 28 October 2020 (converted, with amendments, by Law n. 127 of 18 December 2020). Another essential provision enables lawyers, in civil proceedings before the Court of Cassation, to file documents electronically, see Art. 221, par. 5, Decree-Law n. 34 of 19 May 2020 converted, with amendments, by Law n. 77 of 17 July 2020: Decree 27 January 2021 of the Ministry of Justice allows the electronic filing of procedural documents by the parties' lawyers as from the 31st March 2021.

96 The qualification of such systems as "alternative" is because they aim to resolve disputes outside the courtroom, thus opposing the jurisdiction traditionally exercised by the State, Pietro Sirena, 'I sistemi di ADR nel settore bancario e finanziario' (2018) 9 Nuova giur. civ. comm., 1370.

97 *ibid.*

then supplemented by EU Regulation no. 524/2013 concerning online ADR systems (Regulation on consumer ODR)⁹⁸.

At a national level, regulatory dispositions within the banking sector, adopted by the Bank of Italy, and within the financial markets sector, adopted by Consob, established ADR systems that provide clients of intermediaries with online tools accessible on the website, through which they can submit and manage complaints in case of disputes. Such ADR systems have so far succeeded in granting clients accessible, rapid and less expensive redressing methods⁹⁹. They can, therefore, provide examples of the benefits that digitalisation of dispute resolutions can bring.

Regarding the banking sector, Law no. 262 of 28 December 2005¹⁰⁰ established that all banks and credit institutions operating on the national territory are obliged to adhere to the Arbitro Bancario Finanziario ('ABF')¹⁰¹. The same law entrusted the supervisory authority, i.e., the Bank of Italy, to provide the infrastructures (logistic and organisational) necessary for the functioning of the territorial colleges constituting the ABF.

Proceedings before ABF are regulated more specifically by Comitato Interministeriale per il Credito ed il Risparmio (CICR) Decision no. 275 of 29 July 2008 and by Bank of Italy Provisions on out-of-court dispute resolution schemes of 18 June 2009.

98 In the event of disputes involving a foreign intermediary established in the territory of the European Union and arising from banking or financial markets contracts of sale or services concluded online, the Italian consumer client may file an appeal through the ODR platform, pursuant to Regulation 524/2013, see Bank of Italy provisions of 18 June 2009, Section VII, par. 2.

99 Initially, the Arbitro Bancario Finanziario ('ABF') consisted of three territorial colleges (Rome, Milan and Naples). Due to the high number of disputes brought before the ABF, it became necessary to set up another four panels, based in Turin, Bologna, Bari and Palermo.

100 See also Art. 128-*bis* of Legislative Decree no. 385 of 1 September 1993 ('Italian Consolidated Law on Banking'); the ABF was then set-up in 2009. Its functioning has been recently amended by Bank of Italy, Measure of 12 August 2020.

101 Pursuant to Legislative Decree no. 28 of 4 March 2010 and Decree-Law no. 50 of 24 April 2017 (converted by Law no. 96 of 21 June 2017), starting the procedure before the ABF constitutes - as an alternative to recourse to the mediation procedure governed by the same decree - a condition for the admissibility of legal proceedings relating to banking and financial markets contracts, within the limits and conditions laid down by these provisions.

Clients shall use the ABF¹⁰² online portal to submit their complaint¹⁰³. To accessing the portal, users shall firstly register themselves, clicking on "Reserved Area" at the ABF website¹⁰⁴: users shall fill in all the fields and, in particular, enter an e-mail address and a mobile phone number on which they will receive notifications and messages updating them on the status of their complaint.

The portal is a simple and interactive tool that assists users in submitting their complaints through a guided procedure and allows them to manage the whole procedure by himself/herself. Users can file an appeal by themselves or on behalf of other subjects using the sample power of attorney available on the ABF website¹⁰⁵. The online portal will assist users in filling in the complaint¹⁰⁶, and in the completion of the requested

-
- 102 ABF joins the Fin-Net network. The Fin-Net network has been promoted by the European Commission since 2001, in implementation of its Recommendation of 30 March 1998. This network is among national ADR systems, which are active in financial intermediation sector within the European Economic Area (the EU countries and Iceland, Liechtenstein and Norway). Such network comprises out-of-court dispute resolution bodies operating in banking, financial markets and insurance sectors and established in the above Area. It allows consumers to contact their national ADR system, which, using the information support provided by the network itself, puts them in touch - if it exists - with the equivalent system in the country where the intermediary operates; see Bank of Italy Provisions of 18 June 2009, Section VII, par. 1; see also Sirena (n 96).
- 103 See Bank of Italy provisions of 18 June 2009, Section VI; for further information, consult the guide for using the ABF portal available at <<https://www.arbitrobancariofinanziario.it/presentare-ricorso/index.html>> accessed 25 February 2021.
- 104 For further information see the ABF website at <<https://www.arbitrobancariofinanziario.it/homepage/index.html>> accessed 25 February 2021.
- 105 The complaint can also be submitted by the customer association of which the customer is a member, see Bank of Italy provisions of 18 June 2009, Section VI, par. 1.
- 106 Once registered and logged into the portal, users can proceed by clicking on "create your appeal" bottom in their reserved area. Users have to make sure they have all the necessary documentation (e.g., the identification document of the person or company for whom the complaint is being submitted; the documentation useful for the complaint, which includes, in particular, the complaint sent to the intermediary: recourse to the ABF presupposes the transmission of a prior complaint to the intermediary, see Bank of Italy provisions of 18 June 2009, Section VI, par. 1), copy of the signed agreement, account statements, the receipt for payment of contribution to the ABF.

actions¹⁰⁷. Files that may be attached shall observe formats allowed¹⁰⁸; for example, "video" files are not accepted in support of the complaint and cannot be uploaded to the portal¹⁰⁹. The complaint will be finalised and submitted by clicking on the bottom "transmit the appeal".

Through the online portal, users can perform all the relevant activities concerning the complaint, which are in particular: (i) monitor the status of his/her complaint; (ii) respond to requests for additional documentation sent by the ABF¹¹⁰; (iii) receive and send documentation; (iv) renounce the complaint or inform the ABF on reaching an agreement with the intermediary; (v) receive the intermediary's counterarguments and reply to them; and (vi) request support and contact the ABF.

Once the procedure is finalised, the complaint dossier¹¹¹ will be submitted to the ABF panel in charge of resolving the dispute¹¹², which may also meet by videoconference¹¹³. The decision of the ABF will be communicated through the online portal¹¹⁴.

107 The guided procedure requires the user to provide the necessary information (e.g., the name of the intermediary) and to give a description of the dispute and the reason for the complaint in a specific box; users are then required to upload the documents necessary to submit the complaint. For further information, consult the guide for using the ABF portal available at <<https://www.arbitrobancariofinanziario.it/presentare-ricorso/index.html>> accessed 25 February 2021.

108 Files allowed are the following:

doc, .docx, .pdf, .xls, .xlsx, .rtf, .txt, .jpg, .jpeg, .tiff, .bmp, .png.

109 In addition, it will not be possible to transmit documentation containing special categories of personal data or data relating to criminal convictions and offences (provided for in Artt. 9 and 10 of EU Regulation no. 679/2016) through the ABF Portal. After submitting the complaint online, users will still be able to send relevant documentation to the PEC address of the Bank of Italy branch where the relevant technical secretariat operates; for further information, consult the guide for using the ABF portal available at (n 1299).

110 The Panel in charge of resolving the dispute can request further evidence from the parties, see Bank of Italy provisions of 18 June 2009, Section VI, par. 2.

111 A technical secretariat is in charge of compiling the complaint dossier, see Bank of Italy provisions of 18 June 2009, Section IV.

112 Each panel consists of five members, operating on a territorial basis, see Bank of Italy provisions of 18 June 2009, Section III, par. 1 and 2.

113 The Panel is duly constituted with the presence of all five of its members: if necessary, the member appointed as President arranges for the panel meeting to be held by videoconference, with the connection from one of the Bank of Italy's branches, see Bank of Italy provisions of 18 June 2009, Section III, par. 4.

114 Relevant decisions are published online on the ABF's website, see Bank of Italy provisions of 18 June 2009, Section IV, par. 2; notice of the intermediary's failure to comply or lack of cooperation is published online on the ABF website for

Filing a complaint in paper copy to the ABF is possible only under specific circumstances¹¹⁵; the ABF will not accept complaint filed in paper copy under circumstances other than those expressly provided for.

Based on the ABF model, the Arbitro per le Controversie Finanziarie (ACF) was established in 2016 concerning disputes in the financial markets sector. Thus, ACF is competent for disputes concerning investors¹¹⁶ and financial intermediaries (including banks) within the realm of the provision of investment services and activities, while ABF is competent for disputes involving customers and (also) banks about the provision of banking services and activities.

Provisions regulating the submitting of complaints to the ACF almost replicate those governing the submission to the ABF¹¹⁷. In particular, Consob Resolution no. 19602 of 4 May 2016 and Consob Resolution no. 19700 of 3 August 2016 are to be taken into account¹¹⁸.

Users are required to register themselves firstly at the ACF website¹¹⁹. Then, submit the complaint by accessing the "reserved area" on the same; the procedure is free (no contribution is needed in comparison to ABF procedure) and takes place exclusively online following the guided procedure once entered in the reserved area. All documents shall be uploaded only in PDF or image format¹²⁰.

Users can monitor their complaint, access and view the complaint dossier, receive and transmit communication and documentation online

five years and prominently on the home page of the intermediary's website for 6 months, see Bank of Italy provisions of 18 June 2009, Section VI, par. 4.

115 These are the following: (i) when the complaint is made against two or more intermediaries at the same time; (ii) when the complaint is made against a foreign intermediary operating in Italy under the freedom to provide services; (iii) when the complaint is made against a loan guarantee consortium, according to Art. 112, par. 1, Italian Consolidated Law on Banking. When a complaint is filed in paper copy, the complaint form may be filed, together with all the relevant documents, by mail or fax to the competent technical secretariat or any other Bank of Italy branch. The complaint may also be presented in person at one of the Bank of Italy branches open to the public.

116 Retail investors, according to Art. 2, par. 1, lett. g), of the Regulation concerning ACF, adopted by Consob Resolution no. 19602 of 4 May 2016.

117 Even in such cases, a pre-condition to starting the procedure is that a prior complaint has been submitted to the intermediary, see Art. 10, Regulation concerning ACF, adopted by Consob Resolution no. 19602 of 4 May 2016.

118 For further information, consult the practical guide available at (n 103).

119 For further information, see <<https://www.acf.consob.it>> accessed 25 February 2021.

120 For further information, consult the practical guide available at (n 103).

by accessing their reserved area at the ACF website. Users are informed of each stage of the complaint and the inclusion of documents in the complaint dossier through the pec/mail address they have indicated when registering themselves at the ACF website.

The panel in charge of solving the dispute can also meet through teleconferencing or videoconferencing remote connection systems¹²¹.

Based on the favorable experience already gained in the banking and financial markets sector, an ADR body ('Insurance Arbitrator') is to be established for the insurance sector to match the significant results achieved by ABF and ACF in ensuring an accessible, rapid and less expensive redressing methods for customers¹²². However, the approval of the regulation of this new ADR is still pending.

In conclusion, ADR systems in financial sectors are examples of applying digital tools in dispute resolutions and the benefits these can bring. It should be pointed out that ADR systems are not subject to the same procedural and constitutional safeguards characterizing ordinary judicial proceedings; therefore, it seems more comfortable for ADR systems to reconcile the application of digital tools with rights granted to the parties involved in the dispute.

6. Conclusive remarks

The Italian legal system explicitly recognises DLTs and smart contracts and sets-up a legislative framework governing their uses and their legal effects, even though the same is currently incomplete. The legal definition of DLTs and smart contracts has been criticised on the assumption that it violates the principle of technological neutrality, and that it provides

121 See Art. 7, Resolution no. 19700 of 3 August 2016. If the panel accepts the complaint made by the investor, it will indicate the action to be taken by the intermediary, specifying a time limit within which such actions shall be executed. If the intermediary does not comply with the decision, notice will be given on the ACF website, in two national newspapers and on the home page of the intermediary's website, see Art. 16, Regulation concerning ACF, adopted by Consob Resolution no. 19602 of 4 May 2016.

122 Art. 187.1 of Legislative Decree n. 209 of 7 September 2005, as recently introduced by Legislative Decree n. 187 of 30 December 2020. The provision sets forth that insurance companies and insurance distributors shall adhere to alternative resolution systems for settling disputes with customers concerning insurance services arising from all insurance contracts, without any exclusions. In agreement with the Minister of Justice, a decree by the MiSE should set up these systems.

for additional requirements for the fulfilment of the written form. The AgID guidelines should help setting out and clarifying the DLTs legal framework.

Specific sectors of the legal affairs showed individual activism in the implementation of DLTs and blockchain-related projects in comparison to others. Some projects have been dropped and others are still in use and object of further development. In general terms, the process is currently at its starting phases and yet to be consolidated. However, some achievements have been so far collected.

Furthermore, Italy has been considered to have relatively highly developed IT facilities about digital tools applied to civil court proceedings. Notwithstanding this, criticisms have highlighted for the complexity of certain aspects of the system underlying the PCT and the formalistic interpretation of its rules adopted by the judiciary. Besides, the epidemiological emergency due to COVID-19 forced the legislator to adopt rules which increased the application of digital tools to civil judicial proceedings; it is not sure whether and how eventually they will shape on a definitive basis the PCT.

Lastly, ADR systems in financial sectors are seen as encouraging experiences in terms of applying digital tools in dispute resolutions and the benefits these can bring; on this basis, a similar ADR system will also be established also in the insurance sector. It may be appropriate to exploit such experiences to identify digital tools that can grant parties rights and the proper functioning of dispute resolution mechanisms also in other sectors¹²³.

123 EU Commissioner for Justice Didier Reynders stated recently that “Italy has to deal with very long trials [...] There are ways to use digital tools to improve the situation. We believe that in the recovery plans it is necessary to invest in the digitalization of justice”; further information available at <<https://24plus.ilsole24ore.com/art/il-commissario-ue-giustizia-reynders-processi-troppo-lunghi-l-italia-in-vesta-strumenti-digitali-ADAwiyLB>> accessed 25 February 2021.

Lithuania

Vytautas Nekrošius

1. To which extent are LegalTech means used in your country: in courts, arbitrations, law firms?

LITEKO and ESP (electronic service portal which is a component of LITEKO system) are electronic systems of the court. Both natural and legal persons, where relevant, may use the services of those systems by obtaining access through E-Government Gateway. LITEKO system is managed and maintained by the National Courts Administration. Electronic signature is not required to log into E-Government Gateway. One may log in through e-banking or by means of mobile signature. In other words, the current system ensures quite an easy access to the system.

The LR Law on Commercial Arbitration provides for a fragmented regulation of the use of electronic means in the process of arbitration; basically, the competence to decide on the use of electronic means is handed over to the arbitral institutions themselves. As for the legislative governance, Article 10(1)(3) may be singled out as it provides for that an arbitration agreement may be concluded by using electronic communications terminals provided that the integrity and authenticity of information so transmitted is ensured and the content of the transmission is made available for later access; Article 34(1) stipulates that an arbitral tribunal shall decide on the form of arbitral proceedings, unless agreed by the parties. Arbitral proceedings may be conducted in the form of oral hearings or a written or any other procedure. Where it comes to the activities of arbitral institutions, it may be stated that the main Lithuanian arbitral institution, Vilnius Court of Commercial Arbitration, uses ARBIS (arbitration information system) as the principal platform which is employed to ensure the existence of an electronic arbitration case. It must be noted that Article 31(1) of the Arbitration Rules of the VCCA establishes the general rule that all disputes falling within the scope of these Arbitration Rules shall be administered and dealt with through the Vilnius Court of Commercial Arbitration Information System (ARBIS).

2. *Are Blockchain and DLT technologies used in courts or other public institutions?*

Blockchain technologies are not used in Lithuanian public institutions.

3. *Electronic communication with courts. Regulatory framework, delivery and submission of documents. Is electronic signature required? How does communication with the persons other than natural persons take place? Online hearings. How are arbitral awards adopted and pronounced?*

The use of information technologies in court proceedings and existence of electronic cases are established in Article 371 of the LR Law on Courts. Paragraph 1 of this Article provides for that electronic data related to court proceedings shall be handled, included in accounting and stored by means of information and electronic technologies following the procedure established by the Judicial Council and approved by the Office of the Chief Archivist of Lithuania. The cases concerning the issuance of the court order as well as other cases established by the Judicial Council and information related to the court proceedings may be handled by electronic means only. In the event of an electronic case, the written information received and sent by courts shall be digitalised following the procedure laid down in paragraph 6 of this Article, whereas the written documents shall be handled, stored and destroyed as per procedure established by the Judicial Council and approved by the Office of the Chief Archivist of Lithuania. Paragraph 3 of the same Article provides for that the parties to the proceedings shall be entitled to submit all procedural documents and information related to the court proceedings in an electronic form by electronic means following the procedure established by the Minister of Justice. The persons submitting the procedural documents by electronic means shall sign them using advanced electronic signatures or shall confirm their identity by other means (through e-banking systems, etc.), or shall log into the court information system. The requirements for authentication and ways of authentication shall be established by the Minister of Justice. Finally, paragraph 4 therein provides for that in the cases established by law, the courts shall notify the parties to the proceedings of procedural actions or procedural decisions by electronic means following the procedure established by the Minister of Justice.

The format of electronic cases is considerably common in civil and administrative procedures but this option is basically abandoned in criminal procedures.

Several amendments to the Code of Civil Procedure (CCP) contributed significantly to the spread of information technologies in the civil procedure. First of all, it is the provision of Article 80(7) of the CCP which establishes that where a person submits a procedural document to the court by electronic means, stamp duty of 75 % shall be paid. This provision, without doubts, encouraged the applicants and their counsels to make use of the option of submitting procedural documents by electronic means and thus initiate the conduct of the electronic case in specific proceedings, which leads to the submission of all other procedural documents and notification of the time and venue of court hearings by electronic means as well. Another important provision is stipulated in Article 175(9) of the CCP which establishes quite an exhaustive list of entities which are, in all cases, submitted procedural documents in an electronic form. The mandatory entities subject to electronic submission are lawyers, paralegals, bailiffs, assistant bailiffs, notaries, public and municipal enterprises, institutions and organisations, financial institutions, insurance and audit firms, judicial experts and insolvency administrators. The Law also provides for that the court shall deliver procedural documents to other persons by electronic means, where such persons desired to receive them by electronic means under the procedure laid down in the Code and have provided the contact details required. The procedure and form of delivery of procedural documents by electronic means shall be established by the Minister of Justice.

As for the use of information technologies during court hearings, Article 175(2) of the CCP must be emphasised as it establishes the ability to use information and electronic communications technologies (video conferences, teleconferences, etc.) to ensure the participation of the parties to the proceedings at the court hearing and enable the witness's interrogation at his location. It is also worth mentioning that Lithuanian courts, in the face of pandemic, are actively using TEAMS and ZOOM platforms. Paragraph 2 of the same Article provides for that information and electronic communications technologies (video conferences, teleconferences, etc.) may be employed to take evidence.

In terms of the use of information and electronic means in the Lithuanian civil and administrative procedures it is very important to note that LITEKO system publishes information on the time and venue of court hearings, deliveries of procedural documents are made public and anonymised decisions and rulings of the courts of all instances are uploaded.

Future plans

On the subject of the perspective, it must be noted that the State is currently financing the essential upgrade of LITEKO system as the capacities of the existing system are clearly insufficient for considerably developed abilities to use information and electronic technologies in the proceedings.

Mexico

Mauro Arturo Rivera León

1. LegalTech used in Mexico

Law firms in Mexico rarely rely on advanced LegalTech. According to "Thomson Reuters 2018 Poll Opinion on Tech in Law in Mexico", 84 % of Mexican lawyers utilize some basic form of technological aid to perform legal work. However, the usage and knowledge of artificial intelligence (AI) are relatively low, and current resources are used mainly in administration and billing matters. The same poll concluded that Mexican lawyers are generally non-familiar with LegalTech and perceive its advance as rather slow. Nonetheless, singular exceptions may be pointed out,¹ in what must be considered a promissory future².

Arbitration in Mexico has yet to incorporate LegalTech. However, regarding mediation, a significant project exists related to consumers' rights. In 2008, the Consumer Protection Federal Agency (Procuraduría Federal del Consumidor- PROFECO) initiated the "Concilianet" project. Concilianet is an online dispute resolution (ODR) mechanism that allows a simplified version of the registration and filing of complaints relative to a breach of warranty, breach of contract, or refusal to surrender³ not restrict-

1 For example, Advosoft (software which organizes the workload of Law Firms and additionally manages Court Dates), Trato (a system that manages and controls electronic contracts securely through Blockchain technology), or Contactabogado (a system that generates automatic contacts between potential clients and lawyers through offer and demand in an automatized system). Noteworthy is also "Max", the virtual lawyer of the Fractal Abogados Law Firm (which offers automatized legal advisory through a Facebook bot chat capable of calculating precise compensations in Labor Law cases). Finally, worth mentioning is also the GEBD Legal-Tech Firm, which offers e-consulting and digital administration of cases and CIAJ (developing legal technology regarding access to justice), *inter alia*.

2 See the Mexican report on LegalTech by Legaltechies: Legaltechies, 'El estado de la Legaltech en... México' (legaltechies.ec, 25 November 2020) <<https://bit.ly/371wbZk>> accessed 10 February 2021.

3 Louis Del Duca, 'Facilitating expansion of Cross-Border E-Commerce- Developing a Global Online Dispute Resolution System' (2012) 1, 1 Penn State Journal of Law & International Affairs 66.

ed to online contracts or services. Concilianet does not allow PROFECO to determine compensation coercively but instead relies on the parties' agreement. However, the lack of a mediation agreement does not ban consumers from bringing actions to Court if the parties disagree on the remedy or want to pursue damage claims (which are inadmissible under Concilianet). The ODR managed to reduce the resolution time per complaint from 73 days to 22⁴ while maintaining a high percentage of positive outcomes⁵.

Despite recent criticism,⁶ the Federal Judiciary rarely employs Legal-Tech in automatized procedures (actual legal workers perform most bureaucratic procedures such as the processing and serving of court notices, including hearing notices, as well as undertaking agenda management and the publishing of rulings and procedural decisions). The standard "digital" resources remain the "SISE" electronic system which allows the tracking of case files, procedural history and documents as well as the compilation of binding precedents (*Semanario Judicial de la Federación*), and a relatively complex Search engine (*Buscador Jurídico*, employing AI in data search algorithms). Also worth mentioning are the auxiliary search engines of "Consulta Temática" and "Módulo de informes". Besides the abovementioned tools, there is extensive use of electronic case files, the possibility of filing documents using electronic signatures, and a recently introduced automatized website for the management and generation of hearings (System "Agenda OJ"), which generates a QR code correlated to the Court hearings. Some of these features will be analyzed further in this report.

4 Gabriela Szlak, 'Online Dispute Resolution in Latin America: Challenges and Opportunities', in Mohamed Abdel Wahab and others (eds) *Online dispute resolution: Theory and Practice* (Eleven International Publishing, 2012) 554.

5 For example, in 2019, the percentage of favorable conciliations was 84.73 %, over the 7,780 cases processed. See the Consumer Protection Federal Agency, Procuraduría Federal del Consumidor, 'Informe Anual de la Procuraduría Federal del Consumidor 2019' (PROFECO, 2019) 22.

6 Santiago Oñate and Martín Haissiner, 'Tribunales digitales y jueces máquina' (2020) *El mundo del abogado* 22.

2. *Blockchain and DLT in government systems.*

Currently, neither the Judiciary nor any other state bodies employ Blockchain in Mexico. However, recently a legislative initiative⁷ proposed a transition to full electronic voting through Blockchain; thus, a future discussion may arise on this topic. Blockchain is sometimes used by private companies.

3. *Electronic communication with the Court.*

Mexico is a federal country. The 32 states are entitled to issue Civil, Administrative, and Criminal legislation. Although recent centralization amendments to the Constitution have transferred to the federation legislative competences to issue unifying legislation regarding Civil and Criminal law⁸, the states are still in charge of applying that legislation if the case falls within their jurisdiction. This fragmentation implies that the federal entities' situation mostly depends on implementing programs by their judicial powers (administered by Judicial Councils) while the federal procedures hold a separate and autonomous status. Mexican "Amparo" is a remedy for protecting constitutional rights, which allows the Federal Judiciary to review in practice both local and federal ordinary judicial decisions⁹. Hence, this report will center mostly on the Federal Judiciary.

7 Deputy Adriana Medina, "Iniciativa con Proyecto de Decreto que reforma diversas disposiciones de la Constitución Política de los Estados Unidos Mexicanos y la Ley General de Instituciones y Procedimientos Electorales en Materia Electoral", in *Gaceta LXIV/ISR-25/97621*. Available at: <<https://bit.ly/3pjngsF>>. accessed 24 July 2018. Mexican Electoral Law seems particularly prone to considering Blockchain in certain processes. For a proposal regarding the financial audit of political parties see: Gabriela Valles, 'Financiamiento Público de los Partidos Políticos en México: tópicos controversiales y propuesta de alternativa tecnológica para su fiscalización', (2018) 27, 2 *Dikaion* 303-305.

8 The National Code of Criminal Procedures was published on 5/03/2014 at the DOF. In contrast, even though a constitutional amendment (DOF 15/09/2017) established a federal constitutional competence to regulate a common National Civil and Family Procedural Code, to date such a Code has not been issued. Therefore, Civil Procedure in the states is still governed by local legislation.

9 Recently I provided an introductory account of our complex Amparo procedure. See. Mauro Arturo Rivera, 'An introduction to Amparo Theory' (2020) 12, 2 *Krytyka Prawa* 190-208.

Amparo was the first procedure to employ electronic communications. In 2013, the Amparo Act (DOF 02/04/2013) introduced the possibility of employing electronic communications with the Courts in Amparo cases (District Courts, Unitary Courts, Circuit Courts, and the Mexican Supreme Court).

Article 3 of the Amparo Act, as inherited from the 1936 Amparo Act, maintained the traditional written nature of the Amparo trial (the procedure lacks formal oral hearings). However, the second paragraph openly stated that the plaintiff might discretionally choose whether to file documents physically or electronically. Article 3 issued a relatively extensive regulation of such communications. In the first place, it stated that parties must file all digital communications employing an electronic signature, designed by the Federal Council of the Judiciary¹⁰. Therefore, the law required an electronic signature *sine qua non* regarding the digital filing of documents, with the sole exception of a *numerus clausus* catalog of cases¹¹. Ordinary federal procedures followed the Amparo legislation by an amendment to article 81.XVIII of the Federal Judiciary Act, granting competence to the Federal Judicial Council to establish digital judicial files and electronic signature usage in these procedures (homologating them somewhat to the possibilities in Amparo).

Notwithstanding, the law upheld the obligation for the Courts to hold physical files matching the digital archives. Only the involved parties may access physical case files. In contrast, digital files are openly accessible to everyone through an electronic system called "SISE" (Sistema Integral de Seguimiento de Expedientes), which offers unlimited access to any rulings or procedural decisions (with name suppression). The Amparo Act equally

10 Jaime Cardenas, 'La nueva Ley de Amparo', *Cuestiones Constitucionales* (2013) 29 *Cuestiones Constitucionales*. Revista Mexicana de Derecho Constitucional 389.

11 For example, cases regarding situations which may endanger the plaintiff's life or affect personal freedom outside the procedure, among others, are exempt from the electronic signature. This catalog of situations corresponds to what the doctrine has called the hypotheses of "Universal Representation", that is, cases in which any person may file an Amparo in the name of another person given the severe nature of the acts. See: Mauro Arturo Rivera, 'Las partes en el juicio de amparo' in Juan González and others (eds) *Teoría y Práctica del Juicio de Amparo*, (Flores Editor, 2018) p. 156, Supreme Court of Mexico City. Besides this case, any plea without an electronic signature must be dismissed, as the Supreme Court stated recently in the CT 45/2018 and in the legally binding precedent P./J. 8/2019 (10a.), titled: "Demanda de amparo indirecto presentada a través del portal de servicios en línea del poder judicial de la federación. Procede desecharla de plano cuando carece de la firma electronica del quejoso" (Digital Registry 2019715).

regulated the electronic service of court documents, although it expressly made such a service optative and binds this possibility only to those parties possessing an electronic signature. Under the 21/2020 Regulation of the Federal Judicial Council, the Courts serve documents regarding future Court hearings or procedural obligations, providing them with a QR code which contains the relevant information and access permits to the Court.

In 2013 the Federal Judiciary issued the 1/2013 Joint Regulation by the Supreme Court, the Electoral Court of the Federal Judiciary, and the Judicial Council. The regulation stipulated a procedure to obtain an electronic signature for natural persons only. Legal persons may not have an electronic signature, and their representatives must open accounts as natural persons and only then file documents in the representation of the legal person. The newly created electronic signature (called "FIREL") established a distinctive procedure for its access comprising electronic registration and a verification consisting of several steps. Nevertheless, the regulation (article 5) established the possibility of employing other "digital electronic signatures" issued by an official state body if the Federal Judiciary has concluded a coordination agreement of the recognition of such digital certifications (although the apparent rigidity of the need of such agreements was the subject of analysis by the Supreme Court in the CT 220/2017)¹². The joint regulation created a full special unit at the Federal Judiciary solely devoted to the issuing and administration of the electronic signature ("Unidad para el Control de Certificación de Firmas"). The 1/2015 Joint Regulation substituted the previous 1/2013 Joint Regulation and clarified the hypotheses in which the parties may employ the electronic signature while adhering to the original concept (according to the Supreme Court itself in the CT 45/2018).

Filing of evidence is also possible through digital means. The validity of evidence is assessed by the rules established in the Joint Agreement 1/2013 (principally in article 12), which classifies the types of documents whose validity is presupposed in virtue of their digital certificates (mainly a distinction between "public" and "private" documents). The Supreme Court (for example, AR 307/2020) has stated that physical documents may

12 In the CT 220/2017, the Second Chamber of the Supreme Court established a binding precedent for all judicial bodies (bar the Electoral Court and the Supreme Court itself). The Court stated that in the case of Amparo against final judicial rulings (Amparo Directo), if the authority who issued the appealed act (for example, the judicial power of a state) recognized such an electronic signature, the lack of an institutional agreement was irrelevant to grant that electronic signature full validity in the legal process before the Federal Judiciary).

only be exceptionally required when the authenticity of such documents is doubted by the parties and the judge. All digital trial services are detailed on a special website created by the Federal Judiciary¹³ with online support. Parties may file documents in pdf, .doc or .docx extensions.

4. *Online court proceedings.*

Mexico currently employs online Court proceedings¹⁴. Given the fact that "Amparo" is a predominantly written procedure, as from the introduction of the electronic signature (FIREL) in the 2013 Amparo Act, the full procedure may be performed online by filing the documents and evidence as digital attachments (as explained above). The Federal Judiciary was already holding fully functional trials seven years before the 2020 pandemic. Rulings and procedural decisions are produced, updated, and served directly through the website in the case of online proceedings. Oral hearings concerning argumentation by the parties are neither forbidden nor expressly regulated. Therefore, Judges may discretionally grant private oral hearings through platforms such as Zoom.

Other procedures concerning the Federal Judiciary may have a rather smooth transition to online regulation in 2020, given the Amparo trial experience. However, criminal procedures have posed some concerns because of their oral and accusatorial nature¹⁵. Criminal cases currently employ Cisco or "Telmex" software for hearings. However, prisons often lack the type of internet connection or spaces required to perform a hearing properly (a substantial number of processes involve preventive prison). The lack of infrastructure in prisons led to the paradoxical fact that audiences are often undertaken with the accused's physical presence in the Courtroom while the Judge, Prosecutor, attorneys, and remaining parties attend the audience remotely.

Even though, initially, online proceedings pertained to Amparo, given the pandemic, the Supreme Court issued the 10/2020 regulation, establish-

13 <<https://www.serviciosenlinea.pjf.gob.mx/juicioenlinea/juicioenlinea>> accessed 12 February 2021.

14 *In toto*, is well illustrated in the following report: Arturo Ramos, (coord.), 'Observatorio: Avances de Justicia Abierta en Línea en México 2020' (Escuela Libre de Derecho, 2020) 41-46.

15 Campos analyzed some of this problems: Jorge Campos, 'La justicia penal en tiempos del Covid-19. Los retos de las videoconferencias' (2020) VI, 6 Paréntesis legal.

ing online procedures of conflicts of competences and abstract normative control, thus fully transitioning to online proceedings in its three main competences. The first half of 2020 featured a generalized suspension of procedures in Mexico due to the pandemic, with a transitory partial return of certain procedures in the second half of the said year. Depending on the epidemiological situation, some judicial circuits returned to suspension in 2021, while the ones functioning do so mostly by resolving only digitally filed procedures or procedures with digitalized case files.

Traditionally in Mexico, judicial deliberations must be public (article 96 of the Constitution). Even prior to the pandemic, the Judicial TV Channel was already transmitting the Supreme Court's sessions (both in full composition and in chambers) and the Electoral Court's sessions. In 2020 the Supreme Court issued the 4/2020, 5/2020, and 6/2020 Regulations, establishing binding guidelines in relation to Zoom deliberating sessions. Such regulations stipulated safety measures and protocols concerning potential internet issues. The sessions are transmitted simultaneously on the Judicial Channel and Youtube. The Electoral Court of the Federal Judiciary¹⁶ and the Circuit Courts¹⁷ followed up the mechanics of remote sessions.

The Federal Judiciary does not allow Judges or legal clerks to perform official work or hearings on private computers. Usually, every judicial functionary is assigned a working laptop, which is mandatory to perform remote work. Only an official laptop may activate the internal informatics systems and databases of the Federal Judiciary (a Judge or Law Clerk would not be capable of accessing any files or legal documents if not in possession of an official laptop with the updated permits). The Federal Judiciary employs a VPN system that provides an encrypted connection to the judicial network (Commonly through "Global Protect").

-
- 16 Regulation 4/2020, "Acuerdo general de la Sala Superior del Tribunal Electoral del Poder Judicial de la Federación Número 4/2020, por el que se emiten los lineamientos aplicables para la resolución de los medios de impugnación a través del sistema de videoconferencias", (DOF 22/04/2020).
- 17 Regulation 12/2020, "Acuerdo General del Pleno del Consejo de la Judicatura Federal, que regula la integración y trámite de expediente electrónico y el uso de videoconferencias en todos los asuntos competencia de los órganos jurisdiccionales a cargo del propio Consejo", (DOF 12/06/2020).

5. *AI in the justice system.*

AI is not employed in the judicial system for decision-making. However, the Supreme Court recently (2019¹⁸) created a unit dedicated to legal knowledge administration (Unidad General de Administración del Conocimiento Jurídico). Among its functions, the Unit must implement open government policies concerning the Supreme Court, develop systems of data management, and propose appropriate tools for the use of technology to strengthen the justice system (article 3 of the XIII/2019 Regulation).

The Unit developed a search tool ("Buscador Jurídico") that relies on artificial intelligence algorithms to search for information in a matrix that combines all the databases available to the Federal Judiciary (rulings, decisions, precedents, dissenting opinions, legal doctrine). The system can analyze legal text (such as a plaintiff's argument) and suggest applicable precedents to the argument or binding case law regarding the legal topic described. Currently, the Federal Judiciary is working on improving the "Buscador Jurídico" to enable searches to comprehend even Zoom oral hearings and Zoom public deliberations by the Court.

6. *Future plans and challenges.*

The challenges for the future are clear. The Federal Judiciary must make a full transition to online procedures as this would enable addressing the backlog of cases, especially under the current circumstances in which a return to normality seems rather a distant possibility. Amparo's electronic procedure was designed before the pandemic, allowing for a careful configuration. However, the Federal Judiciary took the remaining measures in direct reaction to the pandemic through administrative regulation of the Supreme Court of the Council of the Judiciary. Therefore, in front of the legal system lies the challenge of creating a further comprehensive regulation that stays ahead of procedural needs and one which is not a mere reaction to the complex circumstances of 2020-2021. Despite a

18 See the General Regulation XIII/2019, "Acuerdo General de Administración número XIII/2019 del Presidente de la Suprema Corte de Justicia de la Nación, de doce de noviembre de dos mil diecinueve, por el que se establece la denominación de la Dirección General de Justicia TV Canal del Poder Judicial de la Federación y de la Dirección General de Derechos Humanos y se crea la Unidad General de Administración del Conocimiento Jurídico" (DOF 21/11/2019).

few states having implemented similar measures even before the Federal Judiciary¹⁹, local justice must also notably increase its efforts.

In summary, the success of online procedures lies in the transition from "digitalizing" the existing trials to creating unique online procedures with their own specifications and distinctive dynamics. Further challenges lie ahead in terms of extending the usage of LegalTech to process, analyze and locate legal precedents (a challenge in which the brand new "Unidad General del Conocimiento Jurídico" might play a key role). The 2021 constitutional amendment introduced a complex new system of binding legal precedents, and therefore developing the proper technological tools to be able to track, identify and analyze thousands of rulings and legal precedents is paramount to its functioning.

Furthermore, it is worth noting that most technological developments have centered on administration tasks and not on decision-making tools: a clear opportunity area. In the legal market, the consolidation of a solid LegalTech ecosystem may happen in the foreseeable future, despite resistance from traditional lawyers. Finally, 2021-2023 may feature legislative discussions on the potential usage of Blockchain by governmental bodies.

19 A notable case is Nuevo León. See García Myrna, 'Juzgado sin papel, un paso más de la justicia electrónica' (2018) 12, 41 *Revista Ius* 133-154.

Introduction

The process of informatisation of the Polish administration of justice is far from being perfect. Polish judiciary cannot be regarded as the most modern and effective system of the old continent. Judges and employees of the Polish administration of justice have become, however, equipped with certain – wider and wider – possibility to use modern technologies for professional purposes, although it seems that this possibility could be significantly broader. Undoubtedly, the absence of optimal utilisation of IT tools in the functioning of the administration of justice constitutes one of the causes – not as serious as understaffing and overburdening judges with work, though – that result in lengthiness of court proceedings². For it is impossible to disagree with the claim that the final effectivity is influenced not only by procedures, but also by the work environment³.

In the current legal circumstances, it is out of the question for the administration of justice to be executed by artificial intelligence. It does not mean, however, that there is no possibility for the judges and court employees to use dedicated computer programs, including those utilising selected artificial intelligence mechanisms, which could have positive influence on the way the Polish administration of justice functions. Usefulness of these programs is beyond doubt. On the one hand they greatly contribute to improvements in the workings of courts (although undoubtedly there is still significant room for utilising modern technologies within the administration of justice in order to improve its effectiveness). On

1 The research was financed from the funds allocated for the maintenance and development of research potential in the discipline of legal sciences no. WPAiSM/PRAWO/SUB/12/2021. Translated by Krystyna Sylwestrow.

2 Aleksandra Partyk, 'Initiating proceedings in a civil case using AI? Selected comments regarding Polish civil procedure' in: García G. Javier, Alzina L. Álvaro and Martín R. Gabriel (eds), *El derecho público y privado ante las nuevas tecnologías* (Dykinson 2020) 662.

3 Ł. Małecki-Tepicht, 'Rewolucja cyfrowa w sądownictwie – przegląd obszarów i narzędzi wzmacniania efektywności wymiaru sprawiedliwości' (2020) 2 *Iustitia* 70.

the other hand, informatisation of the administration of justice, even at its current stage, undoubtedly facilitates – and does so to a considerable extent – the accessibility of courts for the public, especially thanks to Court Information Portals which enable the parties, proxies and other authorised persons to access – by digital means – information on their court cases. In this study key IT solutions will be presented which are used on various fronts of the fight for an efficient legal process. As it will be demonstrated not all solutions which are currently in use entirely fulfil the tasks, they are assigned which demands the question to be asked about the need and possibility of modernising them.

Electronic writ of payment procedure

First of all, the so-called e-court (<https://www.e-sad.gov.pl>) is worth presenting. It is not an IT tool available to Polish courts at large. There is only one court which has been equipped with it so far, namely the District Court Lublin-West in Lublin, 6th Civil Division which performs the function of a national court proceeding electronic writ of payment procedures⁴. The said district court is partially competent to adjudicate cases under electronic writ of payment procedures regardless of the value of the asserted claim⁵. Proceedings under this formula are subject to regulations included in the Code of Civil Procedure (CCP hereinafter) and were introduced in Poland on the 1st of January 2010. As it emphasized in literature court proceedings before the e-court are equivalent to proceedings taking place in an ordinary writ of payment procedure in which a court issues an order for payment, should it recognize a claim as well-grounded, while defendants may dispute the decision issued and have the right to submit a statement of opposition resulting in the order for payment becoming void⁶.

The legislator has unambiguously regulated what kind of claims can be considered under the electronic writ of payment procedure. Above all, this procedure is dedicated to prosecuting monetary claims only. It arises

4 Cf The regulation by Minister of Justice issued on the 14 December 2010, amending the regulation regarding determination of the district court to which adjudication is transferred of cases under the electronic writ of payment procedure, when other district courts are competent (Dz.U. 2010.245.1646).

5 Cf Katarzyna Jasińska, 'Czy "referendarza z Lublina" może zastąpić "sędzia robot"?' (2020) *Studia Prawnicze. Rozprawy i Materiały* 91.

6 *ibid*.

from the procedural regulations directly that the issuance of an order for payment is excluded in cases where the plaintiff seeks to claim something else than money and when the order was to be served to the defendant out of the country. Only claims which became due during three years preceding the day the statement of claim is filed can be brought under this procedure. This corresponds to the general term of limitation considering claims for periodical payments and claims prosecuted by entities running economic activities (*Cf.* art. 118 of Polish Civil Code⁷). Prerequisites that prevent issuing an order for payment under the electronic writ of payment procedure are also as follows: an obvious lack of grounds for the claim and doubts regarding the facts on which the suit is based⁸. It is significant that no evidence is attached to the statement of claim filed under the electronic writ of payment procedure; the e-court takes a decision – to issue an order for payment or to discontinue proceedings due to the lack of grounds for issuing the order for payment – solely basing on the statements put by the claimant into the statement of grounds for the claim. This regulation, on the one hand, enables the claimant to obtain an order for payment relatively easily, it entails, however, the requirement of explaining all the circumstances important for the case precisely in the statement of grounds, as the court does not investigate any facts whatsoever beyond what the claimant offers. Whereas any doubts concerning the grounds for the brought claim lead to the refusal to issue an order for payment and termination of the lawsuit. What is more, the defendant can bring the legal existence of the order for payment to nullification by submitting a statement of opposition within two weeks counted from the day of service of the certified copy of the order⁹. The statement of opposition does not require any reasons, even a one-sentence defendant's letter from which it appears that they do not agree with the decision issued has legal effect. When a statement of opposition is submitted the court terminates the proceedings to the extent to which the order for payment which became null and void. Whereas an order for payment concerning which the defendant did not submit a statement of opposition within statutory period is effective equally to a valid judgment.

The electronic writ of payment procedure is not of obligatory character. And so the plaintiff can take advantage of the possibility for their case to

7 The Act of 23 April 1964, Civil Code (Dz.U. 2020.1740).

8 Cf Łukasz Goździaszek, 'Informatyzacja postępowania cywilnego' in: Kinga Flaga-Gieruszyńska, Jacke Gołaczyński (eds), *Prawo nowych technologii* (Wolters Kluwer 2021) 153.

9 See the Supreme Court resolution of 9.06.2017, III CZP 21/17 (LEX no. 2301818).

be adjudicated under this procedure (provided that certain prerequisites occur)¹⁰ or they can file the case immediately under the „traditional” court procedure. What is more, the plaintiff has the possibility to initiate a „traditional” court proceeding later if the electronic writ of payment procedure ended when the decision to discontinue it was issued – whether because of the lack of grounds for issuing an order for payment or in connection with submission of a statement of opposition against the order for payment by the defendant¹¹. Pursuant to art. 505(37) § 2 CCP if within the period of three months counted from the day the decision concerning discontinuation of the electronic writ of payment procedure was issued the plaintiff files the case against the defendant concerning the same claim but this time under a procedure other than the electronic writ of payment procedure, legal consequences which – pursuant to the relevant act – are connected with bringing legal action are effective as of the day of filing the case under the electronic writ of payment procedure. Should the parties demand that, the court – while adjudicating the case – will take into account the costs borne by the parties during the electronic writ of payment procedure.

The e-court is served by a dedicated IT system which operates the electronic writ of payment procedure. This system enables plaintiffs to file a case in electronic form, and if there is a need, submit documents complementary to the statement of claim. The plaintiff – pursuant to art. 505(31) § 1 CCP – can submit such a document solely using the teleinformatic system; and so there is no possibility for the plaintiff to submit any paper documents during the proceedings under the electronic writ of payment procedure. Therefore, in order to initiate legal action, the plaintiff has to possess an individual, secure account on the internet portal of the e-court. Filing a case results in creation of electronic case records¹². Next, the case undergoes examination by e-court (a judge or a court clerk, Polish: *referendarz sądowy*) who decide if there are grounds for issuing an order for payment or for issuing a decision to discontinue the proceedings (if there are no

10 Katarzyna Franczak, ‘Elektroniczne postępowanie upominawcze - zalety i wady dla stron postępowania’ (2011) 7 PPH 48.

11 In previous legal environment filing the objection caused the order for payment to cease to have full effect and the case was transferred to a court of general jurisdiction. For example: the judgement of District Court in Oleśno of 4.03.2021, I C 962/19 (LEX no. 3153282).

12 Jasińska (n 5) 95.

grounds for awarding the claim)¹³. The order for payment, as well as any other decisions and orders are created in the form of electronic documents. Pursuant to art. 505(30) § 2 CCP actions of the court, the court official and the presiding judge are recorded solely in the teleinformatic system and qualified electronic signature is affixed to the electronic data created as a result of those actions¹⁴.

The legislator, however, stipulated two exceptions to the purely electronic form of the procedure discussed. Firstly, any judgements (an order for payment, a decision) and orders undergo serving in paper form, after their printouts are prepared. The delivery takes place via traditional post. Secondly, the defendant can submit their statement of opposition to the order for payment in paper form. The defendant may also, however, make a choice regarding submission of pleadings via the teleinformatic system, and in such a situation any following documents in the case are submitted by them via the system. According to art. 505(31) § 3 CCP documents submitted via the teleinformatic system do not require a handwritten signature.

It is emphasised in literature that the e-court cannot be reduced to the role of an administration of justice unit which runs electronic writ of payment procedures. For it is a qualified team of people who take care of the implementation of the rules of civil procedure¹⁵. Regardless of the in principle electronic form of the procedure discussed, this procedure is a sub-type of civil procedure and all the general rules of that procedure are applicable here. Therefore the electronic writ of payment procedure maintains all the basic procedural standards without which the right for a case to be adjudicated by an autonomous and unbiased court does not exist, in compliance with the *fair play* rule; still, because of the lack of running any evidentiary proceedings by this court, a number of recommendations proposed the judicature and within legal sciences, addressing the so-called procedural justice do not apply under this procedure at all.

13 Realizacja projektów informatycznych mających na celu usprawnienie wymiaru sprawiedliwości [Execution of IT Project Aimed at improvements in the administration of justice], Supreme Audit Office Department of Public Order & Internal Security, evidence number: 160/2020/P/19/038/KPB.

14 Cf. Anna Brenk, 'Elektroniczne postępowanie upominawcze - kilka uwag na temat e-sądu', (2014) 3 KRS 10.

15 *ibid* 14.

The IT system dedicated to the electronic writ of payment procedure is operated by people and is not in artificial intelligence systems' hands¹⁶. Not unreasonably, it is pointed out that the electronic system itself, dedicated for the electronic writ of payment procedure, is intuitive and relatively easy to operate. It is not flawless, however. For the system is not sufficiently adjusted to everyday reality's requirements, in particular, as of today, no application dedicated for mobile devices has been created. The system is also of autonomic character and is not sufficiently integrated with other services¹⁷. Breaks in its functioning happen, too, due to technical issues¹⁸. Periodically, in 2016 and 2017 the teleinformatic system was not adjusted to procedural regulations. This negligence resulted in a number of complications and forced judges and court officials working at that court to undertake several additional activities. The situation caused prolongation of e-court proceedings as well¹⁹.

Undoubtedly, for many entities the possibility to obtain an order for payment issued after completion of an electronic writ of payment procedure is a desired solution. The above stated is distinctively shown by the enormous number of cases filed under the electronic writ of payment procedure²⁰. For it is a procedure which – in Polish circumstances – enables an order for payment to be obtained remarkably fast. As it is demonstrated by the available data during the first half of 2019 the duration of a proceeding under the electronic writ of payment procedure amounted to (rounding off) 24 days, while in the year 2018 the figure was 26 days, whereas in 2017: 39 days respectively²¹. Unless a statement of opposition regarding the order for payment is submitted by the defendant, the order leads to the same effects as those connected with a legally valid judicial decision, in particular it can become an enforceable title subject to enforced debt collection, which undoubtedly constitutes an attractive alternative for the

16 Cf Jakub Pawliczak, Artur Pietryka, 'Elektroniczne postępowanie upominawcze - ocena skutków regulacji', (2011) 4 KRS 31.

17 (n 13).

18 Information about such interruptions is presented on the website of e-court. For example: <https://www.e-sad.gov.pl/Aktualnosci.aspx?news_id=253> accessed 22.05.2021.

19 (n 13).

20 In 2018 under electronic writ of payment procedure 1.419.190 writs of payments were issued; in 2019 – 1.482.845 and in 2020 – 1.1516.277. Cf. 'Ewidencja spraw w zakresie elektronicznego postępowania upominawczego (EPU) w latach 2010-2020', <<https://isws.ms.gov.pl/pl/baza-statystyczna/opracowania-wieloletnie>> accessed 01.06.2021.

21 (n 13).

‘traditional’ court proceedings, especially regarding class action (against banks, money lenders, or other entities rendering services to/for a broad array of consumer).

A doubt could be voiced, however, whether such mass issuance of orders for payments does not show in a sense that the administration of justice becomes fiction²². As it has already been discussed, a decision to issue an order for payment or to refuse to issue it is taken by a judge or a court clerk solely on the basis of the claims presented by the plaintiff, without verifying their genuineness using any evidence whatsoever, consequently – in a sense – automatically²³. On the other hand, a statement of opposition, even if worded in general terms and lacking any grounds, results in an immediate annulment of the order for payment which was issued under the procedure. And so, the electronic writ of payment procedure is in a sense based exclusively on the statements presented by the parties involved in the procedure and the e-court does not undertake any evidentiary proceedings aimed at determining the actual state of affairs regarding the adjudicated case, consequently does not exercise the so-called objective truth rule.

Programs used for managing court proceedings and secretariat's work (Sawa, Sędzia-2)

The process of informatisation of Polish courts brought widespread replacement of court registers (repertories, lists, indexes) with electronic tools. For this purpose, programs Sawa and Sędzia-2 remain widely used by courts²⁴. The primary function of these IT tools is maintaining a repertory/office system for court secretariats, they undergo, however, frequent modernisations and get equipped with new, additional functionalities²⁵.

22 *ibid.*

23 Marek Załucki, ‘LegalTech w sądownictwie’ in: Dariusz Szostek (ed), *LegalTech. Czyli jak bezpiecznie korzystać z narzędzi informatycznych w organizacji, w tym w kancelarii oraz dziale prawnym* (C.H. Beck 2021) 127.

24 Cf <<https://lodz.so.gov.pl/container/wydzial-wizytacyjny/2016/sekretariaty/iii-rodz-sr-pabianice.pdf>> accessed 05.06.2021; <https://rzeszow.so.gov.pl/files/2a_spr.pdf> accessed 05 June 2021.

25 Joanna Korolczuk, Informatyzacja postępowania sądowego. Szanse i zagrożenia, (2018) 4 *Młody Jurysta* 43 <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj5zez63oDxAhUymIsKHTbhC1QQFjACegQIAhAD&url=https%3A%2F%2Fczasopisma.uksw.edu.pl%2Findex.php%2Fmj%2Far>>

These programs comprise databases where basic information on every case adjudicated by a particular court division is (may be) posted. Each court proceeding is subject to registration according to a case reference number that has been assigned to it (including a designation of the court division, the repertory in which the case has been filed, the number of the case assigned to consecutive cases in the order they are filed and the year of registration). Personal information concerning the parties to the proceedings and other individuals taking part in the proceedings e.g. court experts or witnesses (names and surnames of natural persons, businesses and legal persons, as well as organizational units which are not legal persons) is entered into the system, as well as are their addresses. It is also possible to include some additional data regarding those entities, e.g. PESEL number, telephone numbers, e-mail addresses²⁶. All significant actions connected with a particular judicial proceeding are subject to registration in the system, beginning with the fact and date of filing the suit or a motion which initiates proceedings, following with further procedural acts right up to the legally valid completion of the proceedings and sometimes even after it finishes (e.g. issuance of an enforceable title). Concerning documents submitted by the parties to the proceedings or other persons, only a note is posted in the system – indicating what type of document it was – from which one can learn just who and when submitted the document. Whereas all the documents originated in court (decisions, minutes of sessions, official written records) are entered into the system in their entirety (an electronic document whose content is identical to the paper document, e.g. a judicial decision, which is in the files of the case) is put into the system. That enables a quick determination of the course of a particular judicial proceeding even if there is no possibility to physically access the files of the case; moreover, it facilitates the process of creation of certified copies of court-originated documents. It is also noted down in the system where the case files are currently located, which is exceptionally useful in everyday court functioning practice²⁷.

The possibility to search through information stored by those programs according to various criteria is their key function. Obtaining detailed information on a particular court proceeding can take place not only after the case reference number is entered into the search window, but also in a

title%2Fdownload%2F2990%2F2727%2F&usg=AOvVaw3p7bnSlpZXcKkGpdY9x91m> accessed 05 June 2021.

26 *ibid.*

27 Cf <<https://nawokandzie.ms.gov.pl/numer-13/wokanda-13/akta-pod-kontrola.htm>> accessed 05 June 2021.

different way. In particular, it is possible to determine whether any court proceedings are underway which involve a certain person. It is not out of the question that the desired information is unearthed basing on the date of a hearing, or even in the course of searching through all proceedings conducted by a particular judge²⁸.

The abundance of information disclosed by these programs makes them effective tools in the course of preparing various statistics regarding operations of courts. In particular, it is possible to establish – in a fully automated manner – how many active lawsuits is a certain judge conducting at a given moment, how many cases were filed in their department during a certain period, how many cases the judge has closed or how many statements of reasons they prepared. Functionalities connected with statistics enable also to establish, for example, the number of court cases which within a given period of time ended with a judgement awarding the complaint or petition, a decision to dismiss it, discontinuation of the lawsuit or a settlement.

A function which is very important from the perspective of care for a correct course of court proceedings is the integration of repertory-office programs with the system of electronic confirmation of correspondence reception which is run by Poczta Polska [the Polish national state-owned mail company] which has been appointed the operator performing the delivery of court letters. An electronic confirmation of reception consists in delivery of a letter or parcel basing on a record present on a teleinformatic system and subsequently setting down a signature by the recipient on a mobile device²⁹. Thanks to linking the electronic confirmation of reception with the repertory-office programs immediately after correspondence is delivered to a recipient, appropriate information appears in the court's system. Electronic confirmations of reception of correspondence sent regarding every court case undergo printing out and putting into the case's records. The functionalities presented are therefore of great importance from the practical point of view, more so, however, for the court administrative staff than members of judiciary. From the judges' perspective usefulness of the discussed tools is sometimes evaluated point-blank critically³⁰. It stems from the very essence of these programs which – being

28 *ibid.*

29 Cf <<https://www.poczta-polska.pl/biznes/korespondencja/elektroniczne-potwierdzenie-odbioru>> accessed 01 June 2021.

30 Cf 'Currenda, czyli program "nowocześnie utrudniający życie sędziom", <<http://www.poztywam.pl/2015/08/currenda-czyli-program-nowocześnie.html>> accessed 29 May 2021.

repertory and office connected – are dedicated for court secretariats, not for judges. Nevertheless, it is impossible to avoid coming to conclusion that from the perspective of efficient handling court proceedings and managing the work of court secretariats utilizing IT tools of such kind (obviously, allowing for the purposefulness of their modernization and up-dating) is necessary and constitutes a real improvement, uncomparable to the previous solutions based on paper repertories, lists and indexes.

Software used for recording court sessions

Pursuant to art. 157 § 1 CCP an open session results minutes prepared by a court reporter. Minutes are prepared using a device that records sound or sound and video as well as in writing as instructed the presiding judge. Currently it is common to record the course of open sessions (particularly hearings) using sound and video recording devices. Most courtrooms have been equipped with video cameras and microphones that enable that task to be completed.

Operation of the process of recording court session is conducted using dedicated software. One of such programs is ReCourt which has been adjusted to the specific character of recording court sessions. This software combines functions of sound and video recorder with word processor which enables drawing up written minutes. The written record is in such a situation edited in the form of ‘notes’ synchronized in time with the sound and video recording³¹. The written minutes are also subject to copying and pasting into the repertory-office system functioning at a given court (Sawa, Sędzia-2).

The sound and video recording, along with the written notes is saved, and after that it can be played without any limitations. On application from the parties to the proceedings a CD/DVD containing the recording can be given to them. It is also possible to familiarize oneself with it via the Information Portal (*Portal Informacyjny*)³².

31 Cf <https://www.rzeszow.so.gov.pl/files/instrukcja_v.3.0.pdf> accessed 05 June 2021.

32 For more about the recordings of court sessions see: <<https://www.arch.ms.gov.pl/pl/sady-w-internecie/e-protokol>> access: 01 June 2021.

Software used for operating remote court hearings

Covid-19 epidemics influenced numerous changes in law, which was postulated in literature³³. In particular, that challenging time brought about acceleration of the pace of work on conducting sessions by Polish courts in a remote mode. Pursuant to art. 15zzs(1) clause 1 of the Act of 2 March 2020 on exceptional solutions connected with preventing, counteracting and fighting COVID-19, other contagious diseases and crisis situations caused by them³⁴ during the period when the state of epidemiological threat or the state of epidemic announced due to COVID-19 and for a year after the latter was called off, in cases heard under the Code of Civil Procedure regulations, hearings or open sessions are conducted using technical devices which enable conducting them remotely, directly transmitting the sound and video simultaneously over the distance, provided that the persons taking part do not need to be present in the building where court is located, unless conducting the hearing or the open session without the use of the above mentioned devices will not cause excessive risk for the health of individuals taking part in proceedings.

The introduction of software operating remote sessions into Polish courts involved the necessity to couple the functions indispensable for conducting teleconferences with the option to record the course of the session using the already existing software (ReCourt). As a result of the above mentioned, recording a hearing conducted in the remote mode involves recording video and sound from the courtroom and from the program operating the teleconference.

The videoconference system is based on the Videoconference Platform which utilizes Avaya-Scopia or Jitsi software and is made available by the Court of Appeal in Wrocław. The court before which a certain proceeding is taking place becomes the organiser of the session or hearing conducted in the videoconference mode and moderates its course. The organizer of the videoconference manages its course and decides about participation of Attendees. The session moderator (a judge) can switch off all the attendees' microphones and give floor solely to chosen persons³⁵.

33 Cf Aleksandra Partyk, 'Epidemia (COVID-19) a tok postępowań cywilnych i sądowniczych' (2020) 5 PPP 42.

34 Dz. U. 2020.1842.

35 Cf <[https://wroclaw.sa.gov.pl/container/Wideokonferencje/Regulamin%20Systemu%20Wideokonferencji%20\(003\)%20-%20Kopia.pdf](https://wroclaw.sa.gov.pl/container/Wideokonferencje/Regulamin%20Systemu%20Wideokonferencji%20(003)%20-%20Kopia.pdf)> accessed 01 June 2021 and <https://wroclaw.sa.gov.pl/container/Wideokonferencje/Zestaw%20dobrych%20praktyk_v2-0.pdf> accessed 01 June 2021.

Organising videoconferences using Avaya-Scopia software takes place via a portal accessible at the internet address: <https://cpw.wroclaw.sa.gov.pl>. The essential condition for organisation of a videoconference based on the Avaya-Scopia software is establishment of an account³⁶. Whereas if Jitsi software is used, the court sends e-mail messages to the parties, their proxies or other persons. The messages contain a link which enables joining the remote hearing. Downloading or installing any software is not required ahead of the hearing. It is also possible to take part in a remote hearing using a smartphone via the Jitsi Meet application³⁷.

Information Portals

From the perspective of the parties to the proceedings, and especially from the point of view of legal professionals representing them, Common Courts' Information Portals are exceptionally useful tools. For they constitute tools which enable entitled or authorized entities to access information on a lawsuit taking place with their involvement. Information Portals are linked with repertory-office systems used at a particular court, as well as with software used for recording hearings³⁸. By way of example, persons who decide to use the Portal do not need to contact the secretariat employees in order to find desired information³⁹.

In order to use the Information Portal one is required to set up a free-of-charge personal account. Thanks to such an account the registered users gain access to plentiful information regarding, among others, the state of their court case (which means the stage a certain proceeding is at), actions undertaken in the course of the case (with annotations pointing to dates and persons performing them), dates of sessions and hearings. The

36 Cf <<https://wroclaw.sa.gov.pl/container/Wideokonferencje/Instrukcja%20instalowania%20Scopia%20-%20przegl%C4%85darki%20%2B%20mobile%20v1-4.pdf>> accessed 01 June 2021.

37 Cf <<https://wroclaw.sa.gov.pl/container/Wideokonferencje/instrukcja%20po%C5%82%C4%85czenia%20JITSi%20-%20dla%20obywatela%20v1-3.pdf>> accessed 01 June 2021.

38 Cf <<https://czestochowa.so.gov.pl/portal-informacyjny,new,m1,190,231.html,1370>> accessed 01 June 2021.

39 Cf Ewelina Mikołajczuk, *Analiza funkcjonowania Portali Informacyjnych Sądów Powszechnych*, Instytut Wymiaru Sprawiedliwości, Warszawa 2020, 16. <https://iw.s.gov.pl/wp-content/uploads/2021/02/IWS_Miko%C5%82ajczuk-E._Analiza-funkcjonowania-Portali-Informacyjnych-S%C4%85d%C3%B3w-Powszechnych.pdf> accessed 1 June 2021.

Information Portal makes it also possible to familiarize oneself with documents generated by the court while adjudicating the case which are subject to being entered into the repository-office system (e.g. decisions and their grounds, session minutes). One significant function of the Information Portal is access to electronic minutes. If the session underwent recording using voice and video capturing devices the audio recording form that session is subject to being made available via the Information Portal⁴⁰.

Information Portals have become working tools exceptionally willingly used by persons who take part in court proceedings. In the period between the 1st of December 2019 and 30th of November 2020 Information Portals have been logged on to over 23 million times, over 21 million documents and nearly 0.5 million minutes were downloaded from them or read. Around 70 % of Polish legal practitioners, who took part in the research conducted, use Information Portals daily, while further 26 % do so a few times a week. Almost 95 % respondents expressed generally positive opinions as for their functioning⁴¹.

PESEL-SAD

From the perspective of informatisation of courts another system is significantly important as well, namely PESEL-SAD which is an exact copy of the PESEL base, only created for the purpose of being used during court proceedings⁴². The PESEL number (Powszechny Elektroniczny System Ewidencji Ludności, English: *Universal Electronic System for Registration of the Population*) is assigned to every Polish citizen (and to foreigners, in certain situations)⁴³ and – thanks to its unique character – enables individualisation of every person to whom it was assigned⁴⁴. Selected employees of

40 (n 38).

41 Cf Mikołajczuk (n 39).

42 Cf The Province Administrative Court in Warsaw judgment of 26.10.2015, II SA/Wa 1135/15, LEX no. 1940909.

43 Data gathered in the register concerns people who reside in Polish Republic on a permanent basis, have a permanent residence or temporary residence (over 3 months) registration, as well as individuals who have applied for an ID card or passport. It also contains information regarding individuals for whom there are grounds for possessing the PESEL number pursuant to separate regulations. Cf. <https://www.arch.ms.gov.pl/pl/sady-w-internecie/peselsad/> (access: 17.05.2021).

44 Pursuant to regulations of the Act of 24.09.2010 on population registration (Dz.U.2021.51) changing the PESEL number is acceptable only in exceptional situations, among others, following sex change.

common courts, judges and court secretaries in particular, are authorised to use the PESEL-SAD database⁴⁵. The documentation concerning the PESEL-SAD system is subject to protection. As The Province Administrative Court in Warsaw stated in the judgment of 26th October 2015 in the case II SA/Wa 1135/15⁴⁶ the Polityka Bezpieczeństwa Systemu Informatycznego PESEL-SAD (PESEL-SAD IT System Security Policy) constitutes classified information and disclosing it to unauthorised persons could negatively impact executing tasks within the realm of public safety and administration of justice, or even lead to threatening the rights and freedoms of the citizens.

Access to the PESEL-SAD database results in streamlining proceeding in court cases primarily because it enables unequivocal identification of the parties to a particular proceeding, therefore eliminating the risk arising from concurrence of names and surnames. On the other hand, linking a PESEL number with a particular individual (e.g. the defendant) makes it possible for a judge to verify whether the lawsuit is conducted in fact against the person indicated in the stated of claim as being sued⁴⁷. It is worth pointing out that the plaintiff, while initiating a legal action, is obliged to indicate their own PESEL number in the statement of claim and at the same time they should include information which enables identification of the defendant⁴⁸. Pursuant to art. 208(1) *in principio* CCP the court *ex officio* determines the PESEL number of a defendant who is a natural person. The Regional Court in Bydgoszcz in its decision of 14th of March 2014 in the case II Cz 73/14 (LEX no. 1661570), emphasised that the act described in art. 208(1) CCP, should be performed by the presiding judge in the court hearing the case, using the PESEL-SAD database which was created for this purpose and only upon establishing that data provided in the statement of claim are insufficient for the purpose of determining the PESEL number should they order the plaintiff to supplement the missing information under the threat of suspending the action pursuant to art. 177 § 1 clause 6 CCP. Determining the number which identifies the defen-

45 Probation officers are also authorised to access the database.

46 LEX no. 1940909.

47 Cf The judgment of District Court in Gdynia of 4.07.2019, I1 C 3473/2018 (LEX no. 2748032).

48 It could be pointed out that within the electronic writ of payment procedure the plaintiff is obligated to indicate the defendant's PESEL number as well, what remains, however, a kind of peculiarity comparing to cases heard under other procedures. See also: https://www.e-sad.gov.pl/Subpage.aspx?page_id=42 (access: 17.05.2021).

dant is at most times uncomplicated once the court has a set of data (name, surname, address, and sometimes the date of birth)⁴⁹.

Access to the PESEL-SAD database is of great importance also due to the fact that the discussed database contains address information. Regarding selected court cases adjudicated under non-contentious procedures (e.g. concerning establishment of easement, acquisitive prescription, or inheritance) the court *ex officio* determines the circle of persons interested in the case and summons them to take part in the proceedings. The possibility to establish those persons' address information on the spot, by means of the PESAL-SAD system, significantly streamlines and accelerates the proceedings.

Moreover, information regarding civil status of individuals, including their deaths, is entered into the PESEL-SAD database and regularly updated. Whereas the death of a party to proceedings constitutes an obligatory prerequisite for suspension of a civil proceeding (art. 174 § 1 clause 1 CCP), whereas conducting proceedings involving a deceased person constitutes grounds for invalidity of those proceedings (art. 379 clause 2 CCP). And so the possibility to verify whether parties to a proceeding are alive is exceptionally useful from the perspective of ensuring the proper course of proceedings. Unfortunately, until today repository-office systems used by courts have not been integrated with the PESEL-SAD database, therefore the function of automatic verification of whether the parties to a proceeding remain alive does not exist. Introduction of such a solution in future is worth postulating.

System of Random Allocation of Cases

In the current legal environment allocation of cases to judges for adjudication is done by means of an IT tool, named: 'System Losowego Przydziału Spraw (SLPS)' [*System of random allocation of cases*]. The system is supposed to evenly distribute cases to be heard by particular judges adjudicating in a certain court. Nevertheless, not every court case is equally complex and requires identical amount of time and work in order to be adjudicated. Allocating the same number of cases to judges itself would not mean that they are equally burdened with work. As it is pointed out in literature

49 Aaleksandra Partyk and Tomasz Partyk, 'Niewskazanie numeru PESEL jako brak formalny pozwu. Glosa do postanowienia s. apel. z dnia 11 marca 2015 r., I ACz 244/15' (2015) LEX/el.

“creating a system which exercises the rule of even load fully and in an extreme and inflexible manner must take place at the expense of infringing equal chances of parties for their cases to be adjudicated within reasonable timeframe”⁵⁰. Since one could envision a situation when two judges receive the allocation of identical number of cases, yet those allocated to the first judge are really simple, whereas the ones allocated to the other judge are complicated and multi-thread. The SLPS system is supposed to solve this problem thanks to classifying cases into certain categories before the random draw.

The Ministry of Justice points out that the report generated by the system upon the draw is a result of a greatly complex process influenced by a number of various factors which are usually known only at the court conducting the draw⁵¹. Such a report contains the case reference number, the date of the draw, the number of the draw, category and symbol of the case, the cost of the case, the result of the draw, indication of the judge to whom the case was assigned, as well as the number of judges who took part in the draw. Additionally, the load of cases existing before the draw is indicated, along with the figure randomly assigned to the case. Consequently, the report allows one to determine that the draw did take place and which one of the judges working in a certain court is to adjudicate in the assigned case, basing on several variables⁵².

Allocation of cases should be transparent, in order to eliminate any abuse. What still remains problematic is the fact that it has not been revealed to the public and to judges at large, exactly how SLPS functions and precisely what algorithm the draw is based on. It is noted in literature, and rightly so, that the lack of openness in this matter might infringe the right for a case to be adjudicated by an independent and unbiased court, since it is not known how the cases are allocated to particular adjudicators⁵³. The outright fear arises of an instrumental use of the tool in order to influence the makeup of a particular judging panel. Although an assumption should be made that every judge to whom a case is allocated for adjudication will conduct it in a way compliant with the code of conduct in order for the judgement issued to be fair and to take substantive and procedural

50 Paweł Rygiel, ‘Losowy przydział spraw cywilnych w sądzie drugiej instancji’ (2019) 2 PS 49.

51 The Province Administrative Court in Warsaw judgment of 12.11.2020, II SAB/Wa 352/20, LEX no. 3106939.

52 The Province Administrative Court in Warsaw judgment of 12.11.2020, II SAB/Wa 352/20, LEX no 3106939.

53 Rygiel (n 50) 50.

regulations into account, it does not seem to be an argument, however, which sufficiently justifies acknowledging that the failure to reveal the mechanism of SLPS's functioning does not remain a problem⁵⁴.

Summary

In the last decade the Polish justice system has undergone a revolution which was connected with the computerisation and informatisation, whereas the work in the field has not been finished yet. The existing solutions need to be assessed in principle positively. However, they are not sufficient to meet the actual needs, in particular when assessed from the view of the problem of the lengthiness of court proceedings. One can say that the solutions based on modern technologies have been introduced in Polish civil cases across some spots, but not in a global way. Surely the already existing mechanisms significantly support the performance of the justice system. The exploitation of information technology advancements makes access to courts much more convenient for parties and their proxies. Electronic Procedure by Writ of Payment is of autonomous character, however on the national scale it is a huge relief for the courts of their workload with regard to cases connected with payments (particularly for a small value of the matter in issue). Still, a coherent, complex solution aimed at full informatisation of court cases, for instance by digitalisation of court records, is missing. An overhaul which will usher the Polish justice system into the XXI century needs to be deemed desired. This undoubtedly requires a broad discussion from both legal and technological perspective, and what is more, an analysis of regulations implemented in other countries, along with their effectiveness, so that the modernisation of Polish courts could lie up to the expectations aroused by it.

54 It is worth mentioning that the stance has been expressed in the body of penal judicial decisions according to which infringement of the rules concerning allocation of cases based on a system does not as such automatically mean that unconditional grounds for appeal exist regarding particular proceedings; it does not exclude, nevertheless, examination whether such a circumstance does not result in a violation of procedural provision if it could have influenced the content of the judgment. The Supreme Court decision of 17.07.2019, V KK 296/19, LEX no. 2696866.

Summary of the book

Lawyers, including advocates, legal advisers, judges and prosecutors are facing a major revolution both in the way they operate, such as running law firms, and in the substantive and legal aspects of legal assistance provided, to include court proceedings. The changes are already taking place. For some lawyers, they are obvious, noticeable and they willingly participate in them, for others, they are a problem, an attitude of denial emerges and an attempt to maintain the current *status quo*. Many do not see the changes coming.

Depending on the digital competence of the state, lawyers function at different levels of use of LegalTech tools. In states with low levels of digital competence, it is LegalTech 1.0, reinforced by the Covid19 pandemic based on simple tools to support the work of lawyers (expert systems, online services, instant messaging, online communication with courts). In countries with higher digital competencies, it is LegalTech 2.0 (such as smart contract, process tokenization, etc.) or LegalTech 3.0 based on process automation, including decision and judgment issuance, AI or machine learning support.

Algorithmic codes, including algorithmization of law, are increasingly used not only by lawyers but also by entrepreneurs in the area so far reserved exclusively for lawyers. Many activities that used to be performed by people are more and more often and even with better results performed by algorithms. The development of machine learning, AI and algorithmization of legal thinking is still ahead of us. The way of creating and publishing legal acts is changing, both in the form of texts based on specialized software and new proposals - immediate implementation of the law in algorithmic codes, in a form understandable primarily by computer programs.

LegalTech tools are increasingly used in the communication of lawyers but also in court proceedings. Particularly this tendency has strengthened in the pandemic period. The level of use of electronic communication in legal proceedings varies. From quite low - sending correspondence online, through video hearings, to specialized online courts fully automated, exclusively online, based on algorithms and even automatic issuance of judgments. This is no longer science fiction, but real and functioning courts. In Europe we are facing a very serious discussion not only about electronic communication, electronic identity, electronic identification,

electronic form, but also about the way the judiciary works, the level of automation of the adjudication process and the participation of the human factor in the whole process, including lawyers.

LegalTech tools force lawyers to use an appropriate methodology for their implementation and supervision of algorithms. Disciplinary proceedings are already being conducted against lawyers for defective use of Legaltech tools in the office, defective data storage, defective electronic communication, etc. Data security, regardless of how it is stored (in the cloud or stationary in the organization), cyber security of devices used by lawyers, but also algorithms is becoming crucial.

In the near future we are facing further development of algorithms, proliferation of blockchain and smart contract, spread of machine learning and AI, automation of processes, and activities of lawyers both in law firms and in the broader justice system. Maybe a new type of courts (exclusively online and based on algorithms), and even to some extent the legal subjectivity of AI.

These are the problems we have to face not only in the future but already today. The revolution in the way the law and lawyers operate has already begun. It is time to recognize this and take appropriate action, both in terms of education, regulation, ethics, corporate rules, and the acquisition of new competencies by lawyers. The time of algorithms is coming. For this reason, the considerations presented in this book are intended to be useful in lawyers' continuing adventures with LegalTech tools. The discussion and suggestions contained herein are intended to further scholarly discourse on the use of technological tools in the operation of the justice system. We invite you to join the discussion.

Dariusz Szostek, Mariusz Załucki

About the authors

1. **Dariusz Szostek** – he is a partner and founder of the Law Firm Szostek-Bar and Partners, of counsel in Maruta/Wachta, expert of the European Parliament Artificial Intelligence Observatory; Member of the European Law Institute in Vienna, member of the Programme Council of the IGF UN 2021, member of the Blockhaton EUiPO Brussels, chairman of the Scientific Council of the Virtual Chair of Ethics and Law (a consortium of Polish universities and NASK), professor at the Faculty of Law and Administration at the University of Silesia, lecturer, author of several dozen publications (including monographs and foreign publications, including bestsellers, e.g. *Cyber Law* - New York, Tokyo, Sydney, Amsterdam, London edition), author of several books. co-author of IT and data security in a law firm (also editor), author of a monograph “*Blockchain a prawo*” 2018 (Warsaw) - English edition “*Blockchain and Law*” (Nomos, Germany 2019), co-author of monograph *Smart contract and Insurance* (London, in print). Editor and co-author of “*Internet and New Technologies Law. Perspectives and Challenges*” (Nomos 2021).
2. **Mariusz Załucki** – full professor of law, head of the Institute of Private Law at the AFM Kraków University (Poland) A graduate of legal studies in Poland, he also learned about European economic and civil law at the University of Bielefeld in Germany and the University of Staffordshire in Stoke-on-Trent, England. He has worked as visiting professor at several foreign universities, e.g. University of Bristol (England), University of New South Wales in Sydney (Australia), Keele University (England), Staffordshire University (England), University of Las Palmas de Gran Canaria (Spain), University of Reggio Calabria (Italy). He is the author of over 150 publications, scientific specialties: civil law, intellectual property law, private international law, protection and promotion of human rights. Since 2001, he is a member of the Bar Association in Rzeszów, he practises as an advocate. In 2021, he was recommended by the National Council of the Judiciary in Poland to become a judge in the Supreme Court of Poland. Editor and co-author of “*Internet and New Technologies Law. Perspectives and Challenges*” (Nomos 2021).
3. **Michał Araszkiwicz** – he is an assistant professor (adiunkt) in the Department of Legal Theory at the Jagiellonian University in Kraków

and holds a PhD in legal theory. He is also a legal advisor, partner in *Araszkiewicz Cichon Araszkiewicz Law Firm* (acrlegal.pl). Michał Araszkiewicz has published extensively in the field of legal theory and in the area of AI and Law. He specializes in theories of legal reasoning and argumentation, legal interpretation, case-based reasoning as well as in normative aspects of Artificial Intelligence, including the right to explanation. He is currently a member of the Executive Committee of the International Association for Artificial Intelligence and Law (IAAIL) and of the Steering Committee of JURIX. He served as the President of the ARGDIAP association (argdiap.pl) – a NGO focused on the problems of argumentation, dialogue and persuasion. He has co-organized numerous scientific events including the JURIX 2014 (Conference Chair) and three consecutive editions of XAILA – The EXplainable and Responsible AI in Law workshops at JURIXes 2018-2020. In legal practice he specializes in the field of legal regulation of AI as well as in Intellectual Property, Data Protection and broadly understood Protection of Information.

4. **Gabriela Bar** - Attorney at Law, doctor of law, managing partner at *Szostek_Bar and Partners*. Enthusiast of new technologies, with particular emphasis on Artificial Intelligence. Experienced expert in the field of electronic contracts, e-commerce, legal aspects of IT systems implementation and privacy protection. Member of the IEEE Legal Committee in the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems project; member of the New Technologies Law Association, Women in AI and AI4EU. Assistant profesor at the Opole University and Silesia University.
5. **Wilfried Bernhardt** – born in Lübeck (Germany), is a lawyer in Berlin, honorary professor for IT Law at the faculty of law of the University of Leipzig. He studied law in Augsburg and Kempten (Germany). CEO of the Bernhardt IT Management Consulting GmbH, Member of the board of the National eGovernment Competence Center and on the board of the German EDV-Gerichtstag. He is the author of numerous publications, in particular on issues relating to the use of information technology in administration and the judiciary.
6. **Katarzyna Biczysko-Pudęłko** – assistant professor at the Institute of Legal Sciences at the University of Opole, associate of the Centre for Legal Problems of Technology and New Technologies at the University of Opole, lawyer.
7. **Maddalena Castellani** – certified lawyer since 2007, specialized in Copyright and IPR Law (copyright, trademarks, design, know how, patents, software) and in International Corporate and Commercial

- Law. She is partner of the Law Firm Triberti Castellani, established both in Milan and Verona. Since 2019 Member of the Anti-Counterfeiting Blockathon Forum set up by the European Commission and EUIPO. Professor of Law.
8. **Tomasz Chomicki** – graduate of the University of Technology and Agriculture in Bydgoszcz at the Faculty of Electronics and Telecommunications, The George Washington University - School of Business and specialist courses at the London Business School. Currently, he has been working at Samsung Electronics Polska for six years. In the corporation, he is responsible for business development and the creation of new strategic business partnerships, including the creation of innovative projects with public administration and the commercial sector, as well as public policy in the field of technical regulations. Technology Director and Member of the Council - ZIPSEE Digital Union - an organization in the RTV and IT industry; academic teacher and coordinator of the Samsung Electronics Polska - Warsaw School of Economics program; Chairman of the Digital Administration Committee at the Polish Chamber of Information Technology and Telecommunications; Vice-chairman of the Council for Telecommunications and Cybersecurity.
 9. **Patryk Ciurak** - he is an academic teacher, an author and a project manager (holds the PSM I, PSPO I and SPS certificates). His scientific interests are focused on empirical analysis of changes in law and the use of statistical methods to describe phenomena occurring in legislation, as well as exploring the relationship between a text-written law and a computer code.
 10. **Wojciech Cyrul** - LL.M, D.E.A. Chair in Legal Philosophy and Legal Ethic, Department of Law and Administration at the Jagiellonian University in Krakow. He studied law at the Jagiellonian Universities of Krakow, Katholieke Universiteit Brussels and Catholic University of Washington DC. He holds degrees in law (mag. iuris, PhD and habilitation) and in legal theory (LL.M. and D.E.A.). He is currently a professor at the Jagiellonian University in Cracow and a Member of the Executive Board of the European Academy of Legal Theory. Previously Associated Professor at the Katholieke Universiteit Brussel and at the University of Cardinal Wyszyński in Warsaw. He is an author of several dozen publications on legal theory and legal informatics. Research interests: Legal informatics, theory and philosophy of law, ICT law, theory of legislation.
 11. **Maria Dymitruk** - attorney-at-law, researcher at the Faculty of Law, Administration and Economics of the University of Wrocław. Since

2014, at the Center for Research on Legal and Economic Problems of Electronic Communication, she conducts research on the use of artificial intelligence in law, e-justice issues and the impact of technology on law and justice. She is the author of scientific publications and a speaker at national and international scientific conferences, as well as the manager and contractor in national and international research projects. Chairwoman of the Committee for New Technologies and Digital Transformation of the District Chamber of Legal Advisers in Wrocław. Member of the Committee on New Technologies of the Federation of European Bars (Fédération des Barreaux d'Europe) and the International Association of Artificial Intelligence and Law (IAAIL).

12. **Ewa Fabian** - attorney-at-law associated with the Warsaw Bar Association of Advocates, researcher using empirical methods of analysis in the field of new technology, including digital accessibility. Alumni of the Warsaw University of Technology, international law firms and SCC Arbitration Institute in Stockholm. Expertise in litigation, arbitration, new technology law and intellectual property.
13. **Agnieszka Kubiak Cyrul** - associate professor (adiunkt) at the AFM Krakow University, Faculty of Law, Administration and International Relations, Chair of Civil Law. She has published in the field of civil law and consumer protection law.
14. **Tomasz Grzegory** – lawyer, professionally associated with start-ups. Currently at Google as Legal Director CEE, responsible for managing the company's legal risk in nineteen jurisdictions in Central and Eastern Europe. PhD student at the Institute of Legal Sciences of the Polish Academy of Sciences, lecturer at the Kozminski University and at the Institute of Economics of the Polish Academy of Sciences in Warsaw. In the past, inter alia, a long-term member of the Council of the Polish Chamber of Information Technology and Telecommunications, a member of the Council for Informatisation of the Małopolskie Voivodeship, legal expert and co-founder of the Legal Group - an expert body operating within IAB Polska. For over eighteen years he has been involved in projects related to shaping the law of new technologies.
15. **Iga Kurowska** - A doctor of law (cum laude) from Sorbonne Law School, where she previously obtained a Master's degree in international business law and graduated from a postgraduate studies in business. Her research topic was "Legal challenges of data-driven international M&As". Dr Kurowska has worked in prestigious law firms, advising clients on legal and business aspects of international corporate transactions, as well as in European institutions since 2014. After

founding and managing a French boutique law firm Verne Legal since 2018, she recently joined a leading corporate Spanish law firm Aktion Legal, as a Head of Innovation and Legaltech. She continues as a visiting professor at two universities in Paris and teaches a number of legaltech courses all over Europe. She participates frequently in conferences and publications and has set up a new independent educational platform and podcast – Legaltech Academy. Her legaltech startup Simplify Docs was acquired by an international publisher and legaltech provider in May 2021. She is an active member of legal technology initiatives in France, Poland and Spain, as well as a member of Plug-in foundation, being in charge of Ambassadors of Polish Innovation Awards (API).

16. **Małgorzata Kurowska** - Attorney-at-law, expert in managing comprehensive projects encompassing legal, organizational and IT issues. Counsel at Maruta Wachta Law Firm. She is responsible for the projects pertaining to trust services and electronic identification, as well as cybersecurity and personal data. Author of articles in She owns a CIPP/E certificate and is fluent in English and French, she also communicates fluently in German. She lectures at higher education institutions in the field of personal data protection and cybersecurity (Leon Kozminski University, Górnośląska Wyższa Szkoła Handlowa [Upper Silesian Academy of Economics]). She graduated from the Faculty of Law of the University of Warsaw and Poitiers University.
17. **Pierpaolo Marano** – a law professor at the Catholic University of Milan and the University of Latvia, Professor Marano holds a PhD in Banking law and regulation (University of Siena), and he is a scholar in residence at the University of Connecticut, School of law – Insurance Law Center, an Honorary Fellow at the University of Hong Kong – Asian Institute of International Financial Law, and an Affiliate Faculty at the Department of Insurance of the University of Malta. He is a lawyer practising in Milan as an of Counsel at the PwC TLS Avvocati & Commercialisti law firm, where he is counselling in the Department of Financial Services.
18. **Vytautas Nekrošius** – is a Lithuanian politician and civil legal scholar, PhD, Professor at the Faculty of Law of Vilnius University, the Faculty of Law's, since 2016 president of the Lithuania Lawyers Association (LLA).
19. **Robert Pająk** Currently holds the position of Senior Information Security Manager in Akamai's security department. He leads a team responsible for managing information security compliance/security governance requirements. He manages global projects demonstrating

how Akamai meets the highest standards in information security. Co-founder of the Affinity Conference. Previously held various cybersecurity and data protection roles - most notably Head of Security at Future Simple Inc. (Base - now Zendesk) - a Silicon Valley-based company developing innovative software. Prior to joining Base, he was Head of Information Security for EMEA at Herbalife. For over 14 years he was also CSO at INTERIA.PL (and DPO at RMF Group) - responsible for security, compliance and privacy at one of Poland's largest portals. Founder or co-founder and member of audit committees of various Polish branches of organisations and associations dealing with security issues, in particular: OWASP/ISACA/ISSA. As part of his work for the INTERIA.PL portal, he also built and led the R&D team. Passionate about security and technology. Actively lectures at various universities and conferences - on widely understood aspects of information protection, compliance, and modern threats. Co-founder of postgraduate studies "Cyber Security Management" at Kozminski University. Cooperates as an expert with numerous companies and organisations in Poland and abroad dealing with information security in a wide sense.

20. **Przemysław Paul Polański** - lawyer and programmer, for many years acting as an IT department director. associate professor at the Kozminski University in Warsaw (*Akademia Leona Koźmińskiego*) at the Department of Quantitative Methods & Information Technology. Legal counsel at OIRP in Warsaw. Author of more than 70 publications on IT Law, including two monographs. Director of two research grants from the National Science Centre.
21. **Rafał Tomasz Prabucki** - A doctor of law. Professor assistant at the University of Silesia for the Multi-Agent Systems for Pervasive Artificial Intelligence for assisting Humans in Modular Production (MAS4AI project). Also graduate of engineer title from the Gdańsk University of Technology. Alumn LegalTech HIOP at the IE University in Madrid as part of the Tech4Law scholarship and the Lesław A. Paga foundation on the project of the National Days of Judicial Sciences. Fellow of the DeFi Talents scholarship at Frankfurt School of Finance & Management in Blockchain Center. Participant in hackathons and international conferences on the law of new technologies. Member of the steering committee of the Poland Youth Internet Governance Forum. Legal Project Manager of the Smart Human-Oriented Platform for Connected Factories (SHOP4CF project). Author of a number of publications in the field of new technologies and law.
22. **Janos Puskas** – Hungarian advocate dealing with regulatory investigations and litigation with a focus on legal and compliance issues

affecting the digital industry and online services. He specializes in new technologies law and the defense of related civil claims and regulatory disputes. He has represented his clients before the Hungarian Supreme Court in over twenty-five cases in the field of consumer protection, advertising law and other regulatory matters.

23. **Mauro Artura Rivera** – Professor of Law at the Universidad Iberoamericana (Mexico City) since 2016. He obtained his PhD at the Universidad Complutense de Madrid (Spain). He holds a Master in Parliamentary Law, Elections, and Legal Studies at the Universidad Complutense de Madrid. He obtained his Bachelor's degree in Law at the Universidad de Sonora (Hermosillo). Mauro Arturo Rivera is a member of the Mexican National System of Researchers (SNI level I).
24. **Thiago Santos Rocha** - PhD student in Constitutional Law at the University of Oviedo (Spain) in co-supervision with the Pontifical Catholic University of Rio Grande do Sul (Brazil). Researcher funded by the Vice-Rectorate of Research of the University of Oviedo (Spain), through the Plan for the Support and Promotion of Research (Project PAPI-20-PF-01). He has a master's degree in Law and Legal Science, specializing in Fundamental Rights, from the University of Lisbon (Portugal). He is an associate member of the Brazilian Basic Income Network, Basic Income Network Spain and the Association for Unconditional Basic Income Portugal. Researcher at UBIEXP - Basic Income Experiments, University of Minho (Portugal). In addition to academic production focused on the area of fundamental rights, he has experience in the area of Public Law, having integrated the permanent staff of professionals from entities such as PricewaterhouseCoopers (PWC), Ernst & Young (EY) and the National Confederation of Municipalities (CNM, Brazil), acting mainly in bidding processes and auditing projects, ruled by Brazilian legislation or by guidelines from international organizations such as IADB, IBRD and UNDP.
25. **Enrico Maria Scavone** – Legal counsel with experience of legal assistance to banks, investment firms, asset management companies, financial intermediaries and insurance companies clients, on all aspects of banking, financial services and insurance law and regulatory frameworks, also for their cross-border activities. Graduated in Law at Università commerciale Luigi Bocconi and currently Legal Senior Associate at PwC TLS Avvocati & Commercialisti law firm. He is the author of publications and articles in financial markets, banking and insurance law.
26. **Rafał Skibicki** - PhD student at the Center for Research on Legal and Economic Problems of Electronic Communication at the Faculty of

Law, Administration and Economics of the University of Wrocław, lawyer at Szostek_Bar and Partners Legal Office. His interests are related to intellectual property law and the law of new technologies. Specialist in contract law, copyright and privacy protection. He participated in numerous projects regarding the implementation of legal instruments related to new technologies, resulting from the GDPR, the eIDAS regulation or the PSD2 directive. Speaker at international and national conferences, author of publications on the law of new technologies and IPR. Honorary member of the Science Club of Civilists at the University of Wrocław.

27. **Sylwester Szczepaniak** - Attorney-at law. Specialist of regulation aspect of developing and deployment of new technology in public sector. Assistant in The Institute of Law Studies of the Polish Academy of Sciences – ILS PAS. Former worker in Ministry of Digital Affairs. Coordinator the legislation process of bill of Act of Electronic Delivery.
28. **Kamil Szpyt** – PhD, Assistant Professor at the Chair of Civil Law of the Faculty of Law, Administration and International Relations of the AFM Krakow University. He is a lecturer at the Medical College of the University of Rzeszow and associate at the *Centre for the Law of Design, Fashion and Advertising*. Dr Szpyt is an attorney-at-law, partner in a law firm Dybała Janusz Szpyt i Partnerzy Kancelaria Radców Prawnych. Within the firm he leads the practice of Intellectual Property and New Technologies Law. He is an author of over thirty publications in the field of new technology law, intellectual property law, insurance law and civil law and a speaker at several dozen international and national scientific conferences. Dr Kamil Szpyt is a member of, among others, the Polish Artificial Intelligence Society and Games Research Association of Poland and a regular contributor (publicist) to "Gazeta Ubezpieczeniowa".
29. **Marek Świerczyński** – advocate, consultant of the Council of Europe in the field of electronic evidence and digitization of judiciary. Chairman of the team for the law applicable to artificial intelligence at the Virtual Department of Law and Ethics (consortium of Polish universities). Of counsel at Kieszkowska Rutkowska Kolasiński Law Firm and associate professor at the Institute of Legal Sciences of the UKSW. Graduate of the Faculty of Law and Administration at the Jagiellonian University. He teaches new technologies law at INP PAN, the Jagiellonian University, University of Warsaw, University of Economics in Krakow and Kozminski University. He is a permanent arbitrator at the Arbitration Court for Internet Domains and a mediator at

- the UPRP/WIPO. Professor of Law at the Cardinal Stefan Wyszyński University of Warsaw.
30. **Michał Tabor** – computer scientist, graduate of the University of Warsaw. He deals with the implementation of electronic signature and electronic identification solutions. Author of many solutions in the field of electronic identification and trust services functioning in Poland, in particular the author of the widely used mechanism for submitting tax returns and the Trusted Profile. CISSP certificate holder. Member of the ESI ETSI Technical Committee. Expert of the Polish Chamber of Information Technology and Telecommunications.
 31. **Gabriela Witkorzak** – Experienced Commercial Lawyer (UK qualified solicitor) with a demonstrated history of working in the legal services industry. Skilled in Breach Of Contract, Negotiation, Community Engagement, Big Data, LegalTech, Data Protection, IT and EU Law. Strong sales professional graduated from Brunel University, BPP Law School and Akademia Leona Koźmińskiego.
 32. **Jakub Wyczik** – Jakub Wyczik - PhD candidate at the Doctoral School at the University of Silesia in Katowice in the area of social sciences (legal sciences), conducting research in the field of IT law, with particular emphasis on the legal status of data. Laureate of the first prize in the 18th edition of the competition for the best scientific work on intellectual property, organized by the Polish Patent Office. He combines his research with professional practice as an in-house lawyer in a company belonging to the group of 10 largest providers of systems for advanced data analysis in Poland (Computerworld TOP200 Edition 2020), where he participates from the legal side in IT projects carried out in cooperation with leading global technology partners such as Microsoft or Cloudera.
 33. **Michał Wódczak** – holds a DSc (habilitation) and a PhD (doctorate) in telecommunications, both from Poznań University of Technology, as well as an Executive MBA from Aalto University School of Business. He has authored three monographs in the area of autonomic intelligence systems, where the habilitation related one was published by Wiley, and the two others by Springer. Presently he holds the position of a Vice Chairman of the Communications Chapter of the Polish Section of IEEE, as well as acts as an Expert to the Legislative Committee of the Sector Council for Telecommunications and Cybersecurity. Previously he ran standardization activities as a Vice Chairman and Rapporteur of ETSI ISG AFI, the Industry Specification Group on Autonomic network engineering for the self-managing Future Internet, established under the auspices of European Telecommunications Stan-

- dards Institute. He also served as an Executive Board Member of the Association of Polish Translators and Interpreters in Warsaw.
34. **Anna Zalesińska** – attorney at law, professionally associated with the Center for Competence and Computerization of the Judiciary (Court of Appeal in Wrocław). She participated as a researcher in numerous research projects concerning computerization of the justice system (national and international). Since starting doctoral studies, she has been involved in legislative work related to the drafting of provisions related to the computerization of proceedings before common courts. Member of the Analytical and Legal Team for the implementation of the system of registration of the course of court hearings in civil proceedings in common courts at the Department of Common Courts of the Ministry of Justice (2011–2015). She was the Project Manager of the Portal Orzeczeń in the Ministry of Justice (2013-2016) and the Deputy Project Manager in the Information Portal Project in the Ministry of Justice (2013-2016), as well as a member of the Working Group for the Electronic Inquiry Office established as part of the IT Steering Committee at the Ministry of Justice. Author of numerous scientific articles and participant of several dozen conferences on the computerization of public entities, academic lecturer.
35. **Tomasz Zalewski** – attorney-at-law, partner managing the Commercial practice at Bird & Bird law firm. Founder of the LegalTech Polska Foundation. Experienced expert in the field of contracts, intellectual property law, IT projects and public procurement. He has over 20 years of experience in legal advisory for business. He advises clients on projects related to digital business transformation. He has advised on numerous infrastructure and IT projects including comprehensive software implementations, both in the traditional model and in the cloud model. He advises on all aspects of public procurement law, including representing clients in procurement disputes before the National Appeals Chamber and before courts. He is an arbitrator at the Court of Arbitration of the Audiovisual Market at the Polish Chamber of Commerce of Polish Audiovisual Producers and an expert at the Council of the Polish Chamber of Information Technology and Telecommunications. Advises as an expert in the project "European Aid for Innovation".
36. **Mario Zanin** – lawyer with experience of legal assistance, both in and out of court, to banks, investment firms, asset management companies, financial intermediaries and insurance companies clients, on all aspects of banking, financial services and insurance law and regulatory frameworks, also for their cross-border activities. Graduated in

Law at the University of Milan and currently Legal Director at PwC TLS Avvocati & Commercialisti law firm. He regularly participates as a speaker at national conferences and meetings on several aspects of financial markets, banking and insurance law and is author of various publications and articles in financial markets, banking and insurance law.

37. **Zsolt Zódi** – PhD, lawyer, senior research fellow, National University of Public Service, Budapest, Hungary. His field of interest covers legal informatics and regulatory problems of information society. He is an author of two books, and more than 80 articles.
38. **Aleksandra Partyk** - Assistant Professor at the AFM Krakow University; Attorney-at-law; Managing Editor at “Studies in Law. Research Papers” („Studia Prawnicze. Rozprawy i Materiały”); Editor for international cases at “Annals of the Administration and Law” (“Roczniki Administracji i Prawa”); Permanently cooperates with Wolters Kluwer Polska; Author and co-author of monographs, articles concerning law; Speaker at numerous Polish and international Conferences.

Bibliography

- AB2L, 'Radar de Lawtechs e Legaltechs' (ab2l.org.br) <<https://ab2l.org.br/radar-lawtechs/>> accessed 10 February 2021;
- Abrams I R, 'Statutory Protection of the Algorithm in a Computer Program: A Comparison of the Copyright and patent laws' (1989) 9:2 Computer Law Journal;
- Abschlussbericht der Länderarbeitsgruppe 'Legal Tech: Herausforderungen für die Justiz' (Schleswig-Holstein, 2019), <https://www.schleswig-holstein.de/DE/Landesregierung/II/Minister/Justizministerkonferenz/Downloads/190605_beschluesse/TOPI_11_Abschlussbericht.pdf;jsessionid=403E9295A2AF9CB0FBA9909024CD2AFA.delivery2-replication?__blob=publicationFile&v=1> accessed 26 February 2021;
- Accident Compensation Better Rules Discovery Team 'Exploring Machine Consumable Accident Compensation Legislation. Lessons for a structural rewrite of the AC Act and opportunities to make it machine consumable' (The Service Innovation Lab, 1 July 2019) <https://serviceinnovationlab.github.io/assets/Exploring_Machine_Consumable_Code_With_ACC.pdf> accessed 30 January 2021;
- Adamczewski P, 'Ku dojrzałości cyfrowej organizacji inteligentnych', (2018) 161 Studia i Prace. Kolegium Zarządzania i Finansów;
- , 'Organizacje inteligentne w zintegrowanym rozwoju gospodarki' (2016) 2 Zeszyty Naukowe Uniwersytet Rzeszowski,
- African Regional Intellectual Property Organization, 'ARIPO Model Law on Copyright and Related Rights' (ARIPO, July 2019) <<https://www.aripo.org/wp-content/uploads/2019/10/ARIPO-Model-Law-on-Copyright-and-Related-Rights.pdf>> accessed 11 December 2020.
- Agarib A, 'Dubai Police unveil Artificial Intelligence projects, Smart Tech' (Khaleej Times, 12 March 2018) <<https://www.khaleejtimes.com/nation/dubai/dubai-police-unveil-artificial-intelligence-projects-smart-tech>> accessed 8 February 2021;
- Agnoloni T, Francesconi E and Spinosa P, 'xmLegesEditor: an OpenSource Visual XML Editor for supporting Legal National Standards' in *Proceedings of the V Legislative XML Workshop* (European Press Academic Publishing 2007);
- Alchourrón C E and Bulygin E, *Normative Systems* (Springer-Verlag 1971);
- Aletras N, Tsarapatsanis D, Preotiuc-Pietro D and Lamos V, 'Predicting judicial decisions of the European Court of Human Rights: a Natural Language Processing perspective' (2016), 2 *PeerJ Computer Science*;
- , Tsarapatsanis D, Preotiuc-Pietro D and Lamos V, 'Predicting judicial decisions of the European Court of Human Rights: a natural language processing perspective' (2016) 2 *PeerJ Computer Science*;

- Aleven V, *Teaching Case-Based Argumentation Through A Model and Examples* (University of Pittsburgh 1997) <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.47.3347&rep=rep1&type=pdf>> access 10 May 2021;
- Alexy R, *A Theory of Constitutional Rights*, transl. J. Rivers (Oxford University Press 2002);
- Al-Kofahi K, 'Cognitive Computing: Transforming Knowledge Work, Transforming Knowledge Work' (27 January 2017) <www.blogs.thomsonreuters.com/answeron/cognitive-computing-transforming-knowledge-work/> accessed 15 December 2020;
- Allen C, 'The Path to Self-Sovereign Identity' (*Life With Alacrity*, 25 April 2016) <<http://www.lifewithalacrity.com/2016/04/the-path-to-self-sovereign-identity.html>> accessed 21 February 2021;
- Alpaydin E, *Machine Learning. The New AI* (The MIT Press 2016);
- Alsop T, 'Legal Tech Market Revenue Worldwide from 2019 to 2025, by Business Type' (Statista, 26 January 2021) <www.statista.com/statistics/1168096/legal-tech-market-revenue-by-business-type-worldwide/> accessed 30 January 2021;
- Ambrogi R, 'A Chronology of Legal Technology 1842-1995', <<https://www.lawsitesblog.com/2010/02/chronology-of-legal-technology-1842.html>> access 17 March 2021;
- , 'At \$1.2 Billion, 2019 Is A Record Year for Legal Tech Investments - And It's Only September', (Lawsites 14 February 2010) <<https://www.lawsitesblog.com/2019/09/at-1-1-billion-2019-is-a-record-year-for-legal-tech-investments-and-its-only-september.html>> access 17 March 2021;
- , 'Judge Penalizes Lawyers For Not Using Artificial Intelligence' <[abovethelaw.com/2019/01/judge-penalizes-lawyers-for-not-using-artificial-intelligence/](https://www.abovethelaw.com/2019/01/judge-penalizes-lawyers-for-not-using-artificial-intelligence/)>, accessed: 13 January 2021;
- Amendolagine V, 'Percorsi di giurisprudenza - il processo civile telematico a cinque anni dalla sua introduzione' (2020) 1 *Giurisprudenza Italiana*;
- Amrosz M, 'Sztuczna inteligencja z obowiązkowym ubezpieczeniem OC?' (2021) 5 *Miesięcznik Ubezpieczeniowy*;
- Anand S A pioneer in real estate blockchain emerges in Europe, <<https://www.wsj.com/articles/a-pioneer-in-real-estate-blockchain-emerges-in-europe-1520337601>> accessed 27 January 2021;
- Andoni M, Robu V, Flynn D, Abram S, Geach D, Jenkins D, McCallum P and Peacock A, 'Blockchain technology in the energy sector: A systematic review of challenges and opportunities' (2019) 100 *Renewable and Sustainable Energy Reviews*;
- Andrews v. Blick Art Materials LLC 286 F Supp 3d 365 (NY 2017);
- Angwin J, Larson J, Mattu S and Kirchner L, 'Machine Bias', (ProPublica, 23 May 2016) <<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>> accessed 8 February 2021;
- Angwin J, Larson J, Mattu S and Kirchner L, 'Machine bias' (Pro Publica, 23 May 2016) <<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>> accessed 11 March 2021;

- Araszkiewicz M, 'Limits of Constraint Satisfaction Theory of Coherence as a Theory of (Legal) Reasoning' in Michał Araszkiewicz and Jaromír Šavelka (eds) *Coherence. Insights from Philosophy, Jurisprudence and Artificial Intelligence* (Springer 2013);
- Araszkiewicz M, 'Towards Systematic Research on Statutory Interpretation in AI and Law' in Kevin D. Ashley (ed) *Legal Knowledge and Information Systems - JURIX 2013: The Twenty-Sixth Annual Conference. Frontiers in Artificial Intelligence and Applications* 259 (IOS Press 2013);
- Araszkiewicz M, Żurek T, 'Interpreting Agents' in Floris Bex, Serena Villata (eds) *Legal Knowledge and Information Systems - JURIX 2016: The Twenty-Ninth Annual Conference. Frontiers in Artificial Intelligence and Applications* 294 (IOS Press 2016);
- Araya D, '3 Things You Need To Know About Augmented Intelligence' (Forbes 22 January 2019) <forbes.com/sites/danielaraya/2019/01/22/3-things-you-need-to-know-about-augmented-intelligence/?sh=4cda84bd3fdc>, accessed: 10 January 2021;
- Armour J, Parnham R and Sako M, 'Augmented Lawyering' (2020) 558 *European Corporate Governance Institute - Law Working Paper*;
- Artificial Lawyer, 'France's Controversial Judge Data Ban – The Reaction' (Artificial Lawyer, 5 June 2019) <<https://www.artificiallawyer.com/2019/06/05/frances-controversial-judge-data-ban-the-reaction/>> accessed 31 March 2021;
- Ashley K D and Brüninghaus S, 'Automatically Classifying Case Texts and Predicting Outcomes' (2009) 17(2) *Artificial Intelligence and Law*;
- , 'An AI model of case-based legal argument from a jurisprudential viewpoint' (2002) 10 *Artificial Intelligence and Law*;
- , *Artificial Intelligence and Legal Analytics. New Tools for Legal Practice in the Digital Age* (Cambridge University Press 2017);
- , *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age* (Cambridge University Press 2017);
- , *Modeling Legal Argument. Reasoning with Cases and Hypotheticals* (MIT Press 1990);
- Atienza M and Ruiz-Manero J, *A Theory of Legal Sentences* (Springer 1998);
- Atkinson K and Bench-Capon T, *Argumentation Schemes in AI and Law* (in press 2021);
- , Bench-Capon T and Bollegala D, 'Explanation in AI and law: Past, present and future' (2020) 289: 103387 *Artificial Intelligence*.
- , Bench-Capon T, 'Reasoning with Legal Cases: Analogy or Rule Application?' in Floris Bex (ed) *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law, ICAIL 2019* (ACM 2019);
- , Bench-Capon T, Bex F, Gordon T F, Prakken H, Sartor G, Verheij B, 'In memoriam Douglas N. Walton: the influence of Doug Walton on AI and law' (2020) 28(3) *Artificial Intelligence and Law*;

- Bacon J, Michels J D, Millard C and Singh J, 'Blockchain Demystified' (2017) 268/2017 Queen Mary School of Law Legal Studies Research Paper <<https://ssrn.com/abstract=3091218>> accessed 6 February 2021;
- Banasikowska J, Sołtysik-Piorunkiewicz A, 'Czynniki kształtujące poziom akceptacji i poziom dojrzałości systemów e-administracji na tle rozwoju społeczeństwa informacyjnego' (2016) 308 *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*,
- Bandara E, Keong Ng W, Ranasinghe N, De Zoysa K, 'Aplos: Smart contract Made Smart' in Zibin Zheng, Hong-Ning Da, Mingdong Tang, Xiangping Chen (eds), *Blockchain and Trustworthy System* (Springer 2020);
- Bar G, 'Przejrzystość, w tym wyjaśnialność, jako wymóg prawny dla systemów Sztucznej Inteligencji' (2020) 20 *Prawo Nowych Technologii*;
- , 'Robot personhood, czyli po co nam antropocentryczna Sztuczna Inteligencja' in Luigi Lai and Marek Świerczyński (eds.), *Prawo Sztucznej Inteligencji* (C. H. Beck 2020);
- Baran P, 'On Distributed Communications: I. Introduction to Distributed Communications Networks' (1964) RAND Corporation <https://www.rand.org/pubs/research_memoranda/RM3420.html> accessed 1 December 2020;
- Baroni P, Gabbay D, Parent X, van der Torre L (eds) *Handbook of Formal Argumentation* (College Publications 2018);
- Barotanyi B, 'E-Recht: Law Making in a Contemporary Way' (2007) 1 *Masaryk University Journal of Law and Technology*;
- Barracrough T, Fraser H and Barnes C, 'Legislation as a code for New Zeland: opportunities, risks, and recomendations' (2021) 3 *NZLFRRP* 12-13;
- Barredo Arrieta A, Díaz-Rodríguez N, Del Ser J, Bennetot A, Tabik S, Barbado A, Garcia S, Gil-Lopez S, Molina D, Benjamins R, Chatila R and Herrera F, 'Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI' (2020) 58 *Information Fusion*;
- Barta P, Kawecki M in Paweł Litwiński (ed), *Rozporządzenie UE w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i swobodnym przepływem takich danych. Komentarz*, Warszawa (C. H. Beck 2018);
- Baum S, "A Survey of Artificial General Intelligence Projects for Ethics, Risk, and Policy" (Global Catastrophic Risk Institute Working Paper 17 January 2017) 29 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3070741> accessed 4 August 2021;
- Beck K, *Test Driven Development: By Example* (1 ed., Addison-Wesley Professional 2002);
- Beconcini P, 'More "NetCourts" Opening in China' (Squire Patton Boggs, 14 November 2018) <<https://www.iptechblog.com/2018/11/more-netcourts-opening-in-china/>> accessed 21 August 2021;
- Belew R K, 'A connectionist approach to conceptual information retrieval' (Proceedings of the First International Conference on Artificial Intelligence and Law, ICAIL '87, Boston, 27-29 May 1987);

- Bellinger G and Castro D, Mills A, 'Data, Information, Knowledge and Wisdom' (2004) <<http://www.Systems-thinking.org/dikw/dikw.htm>> accessed 11 January 2021;
- Bench-Capon T and others, 'A History of AI and Law in 50 Papers: 25 Years of the International Conference on AI and Law' (2012) 20 *Artificial Intelligence and Law*;
- and Coenen F P, 'Isomorphism and legal knowledge based systems.' (1992) 1 *Artificial Intelligence and Law*;
- 'Before and after Dung: Argumentation in AI and Law', 11(1-2) *Argument and Computation*;
- 'HYPO'S legacy: introduction to the virtual special issue' (2017), 25(2) *Artificial Intelligence and Law*;
- Sartor G, 'A model of legal reasoning with cases incorporating theories and values', 150(102) *Artificial Intelligence*;
- Berek M, 'Rządowa procedura prawodawcza i jej znaczenie dla jakości stanowionej prawa.' in Federczyk W. and Peszkowski S. (eds.), *Doskonalenie i standaryzacja procesu legislacyjnego – dobre praktyki opracowane w ramach projektu LEGIS* (Krajowa Szkoła Administracji Publicznej im. Prezydenta Rzeczypospolitej Polskiej Lecha Kaczyńskiego 2019);
- Berger-Walliser G, Barton T D and Haapio H, 'From Visualization to Legal Design: A Collaborative and Creative Process' (2017) 54:2 *American Business Law Journal*;
- Berman D H and Hafner C D, 'Representing Teleological Structure in Case-based Legal Reasoning: The Missing Link' in Anja Oskamp and Kevin Ashley (eds), *Proceedings of the Fourth International Conference on Artificial intelligence and Law, ICAIL '93* (ACM 1993);
- Bex F, *Arguments, Stories and Criminal Evidence. A Formal Hybrid Theory*, (Springer 2011);
- Biallaß I D in Stephan Oryand Stephan Weth (eds) *Elektronischer Rechtsverkehr* (1st edition, juris Allianz, 2020);
- Bieluk M, 'Cywilnoprawna odpowiedzialność profesjonalnego pełnomocnika za błąd' (Uniwersytet w Białymstoku 2019)
- Bigelow R P, 'The Use of Computers in the Law', (1973) 24, 4 *Hastings Law Journal* <https://repository.uchastings.edu/hastings_law_journal/vol24/iss4/4/> access: 17 March 2021;
- BIK, 'Cybersecurity of Poles 2020' (Biuro prasowe Grupy BIK, 26 January 2021) <<https://media.bik.pl/informacje-prasowe/637189/dobre-praktyki-ochrony-danych-osobowych>> accessed 31 March 2021;
- Bing J, 'Performance of Legal Text Retrieval Systems: The Curse of Boole' (1987) 79 *Law. Libr. J.*;
- , 'Let there be LITE: a brief history of legal information retrieval' (2010), 1 *European Journal of Law and Technology*;
- Black H C, 'Token', *The Black's Law Dictionary* (Rev 4th edn, West Publishing Co. 1968);

- Black N, 'The Latest on Legal Document Management Software' (ABA Journal, 27 April 2020) <www.abajournal.com/web/article/the-latest-on-legal-document-management-software> accessed 29 May 2020;
- Błaszczak A, 'Cyberprzestępczość: 2021 będzie rokiem wymuszeń w Internecie' <www.rp.pl/Biznes/201209783-Cyberprzestepczosc-2021-bedzie-rokiem-wymusz-en-w-Internecie.html> accessed 25 April 2021;
- Bodo B, Gervais D and Quintais J P, 'Blockchain and Smart Contracts: the Missing Link in Copyright Licensing?' (2018) 26 International Journal of Law and Information Technology <<https://academic.oup.com/ijlit/article/26/4/311/5106727>> accessed 7 February 2021;
- Boicu M, Tecuci G, Stanescu B, Balan G and Popovici E, 'Ontologies and the Knowledge Acquisition Bottleneck', <https://www.researchgate.net/publication/228549124_Ontologies_and_the_knowledge_acquisition_bottleneck/link/549dbfd20cf2fedbc31198ec/download> accessed 25 April 2021;
- Bongiovanni G, Postema G, Rotolo A, Sartor G, Valentini C and Walton D (eds.), Handbook of Legal Reasoning and Argumentation (Springer 2018);
- Boris M, 'Top Trends in Contract Management 2020' (Contractbook, 31 August 2020) <www.contractbook.com/legaltechinstitute/top-trends-in-contract-management-2020> accessed 3 September 2020.
- Borstrom N, *Superinteligencja. Scenariusze, strategie, zagrożenia* (Helion, Gliwice 2016);
- Bosilkovsky I, 'Stanford Grad Who Created The World's First 'Robot Lawyer' Raises \$ 12 Million In Series A' (Forbes 23 June 2020), <www.forbes.com/sites/igorbosilkovski/2020/06/23/stanford-grad-who-created-the-worlds-first-robot-lawyer-raises-12-million-in-series-a/?sh=1f6b03d03309> accessed 7 January 2021;
- Bostick K L, 'Pie in the Sky: Cloud Computing brings an End to the Professionalism Paradigm in the Practice of Law', (2012) 60, 5 Buffalo Law Review;
- Bower J L and Christensen C M, 'Disruptive Technologies: Catching the Wave' (January-February 1995) Harvard Business Review <<https://hbr.org/1995/01/disruptive-technologies-catching-the-wave>> accessed 2 February 2021;
- Branting K and others 'Semi-Supervised Methods for Explainable Legal Prediction' (Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law (ICAIL '19), Montreal, 17 – 21 June 2019);
- , 'Building explanations from rules and structured cases' (1991) 34(6) International Journal of Man–Machine Studies;
- , Pfeifer C, Brown B, Ferro L, Aberdeen J, Weiss B, Pfaff M and Liao B, 'Scalable and explainable legal prediction' (2020) Artificial Intelligence and Law <<https://doi.org/10.1007/s10506-020-09273-1>> accessed 10 May 2021;
- Bratus S, Lembree A and Shubina A, 'Software on the witness stand: what should it take for us to trust it?' in Alessandro Acquisti, Sean W Smith, Ahmad-Reza Sadeghi (eds), *Trust and Trustworthy Computing, Third International Conference, TRUST 2010, Berlin, Germany, June 21-23, 2010, Proceedings* (Springer 2010);
- Brauer J, *Programming Smalltalk – Object-Orientation from the Beginning* (Springer 2015);

- Braun S, 'Remote Interpreting' in Holly Mikkelson and Renée Jourdenais (eds) *Routledge Handbook of Interpreting* (Routledge 2015) 352.
- Brazier F MT and others, 'Agents and Service-Oriented Computing for Autonomic Computing: A Research Agenda' (2009) 13(3) IEEE Internet Computing;
- Brennan T, Dieterich W and Ehret B, 'Evaluating the predictive validity of the Compas risk and needs assessment system' (2009) 1 Criminal Justice and Behavior;
- Breuker J, Casanovas P, Klein M C.A, Francesconi E 'The Flood, the Channels and the Dykes: Managing Legal Information in a Globalized and Digital World' in Joost Breuker, Pompeu Casanovas, Michel C.A. Klein, Enrico Francesconi (eds), *Law, Ontologies and the Semantic Web. Channeling the Legal Information Flood* (Amsterdam 2009);
- Browne O and Pizze H, 'Pyrrho Investments Ltd v MWB Property Ltd: A Landmark Decision on Predictive Coding in e-Discovery' (Latham.London, 15 July 2016) <<https://www.latham.london/2016/07/pyrrho-investments-ltd-v-mwb-property-ltd-a-landmark-decision-on-predictive-coding-in-e-discovery/>> accessed 26 February 2021;
- Brożek B, *Rationality and Discourse. Towards a Normative Model of Applying Law* (Wolters Kluwer 2007);
- Buchanan B and Headrick T, 'Some Speculation About Artificial Intelligence and Legal Reasoning' (1970) 23, 1 Stan. L.w Rev;
- , Shortliffe E H, *Rule-based Expert Systems. The MYCIN Experiments of the Stanford Heuristic Programming Project* (Reading 1984);
- Bues M M and Matthaei E, 'LegalTech on the Rise: technology Changes Legal Work Behaviors, But Does Not Replace Its Profession' in Kai Jacob, Dierk Schnidler and Roger Strathausen (eds), *Liquid Legal* (Springer International Publishing 2017);
- , 'What AI in Law Can and Can't Do' (European Legal Tech Association) <www.europe-legaltech.org/what-ai-in-law-can-and-cant-do/> accessed 2 February 2021;
- Burrell J, 'How the Machine 'Thinks': Understanding Opacity in Machine Learning Algorithms' (2016) 3(1) Big Data & Society;
- Buss S R, Kechris A S, Pillay A and Shore R A, 'The Prospects for Mathematical Logic in the Twenty-first Century' (2001) 7 Bulletin of Symbolic Logic;
- Butterworth M L, 'The ICO and artificial intelligence: The role of fairness in the GDPR framework' (2018) 2 Computer Law Security Review;
- Bygrave L and Tosoni L, 'Commentary on Article 4' in Christopher Kuner, Lee A. Bygrave, Christopher Docksey (eds) *The EU General Data Protection Regulation (GDPR). A Commentary* (OUP 2020);
- Cahuc P, Malherbet F and Prat J, 'The detrimental effect of job protection on employment: Evidence from France' (2019) Iza Institute of Labor Economics;

- Calegari R and Sartor G, 'A Model for the Burden of Persuasion in Argumentation' in Serena Villata, Jakub Harašta and Petr Kremen (eds) *Legal Knowledge and Information Systems - JURIX 2020: The Thirty-third Annual Conference, Frontiers in Artificial Intelligence and Applications* 334 (IOS Press 2020);
- Callister P, 'Law, Artificial Intelligence, and Natural Language Processing: A Funny Thing Happened on the Way to My Search Results' (2020) 112 *Law Library Journal* 161-212 <www.papers.ssrn.com/sol3/papers.cfm?abstract_id=3712306> accessed 24 February 2021;
- Cambridge Dictionary, 'Token' <<https://dictionary.cambridge.org/dictionary/english/token>> accessed 2 February 2021;
- Campos J, 'La justicia penal en tiempos del Covid-19. Los retos de las videoconferencias' (2020) VI, 6 *Paréntesis legal*;
- Canivet G, '«Preuve et Blockchain», présentation de la table ronde', (2019) 2 *Dalloz IP/IT* 2019;
- Carabantes M, 'Black-box artificial intelligence: an epistemological and critical analysis' (2019) 35 *AI & Society*;
- Cardenas J, 'La nueva Ley de Amparo', *Cuestiones Constitucionales* (2013) 29 *Cuestiones Constitucionales. Revista Mexicana de Derecho Constitucional*;
- Carneiro D, Novais P, Andrade F, Zeleznikow J and Neves J, 'ODR: an Artificial Intelligence Perspective' (2014) 41 *Artificial Intelligence Review*;
- Carnelutti F, *La prova civile. Parte generale. Il concetto giuridico della prova* (Giuffrè, 1992) 9.
- Carnevali D, 'Great Success that Was on the Brink of Failure: The Case of a Techno-Legal Assemblage in the "Civil Trial On-Line" System in Italy' (2019) 8(2) *EQPAM*;
- Casanovas P, Palmirani M, Peroni S, van Engers T and Vitali F, 'Special Issue on the Semantic Web for the Legal Domain Guest Editors' Editorial: The Next Step' (2016) *Semantic Web Journal* <<http://www.semantic-web-journal.net/content/special-issue-semantic-web-legal-domain-guest-editors%E2%80%9999-editorial-next-step>> access: 16 August 2021;
- Case 128/11 *UsedSoft GmbH v Oracle International Corp* [2012] *ECLI:EU:C:2012:407*;
- Case 393/09 *Bezpečnostní softwarová asociace - Svaz softwarové ochrany v Ministerstvu kultury* [2010] *ECLI:EU:C:2010:816*;
- Case C-311/18 *Data Protection Commissioner v. Facebook Ireland Limited and Maximillian Schrems* [2020] *EU:C:2020:559*;
- Case N, 'How To Become A Centaur' (2018) *Journal of Design and Science MIT Media Lab* <jods.mitpress.mit.edu/pub/issue3-case/release/6>, accessed: 14 January 2021;
- Casellas N, *Legal Ontology Engineering. Methodologies, Modelling Trends, and the Ontology of Professional Judicial Knowledge* (Springer 2011);
- Castellani M, Pomi P, Triberti C and Turato A (eds), *Blockchain: Guida pratica tecnico giuridica all'uso* (Goware 2019);

- CCBE, 'Komunikacja elektroniczna i Internet –przewodnik CCBE' (2013)142 Radca Prawny Dodatek Naukowy;
- CCBE, 'CCBE GUIDANCE On Improving The IT Security Of Lawyers Against Unlawful Surveillance' (*ccbe.eu*, 2016) <https://www.ccbe.eu/fileadmin/speciality_distribution/public/documents/IT_LAW/ITL_Guides_recommendations/EN_ITL_20160520_CCBE_Guidance_on_Improving_the_IT_Security_of_Lawyers_Against_Unlawful_Surveillance.pdf> accessed 17 August 2021;
- CCBE, Considerations on the legal aspects of artificial intelligence (2020) <https://www.ccbe.eu/fileadmin/speciality_distribution/public/documents/IT_LAW/ITL_Guides_recommendations/EN_ITL_20200220_CCBE-considerations-on-the-Legal-Aspects-of-AI.pdf> accessed 12 January 2021;
- CEF Digital, 'eID' <<https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eID>> accessed: 21 February 2021;
- Cellan-Jones R, 'Dubai Police Unveil Robot Officer' (BBC, 24 May 2017) <<https://www.bbc.com/news/technology-40026940>> accessed 8 February 2021;
- Center Information Policy Leadership 'Artificial Intelligence and Data Protection: Delivering Sustainable AI Accountability in Practice. First. Report: Artificial Intelligence and Data Protection in Tension' (2018) <https://www.informationpolicycentre.com/uploads/5/7/1/0/57104281/cipl_ai_first_report_-_artificial_intelligence_and_data_protection_in_te....pdf> accessed 8 April 2021;
- CEPEJ '*Length of court proceedings in the member states of the Council of Europe based on the case-law of the European Court of Human Rights*' (CEPEJ,2018);
- CEPEJ, 'Possible introduction of a mechanism for certifying artificial intelligence tools and services in the sphere of justice and the judiciary: Feasibility Study' (15Rev, CEPEJ, 8 December 2020);
- Chan J BL, 'Technological Game: How Information Technology is Transforming Police Practice' (2001) 1 Criminal Justice: The International Journal of Policy and Practice;
- Chan V and Koo A M, 'Blockchain Evidence in Internet Courts in China: The Fast Track for Evidence Collection for Online Disputes' (Lexology, 15 July 2020) <<https://www.lexology.com/library/detail.aspx?g=1631e87b-155a-40b4-a6aa-5260a2e4b9bb>> accessed 9 February 2021;
- Charter of Fundamental Rights of the European Union [2012] OJ C326/391;
- Chaudhuri A, Mandaviya K, Badelia P and Ghosh S K, 'Optical Character Recognition Systems' in Arindam Chaudhuri, Krupa Mandaviya, Pratixa Badelia and Soumya K Ghosh (eds) '*Optical Character Recognition Systems for Different Languages with Soft Computing*', *Studies in Fuzziness and Soft Computing* Vol. 352 (Springer 2017);
- Check Point Data, 'Raport Cyberbezpieczeństwa' (2020);
- Chłopecki A, *Sztuczna inteligencja - szkice prawnicze i futurologiczne* (2nd edn, C. H. Beck 2021);
- , *Sztuczna inteligencja: szkice prawnicze i futurologiczne* (C. H. Beck 2018);

- Chmieliński M, 'Możliwości wspomagania wybranych ekspertyz i opinii specjalistycznych w obszarze bezpieczeństwa przy wykorzystaniu różnych programów komputerowych' (2017) 8 2(28) Problemy mechatroniki. Uzbrojenie, lotnictwo, inżynieria bezpieczeństwa;
- Chozick R, 'The Major Differences Between Digital Forensics and E-discovery' (Flashback Data, 30 June 2017) <www.flashbackdata.com/digital-forensics-vs-ediscovery/> accessed 20 January 2021;
- Christensen C, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston (MA: Harvard Business School Press, 1997);
- Christian G, 'Predictive Coding: Adopting and Adapting Artificial Intelligence (AI) In Civil Litigation' (2019) 97 The Canadian Bar Review;
- CIO, 'Defining your data strategy for a multi-cloud world' <<https://www.cio.com/podcast/the-cloud-control-room/collection/cloud-operations-and-management/article/defining-your-data-strategy-for-a-multi-cloud-world>> accessed 18 December 2020;
- Clegg S, 'Globalizing the Intelligent Organization: Learning Organizations, Smart Workers, (Not So) Clever Countries and the Sociological Imagination, Management Learning' (1999) Sage journals <<https://journals.sagepub.com/doi/abs/10.1177/1350507699303001>> accessed 11 January 2021;
- CNIL, 'Blockchain: Solutions for a responsible use of the blockchain in the context of personal data' <https://www.cnil.fr/sites/default/files/atoms/files/blockchain_en.pdf> accessed 11 December 2020;
- Coelho F and Younes G, 'The GDPR-Blockchain paradox: a work around' (WGCS'18 2018: 1st workshop on GDPR compliant systems, co-located with 19th ACM international middleware conference, Rennes, 2018);
- Cohen M A, 'The Rise of Legal Tech Incubators and Why Allen & Overy's 'Fuse' Has the Right Stuff' (Forbes 12 February 2018) <<https://www.forbes.com/sites/markcohen1/2018/02/12/the-rise-of-legal-tech-incubators-and-why-allen-overys-fuse-has-the-right-stuff/#10482014494d>> access 17 March 2021;
- Cole F K, 'In What Format Should I Make My Production? And, Does Format Matter?' (JD Supra, 3 June 2019) <<https://www.jdsupra.com/legalnews/in-what-format-should-i-make-my-61643/>> accessed 24 February 2021;
- Cole K, 'Judges Make the Case for TAR' (Farrell Fritz, 17 February 2021) <www.allaboutdiscovery.com/2021/02/judges-make-the-case-for-tar/> accessed 24 February 2021;
- Collins A M and Quillian R M, 'Retrieval Time from Semantic Memory' (1969) 8(2) Journal of Verbal Learning & Verbal Behavior;
- Collins P, 'What Is a Blockchain Oracle?' (Medium, 2 September 2020) <<https://medium.com/better-programming/what-is-a-blockchain-oracle-f5ccab8dbd72>> accessed 10 February 2021;
- Collomb A, De Filippi P, Sok K, 'Blockchain Technology and Financial Regulation: A Risk-Based Approach to the Regulation of ICOs' (2019) 10 European Journal of Risk Regulation <doi:10.1017/err.2019.41> accessed 9 March 2021;

- Competition & Markets Authority (UK), 'Algorithms: How they can reduce competition and harm consumers' (Crown, 2021) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/954331/Algorithms_++.pdf> accessed 19 January 2021;
- Conrad J G, 'E-Discovery revisited: The need for artificial intelligence beyond information retrieval'(2010) 4 Artificial Intelligence and Law;
- Conselho Nacional de Justiça, 'Justiça Em Números 2020' (Conselho Nacional de Justiça 2020) 93 <<https://www.cnj.jus.br/wp-content/uploads/2020/08/WEB-V3-Justiça-em-Números-2020-atualizado-em-25-08-2020.pdf>> accessed 9 February 2021;
- Conselho Nacional de Justiça, 'Inteligência Artificial No Poder Judiciário Brasileiro' (Conselho Nacional de Justiça 2019) 37 <https://www.cnj.jus.br/wp-content/uploads/2020/05/Inteligencia_artificial_no_poder_judiciario_brasileiro_2019-11-22.pdf> accessed 7 February 2021;
- Consolo C, Spiegazioni di diritto processuale civile (2nd ed., Giappichelli, Torino, 2014);
- Consumer Protection Federal Agency, Procuraduría Federal del Consumidor, 'Informe Anual de la Procuraduría Federal del Consumidor 2019' (PROFECO, 2019);
- Contissa G, Godano F and Sartor G, 'Computation, Cybernetics and the Law at the Origins of Legal Informatics' [in:] Simona Chiodo and Viola Schiaffonati (eds), *Italian Philosophy of Technology: Socio-Cultural, Legal, Scientific and Aesthetic Perspectives on Technology* (Vol. 35, Springer 2021);
- Cooper S, Cyber Insurance, [w:] Peter Rogan (ed), *The Insurance and Reinsurance Law Review*, USA (Law Business Research Ltd 2020) <<https://thelawreviews.co.uk/title/the-insurance-and-reinsurance-law-review/editors-preface>> accessed 25 April 2021;
- Coormen T H, *Algorithms Unlocked* (MIT Press 2013);
- Corea F, 'Distributed Artificial Intelligence. A primer on Multi-Agent Systems, Agent-Based Modeling, and Swarm Intelligence' (Medium March 2019) <<https://francesco-ai.medium.com/distributed-artificial-intelligence-3e3491e0771c>>, accessed on 14 January 2020;
- Corr J, 'An introduction to the digital maturity model' (2020) <<https://www.seerinteractive.com/blog/introduction-to-digital-maturity/>> accessed 11 January 2021;
- Corrales M, Jurčycs M and Kousiouris G, 'Smart Contracts and Smart Disclosure: Coding a GDPR Compliance Framework' in Marcelo Corrales, Mark Fenwick and Helena Haapio (eds), *Legal Tech, Smart Contracts and Blockchain* (Springer 2019);
- Fenwick M and Haapio H, 'Digital Technologies, Legal Design and the Future of the Legal Profession' in Marcelo Corrales, Mark Fenwick and Helena Haapio (eds) *Legal Tech, Smart Contracts and Blockchain* (Springer, 2019);
- Fenwick M, Haapio H (eds), *Legal Tech, Smart Contracts and Blockchain* (Springer 2019);

- Jurčys P, Kousiouris G, 'Smart Contracts and Smart Disclosure: Coding a GDPR Compliance Framework' (2018) SSRN Electronic Journal <www.researchgate.net/publication/323625892_Smart_Contracts_and_Smart_Disclosure_Coding_a_GDPR_Compliance_Framework> accessed 30 November 2020;
- Council of Bars and Law Societies of Europe, 'CCBE Guidelines on the Use of cloud Computing Services by Lawyers', (CCBE, 7 September .9.2012) r., <http://www.ccbe.eu/fileadmin/speciality_distribution/public/documents/IT_LAW/ITL_Position_papers/EN_ITL_20120907_CCBE_guidelines_on_the_use_of_cloud_computing_services_by_lawyers.pdf> accessed 21 January 2018;
- Council of Europe European Commission for the efficiency of justice ('CEPEJ'), 'European judicial systems – Efficiency and quality of justice' (CEPEJ, 2016);
- Crowd Research Partners and Cybersecurity Insiders, 'Insider Threat Report 2018' (Crowd Research Partners, 2018) <<https://www.veriato.com/resources/whitepapers/insider-threat-report-2018>> accessed 17 August 2021;
- Cui Y, *Artificial Intelligence and Judicial Modernization* (Springer, 2020);
- Custers B and Vergouw B, 'Promising policing technologies: Experiences, obstacles and police needs regarding law enforcement technologies' (2015) 31 Computer Law & Security Review;
- Cyrul W, 'Tekst jednolity aktu normatywnego w formacie elektronicznym. W kierunku automatyzacji procesu ujednolicania tekstów prawnych' in Marzena Laskowska (ed) 'Znaczenie wyroków Trybunału Konstytucyjnego dla tekstu jednolitego ustawy' (Wydawnictwo Sejmowe 2017);
- and Pełech-Pilichowski T, 'Legislating in Hypertext', (2020) 118 OSAP 27;
- Duda J, Opiła J and Pełech-Pilichowski T, *Informatyzacja tekstu prawa. Perspektywy zastosowania języków znacznikowych* (Wolters Kluwer, Warszawa 2014);
- Czepita S, 'On the Concept of a Conventional Act and its Varieties' (2017) Year LXXIX No. 1 Legal, Economic and Sociological Movement 85;
- D'Amato A, 'Can/Should Computers Replace Judges?'(1997) 11 Georgia Law Review;
- Da Silva Moore v. Publicis Groupe - 287 F.R.D. 182 (S.D.N.Y. 2012);
- Dale R, 'Law and Word Order: NLP in Legal Tech' (2019) 25(1) Natural Language Engineering;
- 'Law and Word Order: NLP in Legal Tech' (Towards Data Science, 15 December 2018) <www.towardsdatascience.com/law-and-word-order-nlp-in-legal-tech-bd14257ebd06> accessed 4 January 2020;
- DalleMulle L and Devenport T H, 'What's Your Data Strategy? The key is to balance offense and defense', < <https://www.hbr.org/2017/05/whats-your-data-strategy>> accessed 18 December 2020;
- Daniels J and Rissland E, 'Integrating IR and CBR to locate relevant texts and passages' (Database and Expert Systems Applications, 8th International Conference, Proceedings, DEXA'97, Toulouse, 1-2 September 1997);
- Davidson S, De Filippi P and Potts J, 'Disrupting Governance: The New Institutional Economics of Distributed Ledger Technology' (2016) <<http://dx.doi.org/10.2139/ssrn.2811995>> accessed 9 March 2021;

- Davis A E, 'The Future of Law Firms (and Lawyers) in the Age of Artificial Intelligence' (American Bar Association, 2 October 2020) <www.americanbar.org/groups/professional_responsibility/publications/professional_lawyer/27/1/the-future-law-firms-and-lawyers-the-age-artificial-intelligence/?q=&wt=json&start=0> accessed 30 November 2020;
- 'The Future of Law Firms (and Lawyers) in the Age of Artificial Intelligence' (American Bar Association, 2 October 2020) <https://www.researchgate.net/publication/340322409_The_Future_of_Law_Firms_and_Lawyers_in_the_Age_of_Artificial_Intelligence> accessed 4 August 2021;
- Daylami N, 'The origin and Construct of Cloud Computing', (2015) 9, 2 International Journal of the Academic Business World;
- de Caria R, 'A Digital Revolution in International Trade? The International Legal Framework for Blockchain Technologies, Virtual Currencies and Smart Contracts: Challenges and Opportunities' (Modernizing International Trade Law to Support Innovation and Sustainable Development Proceedings of the Congress of the United Nations Commission on International Trade Law, July 2017) <<https://aperto.unito.it/retrieve/handle/2318/1632525/464608/R.%20de%20Caria%2c%20A%20Digital%20Revolution%20%282017%29.pdf>> accessed 2 February 2021;
- 'Definitions of Smart Contracts: Between Law and Code' in Larry A. DiMatteo, Michel Cannarsa, and Cristina Poncibò (eds) *The Cambridge Handbook of Smart Contracts, Blockchain Technology and Digital Platforms* (Cambridge University Press 2019);
- de Maat E, Winkels R and van Engers T, 'Automated Detection of Reference Structures in Law' in Tom M. van Engers (ed) *Legal Knowledge and Information Systems* (IOS Press 2006).
- Decentralized Identifiers (DIDs) v1.0. Core architecture, data model, and representations' (W3C, 3 August 2021) <<https://www.w3.org/TR/did-core/>> accessed 3 August 2021;
- Deflem M and Chicoine S, 'History of Technology in Policing' in Gerben Bruinsma and David Weisburd (eds), *Encyclopedia of Criminology and Criminal Justice* (Springer 2017);
- Del Castillo M, Blockchain 50 2021, <<https://www.forbes.com/sites/michaeldelcastillo/2021/02/02/blockchain-50/?sh=207076dc231c>> accessed 27 January 2021;
- Del Castillo M, Forbes Blockchain 50 Of 2021: Cashing In On Bitcoin Mania <<https://www.forbes.com/sites/michaeldelcastillo/2021/02/02/forbes-blockchain-50-corporate-america-cashes-in-on-bitcoin-mania/?sh=1bc729216e01>> accessed 27 January 2021;
- Deloitte Center for Government Insights, 'Future of Regulation. Case studies.' (Deloitte Center for Government Insights, 2018) <<https://www2.deloitte.com/content/dam/Deloitte/us/Documents/public-sector/us-fed-future-of-regulation.pdf>> accessed 5 February 2021;
- Deloitte Legal, 'What's your problem? Legal Technology' (2018) Legal Management Consulting;

- Denham H, De Vynck G and Lerman R, 'What is an NFT, and how did an artist called Beeple sell one for \$69 million at Christie's?' The Washington Post (Washington D.C., 12 March 2021) <<https://www.washingtonpost.com/technology/2021/03/12/nft-beeple-christies-blockchain/>> accessed 15 March 2021;
- Departament Oceny Skutków Regulacji, 'Ocena wpływu w rządowym procesie legislacyjnym.' (Gov.pl, 13 November 2020) <<https://www.gov.pl/web/premier/ocena-wplywu-w-rzadowym-procesie-legislacyjnym>> accessed 18 April 2021;
- Dertouzos J N, Pace N M and Anderson R H, 'The Legal and Economic Implications of Electronic Discovery' 2008 Institute for Civil Justice;
- Di Modica G, Di Stefano A, Morana G, Tomarchio O, 'On the Cost of the Management of user Applications in a Multicloud Environment' (7th International Conference on Future Internet of Things and Cloud (FiCloud), Istanbul, 2019);
- Diaz v. Lobel's of New York LLC 16-CV-6349 (NY 2019);
- Dickert T, 'Modernisierung des Zivilprozesses Diskussionspapier' (justiz.bayern.de) <https://www.justiz.bayern.de/media/images/behoerden-und-gerichte/oberland-esgerichte/nuernberg/diskussionspapier_ag_modernisierung.pdf> accessed 26 February 2021;
- Die Bundesregierung, 'Künstliche Intelligenz (KI) ist ein Schlüssel zur Welt von morgen.' (Die Bundesregierung), <www.ki-strategie-deutschland.de> accessed 26 February 2021;
- Dignum V, *Responsible Artificial Intelligence, How to Develop and Use., AI in a Responsible Way* (Springer 2019);
- Dimitropoulos G, 'The Law of Blockchain' (2020) 1117 Washington Law Review;
- Diver L, 'Digisprudence: the design of legitimate code.' (LawArXiv Papers, 14 July 2020) <<https://doi.org/10.31228/osf.io/nechu>> accessed 18 March 2021;
- Dobjani E T, 'Length of proceedings as standard of due process of law in the practise of the Constitutional Court of Albania' (2016) 13 Academicus. International Scientific Journal;
- Domash J, 'AI and its Impact on the Future of Regulatory Compliance' (A-Team Insight, 9 September 2020) <www.a-teaminsight.com/ai-and-its-impact-on-the-future-of-regulatory-compliance/?brand=ati> accessed 30 September 2020;
- Domingos P, *The Master Algorithm: How the Quest for the Ultimate Learning Machine Will Remake Our World* (Brilliance Audio 2017);
- Duca L D, 'Facilitating expansion of Cross-Border E-Commerce- Developing a Global Online Dispute Resolution System' (2012) 1, 1 Penn State Journal of Law & International Affairs;
- Dunbar K, 'Problem Solving' in William Bechtel and George Graham (eds), *A Companion to Cognitive Science* (Blackwell Publishers 1999);
- Dybała G and Szpyt K, 'Odpowiedzialność odszkodowawcza za sztuczną inteligencję' (2021) 5 Gazeta Ubezpieczeniowa;

- Dyduch X, 'Zawód adwokata (abogado) w Hiszpanii' w Michał. Masior (ed) *Analiza prawno-porównawcza ustroju korporacyjnego wolnych zawodów prawniczych oraz rynku usług prawniczych w wybranych państwach, w kontekście regulacji i rynku w Polsce z uwzględnieniem dostępności obywateli do tych usług*, (Instytut Wymiaru Sprawiedliwości 2018) <<https://iws.gov.pl/wp-content/uploads/2018/08/IWS-Masior-M-i-inni-Wolne-zawody-prawnicze.pdf>> accessed 25 April 2021;
- Dymiński M, Ferenc D, 'GDPR w łańcuchu bloków' (2020) 6 Przegląd Prawa Publicznego;
- Dymitruk M, 'Sztuczna inteligencja w wymiarze sprawiedliwości?' in Luigi Lai and Marek Świerczyński (eds), *Prawo sztucznej inteligencji* (C. H. Beck 2020);
- , 'Need for explainable artificial intelligence in automated judicial proceedings' (Doctoral Consortium at 17th International Conference on Artificial Intelligence and Law, Montreal 17 – 21 June 2019);
- Earsl A R, 'Multi-cloud strategy', <<https://searchcloudcomputing.techtarget.com/definition/multi-cloud-strategy>> accessed 9 March 2021;
- EBA, 'Report with advice for the European Commission on crypto-assets' (2019) <<https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2545547/67493daa-85a8-4429-aa91-e9a5ed880684/EBA%20Report%20on%20crypto%20assets.pdf>> accessed 9 March 2021;
- Ebers M, 'Legal Tech and EU Consumer Law' in: Larry A. DiMatteo, André Janssen, Pietro Ortolani, M. Canarsa, M. Durovic, F. de Elizalde, André Janssen, Pietro Ortolani, Francisco de Elizalde, Francisco de Elizalde, Michel Cannarsa, Mateja Durovic (eds), *Lawyering in the Digital Age*, (Cambridge University Press 2021);
- , 'Regulating AI and Robotics: Ethical and Legal Challenges' in Martin Ebers and Susana Navas (eds), *Algorithms and Law* (Cambridge University Press 2020);
- , *LegalTech and EU Consumer Law* (Cambridge 2021);
- and Navas S, *Algorithms and law* (UCL 2020);
- Electronic Transactions Act <<https://sso.agc.gov.sg/Act/ETA2010#P11>> accessed 27 January 2021;
- Endicott T, *Vagueness in Law* (Oxford University Press 2000);
- Engstron D F, 'Post-COVID courts' (2020) 68 UCLA Law Review Discourse;
- Escajeda H G, 'The Vitruvian Lawyer: How to Thrive in an Era of AI and Quantum Technologies' (2020) XXIX Kansas J. of Law & Pub. Pol'y <<https://ssrn.com/abstract=3534683>>, accessed: 14 January 2021;
- ETSI, 'Generic Framework for Multi-Domain Federated ETSI GANA Knowledge Planes (KPs) for End-to-End Autonomic (Closed-Loop) Security Management & Control for 5G Slices, Networks/Services' (2020) 6 White Paper;
- ETSI-GS-AFI-001, 'Autonomic network engineering for the self-managing Future Internet (AFI); Scenarios/Use Cases and Requirements for Autonomic/Self-Managing Future Internet' (ETSI Group Specification 2011);

Bibliography

- ETSI-GS-AFI-002, 'Autonomic network engineering for the self-managing Future Internet (AFI); Generic Autonomic Network Architecture (An Architectural Reference Model for Autonomic Networking, Cognitive Networking and Self-Management)' (ETSI Group Specification 2013);
- European Commission, 'Study on the use of innovative technologies in the justice field. Final report' (Publication Office European Union 2020);
- European Commission, 'OPEN SOURCE SOFTWARE STRATEGY 2020 – 2023 Think Open' (Communication to the Commission, 21 November 2020) <https://ec.europa.eu/info/sites/default/files/en_ec_open_source_strategy_2020-2023.pdf> accessed 12 January 2021;
- European Commission, 'Study on the use of innovative technologies in the justice field – Final Report' (2020) 120, <<https://op.europa.eu/en/publication-detail/-/publication/4fb8e194-f634-11ea-991b-01aa75ed71a1/language-en>> accessed 25 February 2021;
- European Commission, White Paper On Artificial Intelligence - A European approach to excellence and trust, Brussels, COM(2020) 65 final <https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf> access 17 March 2021;
- European Commission, '*Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions. FinTech Action plan: For a more competitive and innovative European financial sector*' (eur-lex.europa.eu, 2018);
- European Parliamentary Research Service, 'Blockchain and the General Data Protection Regulation', PE 634.445 (2019) 4, <[https://www.europarl.europa.eu/RegData/etudes/STUD/2019/634445/EPRS_STU\(2019\)634445_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2019/634445/EPRS_STU(2019)634445_EN.pdf)> accessed 10 October 2020;
- European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs, Artificial Intelligence and Law Enforcement: Impact on Fundamental Rights, PE 656.295, 2020, <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/656295/IPOL_STU\(>\(2020\)656295_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/656295/IPOL_STU(>(2020)656295_EN.pdf)> accessed 8 February 2021.
- Evrotrust, 'Sending and receiving courts' decisions is already possible through the smartphone' (www.evotrust.com, 9 February 2021) <<https://www.evotrust.com/landing/en/a/sending-and-receiving-courts-decisions-is-already-possible-through-the-smartphone>> access 19 February 2021;
- Expert Group on Liability and New Technologies – New Technologies Formation, 'Liability for Artificial Intelligence and Other Emerging Digital Technologies' (European Commission 2019);
- Expert Group on Liability and New Technologies New Technologies Formation, 'Liability for Artificial Intelligence and other emerging digital technologies, 'Report' (European Union 2019);
- Faccioli M in: Alessio Zaccaria, Martin Schmidt-Kessel, Reiner Schulze and Alberto M Gambino (eds) *EU eIDAS Regulation. Commentary* (Beck/Hart 2020);
- Faction, 'What is Multi-Cloud: Everything You Need to Know', <<https://www.factioninc.com/blog/what-is-multi-cloud/>> accessed 28 December 2020;

- Falkon S, 'The Story of the DAO — Its History and Consequences' (Medium, 24 December 2017) <<https://medium.com/swlh/the-story-of-the-dao-its-history-and-consequences-71e6a8a551ee>> accessed 19 January 2021;
- Farzindar A and Lapalme G, 'Machine Translation of Legal Information and Its Evaluation' in Nathalie Japkowicz and Yong Gao (eds) *Advances in Artificial Intelligence* (Springer 2009).
- Fédération Suisse des Avocats, 'Indications et recommandations de la FSA pour la sous-traitance informatique et l'utilisation de services cloud' <[https://www.sav-fsa.ch/fr/documents/dynamiccontent/190408-sav-guidelines-outsourcing_f\(4\).pdf](https://www.sav-fsa.ch/fr/documents/dynamiccontent/190408-sav-guidelines-outsourcing_f(4).pdf)> accessed 9 January 2021;
- Fenwick M, Kaal W A and Vermeulen E P M, 'Legal Education in a Digital Age. Why Coding Matters for the Lawyer of the Future' in Marcelo Corrales Compagnucci, Nikolaus Forgó, Toshiyuki Kono, Shinto Teramoto and Erik P. M. Vermeulen (eds) *Legal Tech and the New Sharing Economy* (Springer, 2020);
- Ferguson A, 'Predictive Policing' (2017) 94 Washington University Law Review;
- Ferrari F, 'Il processo civile telematico' in Lotario Ditttrich (ed) *Diritto Processuale Civile* (Utet Giuridica, 2019);
- Ferrer A J, García Pérez D, Sosa González R, 'Multi-Cloud Platform-as-a-Service Model' (2016) 97 Functionalities and Approaches Procedia Computer Science;
- Feteris E, *Fundamentals of Legal Argumentation. A Survey of Theories on the Justification of Judicial Decisions* (Springer 2017);
- Financial Conduct Authority, 'Guidance on Cryptoassets Feedback and Final Guidance to CP 19/3' (2019) <<https://www.fca.org.uk/publication/policy/ps19-22.pdf>> accessed 7 February 2021;
- Finck M, 'Blockchain and the General Data Protection Regulation, Can distributed ledgers be squared with European data protection law? ', (2019) Study. European Parliament;
- 'Smart Contracts as a Form of Solely Automated Processing under the GDPR' (2019) 9(2) International Data Privacy Law;
- *Blockchain Regulation and Governance in Europe* (CUP 2018);
- and Moscon V, 'Copyright Law on Blockchains: Between New Forms of Rights Administration and Digital Rights Management 2.0.' (2019) 50 IIC – International Review of Intellectual Property and Competition Law;
- FINMA, 'Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)' (2018) <<https://www.finma.ch/en/~media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/fintech/wegleitung-ico.pdf?la=en>> accessed 7 February 2021;
- Finocchiaro G, 'Intelligenza artificiale e protezione dei dati personali' (2019) Giurisprudenza Italiana.
- Finocchiaro G, 'Intelligenza artificiale e responsabilità' (2020) 2 *Contr. impr.*;
- Fitzgibbons L, 'Data in use. Definition', <<https://www.whatis.techtarget.com/definition/data-in-use>>, accessed 15 January 2021;

- Flasiński M, *Introduction to Artificial Intelligence* (Springer International Publishing 2016);
- Flood J and Robb L, 'Professions and Expertise: How Machine Learning and Blockchain are Redesigning the Landscape of Professional Knowledge and Organisation' (2018) 18-20 Griffith University Law School Research Paper <<https://ssrn.com/abstract=3228950>> accessed 19 January 2021;
- Florida v Espinoza, Case No F14-2923 (Fla 11th Cir Ct) <https://www.morrisoncohen.com/siteFiles/files/2014_02_06%20-%20Florida%20v_%20Espinoza.pdf> accessed 7 February 2021;
- Florida v. Espinoza, Case No. 3D16-1860;
- Ford M, *Architects of Intelligence: The truth about AI from the people building it* (Packt Publishing, November 2018);
- Francesconi E, 'A description logic framework for advanced accessing and reasoning over normative provision' (2014) 22(3) Artificial Intelligence and Law;
- Fraser V and Roberge J-F, 'Legal Design Lawyering: Rebooting Legal Business Model with Design Thinking' (2016) 16 Prepperdine Dispute Resoluton Law Journal;
- Freeman K, 'Algorithmic injustice: How the Wisconsin Supreme Court failed to protect due process rights in State v. Loomis' (2016) 5 North Carolina Journal of Law & Technology;
- Frey C B, Osborne M A, 'The Future Of Employment: How Susceptible Are Jobs To Computerisation?' <oxfordmartin.ox.ac.uk/publications/the-future-of-employment/>, accessed: 13 March 2021;
- Frické M H, 'Data-Information-Knowledge-Wisdom (DIKW) Pyramid, Framework, Continuum', in Laurie A. Schintler and Connie L. McNeely (eds) *Encyclopedia of Big Data* (Springer 2018) <https://doi.org/10.1007/978-3-319-32001-4_331-1> accessed 11 January 2021;
- Fundacja LegalTech Polska, 'Diagnoza potrzeb prawników w zakresie wykorzystywania narzędzi informatycznych w usługach prawniczych' (Politechnika Warszawska, 2018) <https://legaltechpolska.pl/wp-content/uploads/2018/06/2018.06.25_Raport_LegalTech_ost.pdf> accessed 17 March 2021;
- Furlong J, 'The evolution of the legal services market', <law21.ca/2012/11/the-evolution-of-the-legal-services-market-stage-1/>, accessed: 20 January 2021;
- Gacyk M, *Zabawy w Boga. Ludzie o magnetycznych palcach* (Agora 2020) 1901;
- Gajewski M, 'To były czasy. Kiedy po raz pierwszy uruchomiłem system z graficznym interfejsem i nie rozumiałem, co widzę' (Spider's Web, 7 December 2018) <www.spidersweb.pl/2018/12/microsoft-windows-3-1.html> accessed 20 May 2020;
- Gamito M C and Ebers M, 'Algorithmic Governance and Governance of Algorithms: An Introduction' in Martin Ebers and Marta Cantero Gamito (eds), *Algorithmic Governance and Governance of Algorithms: Legal and Ethical Challenges* (Springer 2021);
- Garapon A, 'Les enjeux de la justice prédictive' (2017) 1-2 La Semaine juridique;

- Gatteschi V, Lamberti F and Demartini C, 'Technology of Smart Contracts' in Larry DiMatteo, Michel Cannarsa, Cristina Poncibò (eds), *The Cambridge Handbook of Smart Contracts, Blockchain Technology and Digital Platforms* (CUP 2019) <doi:10.1017/9781108592239.003> accessed 9 March 2021;
- Gerard D, 'The KodakCoin ICO failed, and now everyone wants their money' (David Gerard, 10 December 2018) <<https://davidgerard.co.uk/blockchain/2018/12/10/the-kodakcoin-ico-failed-and-now-everyone-wants-their-money/>> accessed 6 February 2021;
- Gerards J and Xenidis R, 'Algorithmic discrimination in Europe: Challenges and opportunities for gender equality and non-discrimination law' (European Commission 2020) <<https://op.europa.eu/en/publication-detail/-/publication/082f1dbc-821d-11eb-9ac9-01aa75ed71a1>> access 16 March 2021;
- Gesetz zur Einführung der elektronischen Akte in der Justiz und zur weiteren Förderung des elektronischen Rechtsverkehrs dated 5. 7. 2017, Bundesgesetzblatt I 2017, 2208;
- Giaccaglia M, 'Considerazioni su blockchain e smart contracts (oltre le criptovalute)' (2019) 3 Contr. impr.;
- Gill K S, 'Data to Decision and Judgment Making – a Question of Wisdom' (2018) 30 IFAC Papers On Line;
- Girasa R, *Artificial Intelligence as a Disruptive Technology. Economic Transformation and Government Regulation* (Palgrave Macmillan 2020);
- Gitti G and Maugeri M, 'Blockchain-Based Financial Services and Virtual Currencies in Italy' in *EuCML*, 2020, 43; for further information, see *Technical Committees ISO TC 307* available at <<https://www.iso.org/committee/6266604.html>> accessed 24 February 2021;
- Gołaczyński J (eds), *Informatyzacja postępowania sądowego w prawie polskim i wybranych państw* (C. H. Beck 2009);
- Gołaczyński J, 'e-Sąd przyszłości' (2019) 2 Monitor Prawniczy;
- Gomez v. General Nutrition Corp. 323 F Supp 3d 1368 (FL 2018);
- González-Espejo M-J and Pavón J (eds), *An Introductory Guide to Artificial Intelligence for Legal Professionals* (Kluwer Law International 2020);
- Goodenough O R, 'Computational Jurisprudence 3.0' (SLS Blog, 5 February 2015) <<https://law.stanford.edu/2015/02/05/computational-jurisprudence-3-0/>> accessed 19 November 2020;
- 'Legal Technology 3.0' (HuffPost, 2 April 2015) <https://www.huffpost.com/entry/legal-technology-30_b_6603658?guccounter=1&guce_referrer=aHR0cHM6Ly9kZS53aWtpcGVkaWtpc3JnLW&guce_referrer_sig=AQAAAJmQ5R47vQkZD-CLSEI62GMZFfameZbEroAVqRj0BgQ3GNQ-M7_Mp42oSaiMJThfkfRJZ2XRPcDqKQplfWZyMly0joNI6cn_4BEIooGzWowCm_XIpcCajidFyB_gju_bruNDzgN9wcy-tWt9MbzuUWKIDaNs8n4FSY6sEDJ5t-RSeB> accessed 19 November 2020;

- ‘Getting to Computational Jurisprudence 3.0’, [in:] Oliver Goodenough, Amedeo Santosuosso and Marta Tomasi (eds), ‘The Challenge of Innovation in Law: The Impact of Technology and Science on Legal Studies and Practice’ (Pavia University PressItaly 2015);
- Goodman A, ‘Predictive Coding: A Better Way to Deal with Electronically Stored Information’ (2016) 43(1) Litigation;
- Gordon T F, Prakken H, Walton D, ‘The Carneades model of argument and burden of proof’ (2007) 171(10-15) Artificial Intelligence;
- Gordon T G, ‘20 Years of ICAIL – Reflections on the field of AI and Law’ tfgordon.de 2007 <<http://www.tfgordon.de/publications/>> access 10 May 2021;
- Górska M A and Marcinowska L, ‘Czy blockchain namiesza w umowach dotyczących własności intelektualnej?’, <<https://newtech.law/pl/blockchain-namiesza-umowach-dotyczacych-wlasnosci-intelektualnej/>> accessed 25 April 2021;
- Gottschalk v Benson (1972) 409 U.S. 63;
- Goździaszek Ł (ed), *Identyfikacja elektroniczna i usługi zaufania w odniesieniu do transakcji elektronicznych na rynku wewnętrznym Unii Europejskiej. Komentarz* (C. H. Beck 2020);
- Grabmair M, *Modeling Purposive Legal Argumentation and Case Outcome Prediction Using Argument Schemes in the Value Judgment Formalism* (University of Pittsburgh 2016) <<http://d-scholarship.pitt.edu/27608/>, 2016> accessed 17 August 2021;
- Grabowski M and Zajac A, ‘Dane, informacje, wiedza – próba definicji’ (2009) 798 *Zeszyty Naukowe Uniwersytetu Ekonomicznego w Krakowie*;
- Grant T D and Wischik D, *On the path to AI. Law’s prophecies and the conceptual foundations of the machine learning age* (Palgrave Macmillan 2020);
- Greenberg A, ‘A Hacker Tried to Poison a Florida City’s Water Supply, Officials Say’ (Wired.com, 2 August 2021) <www.wired.com/story/oldsmar-florida-water-utility-hack> accessed 29 March 2021;
- Grin O S, Grin E S and Solovyov A V, ‘The Legal Design of the Smart Contract: The Legal Nature and Scope of Application’ (2019) 8 *Lex Russia*;
- Grisham J, *A Time to Kill* (Delta 2004) 369..
- Grosman M R, Cormack G V, ‘Inconsistent Responsiveness Determination in Document Review: Difference of Opinion or Human Error’ (2012) 32 *Pace L. Rev.*;
- Grossman M R and Cormack G V, ‘Technology-Assisted Review in E-Discovery Can Be More Effective and More Efficient Than Exhaustive Manual Review’ (2010) 17, *Rich. JL & Tech.*;
- Grupp M, ‘Legal tech – Impulse für Streitbeilegung und Rechtsdienstleistung’ (2014) 8-9 *Anwaltsblatt* <https://www.juris.de/jportal/portal/page/bsabprod.psm!doc.id=jzs-AnwBl2014080019-000_660&st=zs&showdoccase=1¶mfrommHL=true> accessed 18 November 2020;

- Grzybowska N, 'Jest uzasadnienie wyroku ws. Amber Gold. Liczy 9345 stron I zajmie około 47 tomów akt sprawy' (gdansk.naszemiasto.pl, 29 July 2020) <<https://gdansk.naszemiasto.pl/jest-uzasadnienie-wyroku-ws-amber-gold-liczy-9345-stron-i/ar/c1-7827784>> accessed 7 April 2021;
- Guillaume F, 'Aspects of private international law related to blockchain transactions' in Daniel Kraus, Thierry Obrist and Olivier Hari (eds), *Blockchains, Smart Contracts, Decentralised Autonomous Organisations and the Law* (Edward Elgar 2019);
- Gupta S, 'Sentiment Analysis: Concept, Analysis and Applications' (January 2018) <https://towardsdatascience.com/sentiment-analysis-concept-analysis-and-applications-6c94d6f58c17> accessed 12 March 2021;
- Gürçan B, 'Jurisdiction on Blockchain' (2020) ICBEMM-ICISSS 14;
- Gürkaynak G, Yılmaz I, Yeşilaltay B and Bengi B, 'Intellectual Property Law and Practice in the Blockchain Realm' (2018) 34 Computer Law & Security Review;
- Gyuranecz F Z, Krausz B and Papp D, 'The AI is Now in Session. The Impact of Digitalization on Courts' (2019);
- Haapio H and Barton T D, 'Business-Friendly Contracting: How Simplification and Visualization Can Help Bring It to Practice' in Kai Jacob, Dierk Schindler and Roger Strathausen (eds), *Liquid Legal* (Springer 2017);
- Hacker P, Krestel R, Grundmann S, Naumann F, 'Explainable AI under contract and tort law: legal incentives and technical challenges' (2020) 28 Artificial Intelligence and Law;
- Hacker P, 'Towards a Flexible Framework for Algorithmic Fairness', in: Ralf H. Reussner, Anne Koziol and Robert Heinrich (eds) *50. Jahrestagung der Gesellschaft für Informatik, INFORMATIK 2020 – Back to the Future* (Karlsruhe 2020);
- Hadj-Mabrouk H, 'Contribution of Artificial Intelligence to Risk Assessment of Railway Accidents' (2019) 5(2) Urban Rail Transit;
- Hafner C, 'Representation of knowledge in a legal information retrieval system' [in:] *Proceedings of the 3rd annual ACM conference on research and development in information retrieval* 1980;
- Hage J C, *Reasoning with Rules. An Essay in Legal Reasoning and its Underlying Logic* (Springer 1997);
- , 'Formalizing legal coherence' in Ronald Prescott Loui (ed) *Proceedings of the Eighth International Conference on Artificial Intelligence and Law, ICAIL 2001* (ACM 2001);
- , Brożek B and Vincent N (eds.), *Law and Mind. A Survey of Law and the Cognitive Sciences* (Cambridge University Press 2021);
- Halsey M and de Van-Palumbo M, 'Courts as empathic spaces: reflections on the Melbourne neighbourhood justice centre' (2018) 2 Griffith Law Review;
- Hangzhou Huatai Media Culture Media Co., Ltd. v. Shenzhen Daotong Technology Development Co., Ltd. Case of Dispute over Right of Dissemination over Internet (The Supreme People's Court of the People's Republic of China, 4 April 2019) <http://english.court.gov.cn/2019-12/04/content_37527759.htm> accessed 9 February 2021;

Bibliography

- Harrington W G, 'A Brief History of Computer-Assisted Legal Research' (1984) 77, 3 Law. Libr. J.;
- Hartung M, Bues M-M, Halbleib G, Legal Tech. Die Digitalisierung des Rechtsmarkts (C. H. Beck 2018);
- Bues M-M and Halbleib G, *Legal Tech: How Technology Is Changing the Legal World* (C. H. Beck 2018);
- Bues M-M and Halbleib G, *Legal Tech, How Technology is Changing the Legal World* (Nomos 2018);
- Hasal M, Nowaková J, Saghair K H, Abdulla H, Snášel V, 'Chatbots: Security, privacy, data protection, and social aspects' <<https://onlinelibrary.wiley.com/doi/full/10.1002/cpe.6426>> accessed 25 July 2021;
- Hassan S and De Filippi P, 'The Expansion of Algorithmic Governance: From Code is Law to Law is Code' (2017) 17 Field Actions Science Reports;
- Hellwig D, Karlic G, Huchzermeier A, Build Your Own Blockchain (C. H. Beck 2020);
- Henderson J and Bench-Capon T, 'Describing the Development of Case Law' in Floris Bex (ed) *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law, ICAIL 2019* (ACM 2019);
- High Level Group of Independent Stakeholders on Administrative Burdens, *Europe can do better. Report on the best practice for implementing EU legislation in Member States in the least burdensome way* (European Commission, 15 November 2011);
- High-Level Expert Group on Artificial Intelligence, 'A definition of AI: Main capabilities and scientific disciplines' (European Commission, April 2019) <https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=56341> accessed 11 December 2020;
- Hildebrandt M, 'The adaptive nature of text-driven law' (2021) 1(1) Journal of Cross-Disciplinary Research in Computational Law <<https://journalcrcl.org/crcl/article/view/2>> accessed 26 April 2021;
- HM Land Registry to explore the benefits of blockchain <<https://www.gov.uk/government/news/hm-land-registry-to-explore-the-benefits-of-blockchain>> accessed 27 January 2021;
- Hoekstra R, Breuker J, Di Bello M, Boer A, 'LKIF Core: Principled Ontology Development for the Legal Domain' (2009) 188 Frontiers in Artificial Intelligence and Applications;
- Holmes O W, 'The Path of the Law' (1897) 457 Harvard Law Review;
- Hondius E, Silva M S, Nicolussi A, Coderch P S, Wendehorst C and Zoll F (eds), *Coronavirus and the Law in Europe* <<https://www.intersentiaonline.com/bundle/coronavirus-and-the-law-in-europe>>, accessed 12 August 2021.
- Hong J, Dreibholz T, JSchenkel J A, Hu J A, 'An Overview of Multi-Cloud Computing' in Leonard Barolli, Makoto Takizawa, Fatos Xhafa, Tomoya Enokido (eds), *Web, Artificial Intelligence and Network Applications. Proceedings of the Workshops of the 33rd International Conference on Advanced Information Networking and Applications (WAINA-2019)*;

- Hongdao Q and others, 'Legal Technologies in Action: The Future of the Legal Market in Light of Disruptive Innovations' (2019) Sustainability;
- Hook A, 'The Use and Regulation of Technology in the Legal Sector beyond England and Wales, Research Paper for the Legal Services Board' (Hook Tangaza, 2019) <<https://www.legalservicesboard.org.uk/wp-content/uploads/2019/07/International-AH-Report-VfP-4-Jul-2019.pdf>><https://www.legalservicesboard.org.uk/wp-content/uploads/2019/07/International-AH-Report-VfP-4-Jul-2019.pdf>> accessed 16 March 2021;
- Horty J F, 'Reasoning with dimension and magnitudes' (2019) 27(3) Artificial Intelligence and Law;
- Hosier R, 'Evolution of the Law Firm: Why Clients Demand that You Embrace New Technology' (Legal Futures, 28 October 2020) <www.legalfutures.co.uk/features/evolution-of-the-law-firm-why-clients-demand-that-you-embrace-new-technology/> accessed 16 November 2020;
- Houben R and Snyers A, 'Crypto-assets. Key developments, regulatory concerns and responses' (European Parliament's Committee on Economic and Monetary Affairs 2020) <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/648779/IPOL_STU\(2020\)648779_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/648779/IPOL_STU(2020)648779_EN.pdf)> accessed 7 February 2021;
- and Snyers A, 'Cryptocurrencies and blockchain. Legal context and implications for financial crime, money laundering and tax evasion', (European Parliament's Special Committee on Financial Crimes, Tax Evasion and Tax Avoidance 2018), <<https://www.europarl.europa.eu/cmsdata/150761/TAX3%20Study%20on%20cryptocurrencies%20and%20blockchain.pdf>> accessed 8 February 2021;
- Howard L K, 'Security by Design' (2019) 12(2) Journal of Physical Security;
- Howarth D, *Law As Engineering: Thinking about What Lawyers Do* (Edward Elgar Publishing 2014);
- Hudobnik M, 'Data protection and the law enforcement directive: a procrustean bed across Europe?' (2020) 21 ERA Forum;
- HYTrust, 'Protecting sensitive data and achieving compliance in a multi-cloud world', <https://www.hytrust.com/uploads/Compliance-in-a-Multi-Cloud-World_WP.pdf> accessed 11 January 2021);
- I ACa 504/19, Legalis;
- Ibáñez L-D, O'Hara K, Simperl H, 'On Blockchains and the General Data Protection Regulation', <https://www.eublockchainforum.eu/sites/default/files/research-paper/blockchains-general-data_4.pdf> accessed 9 January 2021;
- ILTA's, '2020 Technology Survey', <<https://www.iltanet.org/resources/publications/surveys/2020ts?ssopc=1>>, accessed 9 March 2021;
- Indurkha N, Damerau F J, *Handbook of Natural Language Processing* (Chapman & Hall/CRC 2010);
- Innovative Technology Arrangement and Services Act (ITAS) <<https://legislation.mt/eli/cap/592/eng/pdf>> access 2 February 2021;

- Institut Luxembourgeois de la Normalisation, de l'Accréditation, de la Sécurité et qualité des produits et services, 'Trust Services Under the eIDAS Regulation' (Portail-qualite.lu, June 2018), <<https://portail-qualite.public.lu/content/dam/qu alite/publications/confiance-numerique/trustservices-under-eIDAS.pdf>> access 19 February 2021;
- Insurance Information Institute, 'Facts + Statistics: Identity theft and cybercrime' (iii.org) <www.iii.org/fact-statistic/facts-statistics-identity-theft-and-cybercrime> accessed 29 March 2021;
- International Bar Association, 'LPRU Cybersecurity' (Ibanet.org, 2018) <<https://ww w.ibanet.org/LPRU/Cybersecurity>> accessed 17 August 2021
- International Software Testing Qualifications Board®, 'Certified Tester Foundati- on Level Syllabus.' (International Software Testing Qualifications Board, 11 November 2019) <<https://www.istqb.org/downloads/send/2-foundation-level-do cuments/281-istqb-ctfl-syllabus-2018-v3-1.html>> accessed 18 April 2021;
- Islam N, Islam Z and Noor N, 'A Survey on Optical Character Recognition System' (2016) 10 Journal of Information & Communication Technology -JICT <<https:// arxiv.org/abs/1710.05703>> accessed 8 February 2021;
- Israni E, 'Algorithmic Due Process: Mistaken Accountability and Attribution in State v. Loomis' (Jolt Digest, 31 August 2017) <<https://jolt.law.harvard.edu/dige st/algorithmic-due-process-mistaken-accountability-and-attribution-in-state-v-loo mis-1>> accessed 8 February 2021;
- ITU-T, 'Series X: Data Networks and Open System Communications. OSI Net- working and System Aspects – Efficiency' (1998) ITU-T Recommendation X.630;
- IV Ka 290/18, Legalis;
- Jakubik M and Świetnicki T, 'Technologia coraz bardziej obecna w pracy praw- ników' <<https://www.prawo.pl/prawnicy-sady/informatyka-w-pracy-prawnikow -eksperci-pisza-o-legal-tech,504169.html>> accessed 25 April 2021;
- Janowski J, *Informatyka prawa. Zadania i znaczenie w związku z kształtowaniem się elektronicznego obrotu prawnego* (Wydawnictwo UMCS 2011) 328 – 340;
- Janowski J, *Informatyka prawnicza* (C. H. Beck 2011);
- Juang B-H and, Rabiner L R, 'Automatic speech recognition – a brief history of the technology development' (2005) Georgia Institute of Technology. Atlanta Rutgers University and the University of California. Santa Barbara;
- Judgement of the Federal Supreme Court (BGH) from 27 November 2019, VIII ZR 285/18, NJW 2020;
- Kahnemann D, *Thinking fast and slow* (Farrar, Straus and Giroux, 2011);
- Karoussos H F, 'Law & The Digital Disruption: The Impact of ICT and AI on the Legal Profession' (2017) American College of Greece Research Paper <www.rese archgate.net/publication/321527178_Law_The_Digital_Disruption_The_Impact _of ICT_and_AI_on_the_Legal_Profession> accessed 25 February 2021;
- Kastrop C, 'Human Rights in the Era of AI – Europe as International Standard Setter for Artificial Intelligence' (2021) <<https://www.coe.int/en/web/artificial-in telligence/human-rights-in-the-era-of-ai>> access 17 March 2021;

- Katz D M, Bommarito II M J and Blackman J, 'A General Approach for Predicting the Behavior of the Supreme Court of the United States' (2017) 3 PLOS ONE;
- Kayser-Bril N, 'At least 11 police forces use face recognition in the EU, Algorithm-Watch reveals' (Algorithm Watch, 11 December 2019, updated 19 June 2020) <<https://algorithmwatch.org/en/story/face-recognition-police-europe/>> accessed 8 February 2021;
- Kephart J O and Chess D M, 'The Vision of Autonomic Computing' (2003) 36(1) IEEE Computer;
- Keppens J, 'Explainable Bayesian Network Query Results via Natural Language Generation Systems' (Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law (ICAIL '19), Montreal, 17 – 21 June 2019);
- Kerikmäe T (ed), *Regulating eTechnologies in the European Union. Normative Realities and Trends* (Springer 2014);
- Kerikmäe T and others, 'Legal Technology for Law Firms: Determining Roadmaps for Innovation' (2018) Croatian International Relations Review;
- Kerikmäe T and Pärn-Lee E, 'Legal dilemmas of Estonian artificial intelligence strategy: in between of e-society and global race' (2020) AI & Society <<https://doi.org/10.1007/s00146-020-01009-8>> accessed 7 April 2021.
- Keyvanpour M R, Javideh Mand , Ebrahimi M R, 'Detecting and investigating crime by means of data mining: a general crime matching framework' (2011) 3 Procedia Computer Science;
- Kitchin R, 'Thinking critically about and researching algorithms' (2017) 20:1 Information, Communication & Society;
- Klimas K and Klimas D, 'Electronic Communication in European Cross-border Proceedings – Polish Perspective' in Jacek Gołaczyński, Wolfgang Kilian and Tomasz Scheffler (eds) *Legal Innovation in Polish Law* (C. H. Beck 2019);
- Klimczuk A, 'Chmura jak powietrze: cyfrowa transformacja kancelarii prawnej Magnusson' <<https://news.microsoft.com/pl-pl/2016/12/13/chmura-jak-powietrze-cyfrowa-transformacja-kancelarii-prawnej-magnusson/>> accessed 9 March 2021;
- Kölvart M, Poola M, Rull A, 'Smart Contracts' in Tanel Kerikmäe, Addi Rull (eds) *The Future of Law and eTechnologies* (Springer 2016);
- Kowalski R A., 'Legislation as Logic Programs' in Zenon Bankowski and others (eds) *Informatics and the Foundations of Legal Reasoning* (Springer 1995);
- Krajowa Izba Radców Prawnych, 'Sądy w trybie online – zdalna praca sądów w wybranych państwach europejskich w czasach pandemii SARS-COV-19' (2020) <<https://kirp.pl/wp-content/uploads/2020/05/opracowanie-komisji-zagranicznej-krrp.-sady-w-trybie-online..pdf>> accessed 13 January 2020;
- Krasuski A, Status prawny sztucznego agenta, Podstawy prawne zastosowania sztucznej inteligencji (C. H. Beck 2020);
- Kubat M, *An Introduction to Machine Learning* (Springer International Publishing 2017);
- Kucharska E, 'BriefCam - one system, many possibilities' (2019) 12, Stołeczny Magazyn Policyjny;

- Kucharski B, *Świadczenie ubezpieczyciela w umowie ubezpieczenia mienia* (Wolters Kluwer 2019);
- Kuijer M, 'The right to a fair trial and the Council of Europe's efforts to ensure effective remedies on a domestic level for excessively lengthy proceedings' (2013) 13 Human Rights Law Review;
- Kulawiński M, '*Transhumanizm, cyborgizacja, ulepszanie człowieka*' <researchgate.net/publication/334448348_Transhumanizm_cyborgizacja_ulepszanie_czlowieka> accessed 13 January 2021;
- Kurki V A J, 'Why Things Can Hold Rights: Reconceptualizing the Legal Person' in Visa A. J. Kurki, Tomasz Pietrzykowski (eds) *Legal Personhood: Animals, Artificial Intelligence and the Unborn* (Springer 2017);
- Layne K, Lee J, 'Developing Fully Functional e-Government: A Four Stage Model' (2001) 18 Government Information Quarterly 122;
- Lazuashvili N, Norta A and Draheim D, 'Integration of Blockchain Technology into a Land Registration System for Immutable Traceability: A Casestudy of Georgia' in Claudio Di Ciccio and others (eds) *Business Process Management: Blockchain and Central and Eastern Europe Forum* (Springer 2019);
- Leake D B, 'Case-Based Reasoning,' in William Bechtel and George Graham (ed), *A Companion to Cognitive Science* (Blackwell Publishers 1999);
- Lee J, Khan V M, 'Blockchain and Smart Contract for Peer-to-Peer Energy Trading Platform: Legal Obstacles and Regulatory Solutions' (2020) 19 UIC REV. INTELL. PROP. L.;
- Lee K-F, *Inteligencja Sztuczna Rewolucja Prawdziwa. Chiny, USA i przyszłość świata* (Media Rodzina 2019);
- Leeb C-M, *Digitalisierung, Legal Technology und Innovation* (Duncker & Humblot, 2019);
- Legaltechies, 'El estado de la Legaltech en... México' (legaltechies.ec, 25 November 2020) <<https://bit.ly/371wbZk>> accessed 10 February 2021.
- Legg M and Bell F, 'Artificial Intelligence and the Legal Profession: Becoming The AI-Enhanced Lawyer' (2019) 38(2) University of Tasmania Law Review 59, <ssrn.com/abstract=3725949> accessed: 19 January 2021;
- Legner Ch and Webernde K, 'Electronic bill presentment and payment', <https://www.researchgate.net/publication/221408047_Electronic_Bill_Presentment_and_Payment/link/55746c1f08ae7536374fee56/download> accessed 25 April 2021;
- Legrand J, 'Some guidelines for fuzzy sets application in legal reasoning' (1999) 7 Artificial Intelligence and Law;
- Lehmann J and Gangemi A, 'An ontology of physical causation as a basis for assessing causation in fact and attributing legal responsibility' (2007) 15(3) Artificial Intelligence and Law;
- Lehmann M, 'Who Owns Bitcoin? Private Law Facing the Blockchain' (2019) 21 Minnesota Journal of Law, Science & Technology <<https://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1474&context=mjlst>> accessed 15 March 2021;
- Leiser M and Custers B, 'The Law Enforcement Directive: Conceptual Challenges of EU Directive 2016/680' (2019) 5, European Data Protection Law Review;

- Leiser M R, 'Private jurisprudence' and the right to be forgotten balancing test,' (2020) 29 Computer Law & Security Review;
- Lemkowska M, 'Funkcje ubezpieczeń gospodarczych a zrównoważony rozwój', (2020) 2 Wiadomości Ubezpieczeniowe;
- Lessig L, *Code and Other Laws of Cyberspace* (1st edn, Basic Books 1999);
- *Code and Other Laws of Cyberspace. Version 2.0* (2nd revised edn, Basic Books 2006);
- Leszczyński L, 'O wykładni prawa i jej wymiarze praktycznym. Kontekst sądowego stosowania prawa' (2020) 2 Archiwum Filozofii Prawa i Filozofii Społecznej;
- Leszczyński L, 'Wykładnia operatywna (podstawowe właściwości).' (2009) 6 Państwo i Prawo;
- Łętowska E, 'Dekalog dobrego sędziego' (2016) 1 Krajowa Rada Sądownictwa;
- Letterton R, 'L'accès numérique au droit' (2018) 3 Annales des Mines;
- Licini C, 'Il notaio dell'era digitale: riflessioni giur-economiche' (2018) 2 Notariato;
- Linee Guida sulla formazione, gestione e conservazione dei documenti informatici <<https://www.agid.gov.it/it/linee-guida>> accessed 25 February 2021;
- Lingwall J and Mogallapu R, 'Should Code Be Law? Smart Contracts, Blockchain, and Boilerplate' (2019) 88:1 University of Missouri-Kansas City Law Review;
- Lippe P and Katz D M, '10 Predictions about how IBM's Watson will impact the Legal Profession' (ABA Journal: Legal Rebels, 2 October 2014) <https://www.abajournal.com/legalrebels/article/10_predictions_about_how_ibms_watson_will_impact> accessed 19 November 2020;
- Litwiński P (ed.), *Rozporządzenie UE w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i swobodnym przepływem takich danych. EU Regulation on the protection of individuals with regard to the processing of personal data and on the free movement of such data* (C. H. Beck 2018);
- Liu L, *Introduction to the Semantic Web and Semantic Web Services* (Chapman and Hall/CRC 2019);
- Lodge M, 'Software Testing Is Tedious. AI Can Help.' (Harvard Business Review Home, 22 February 2021) <<https://hbr.org/2021/02/software-testing-is-tedious-ai-can-help#>> accessed 18 April 2021;
- Loevinger L, 'Jurimetrics: The Next Step Forward' (1949) 33, 5 Minn L Rev;
- Lord N, 'Data Protection: Data In transit vs. Data At Rest', <<https://www.digitalguardian.com/blog/data-protection-data-in-transit-vs-data-at-rest>> accessed 13 January 2021;
- Losano M G, *Giuscibernetica: Macchine e modelli cibernetici nel diritto* (Einaudi 1969);
- Louis Larret-Chahine, 'Lille, premier barreau à tester la justice predictive!' (Predictice Blog, 1- August 2017) <<https://blog.predictice.com/lille-est-le-premier-barreau-a-tester-la-justice-pr%C3%A9dictive>> accessed 31 March 2021;
- Lubasz D in Edyta Bielak-Jomaa and, Dominik. Lubasz (eds) *RODO. Ogólne Rozporządzenie o Ochronie Danych. komentarz* (Wolters Kluwer 2017);

- Łukańko B, 'Uchybienie przepisom o ochronie danych osobowych jako naruszenie dobra osobistego – analiza na przykładzie orzecznictwa Sądu Najwyższego' (2016) 46 UWM, *Studia Prawnoustrojowe*;
- Lynch C, Ashley K D, Pinkwart N and Aleven V, 'Concepts, Structure and Goals: Redefining Ill-Definedness' (2009) 19 *International Journal of Artificial Intelligence in Education*;
- Macdonald C, 'Pentagon working to develop technology that would let troops control machines with their MINDS' (Daily Mail 17 July 2018) <[dailymail.co.uk/sciencetech/article-5963803/Pentagon-working-develop-technology-let-troops-control-machines-MINDS.html?ns_mchannel=rss&ito=1490&ns_campaign=1490](https://www.dailymail.co.uk/sciencetech/article-5963803/Pentagon-working-develop-technology-let-troops-control-machines-MINDS.html?ns_mchannel=rss&ito=1490&ns_campaign=1490)> accessed 18 January 2021;
- Magyar Nemzeti Bank, 'Kriptovaluta, nyereségrészesedési jog: fokozott befektetői kockázatok' (mnb.hu, 14 February 2020) <<https://www.mnb.hu/sajtoszoba/sajto kozlemenyek/2020-evi-sajtokozlemenyek/kriptovaluta-nyeresegreszesedesi-jog-fo kozott-befektetoi-kockazatok>> accessed 1 March 2021;
- Malinowska K, 'Aspekty prawne ubezpieczenia cyber ryzyk' (2018) 2 *Prawo Asekuracyjne*;
- Mangan D, 'Lawyers could be the next profession to be replaced by computers' (CNBC 13 February 2017) <www.cnbc.com/2017/02/17/lawyers-could-be-replaced-by-artificial-intelligence.html> accessed 20 January 2021;
- Mapperson J, 'Ethereum Smart Contracts up 75 % to Almost 2M in March' <<https://cointelegraph.com/news/ethereum-smart-contracts-up-75-to-almost-2m-in-march>> accessed 27 January 2021;
- Marano P and Noussia K. (eds), *InsurTech: A Legal and Regulatory View* (Springer 2020);
- and Szostek D, *Smart Contract and Insurance* (Palgrave MacMillan 2021);
- Marczak B and others, 'Hide and seek, Tracking NSO Group's Pegasus Spyware to Operations in 45 Countries' (citizenlab.ca, 18 September 2018) <<https://citizenlab.ca/2018/09/hide-and-seek-tracking-nso-groups-pegasus-spyware-to-operations-in-45-countries/>> accessed 29 March 2021;
- Markowski K, 'Kryptowaluty. Powstanie-typologia-charakterystyka' (2019) 3 *Civitas et Lex*;
- Marrow P, Karol M and Kuyan S, 'Artificial Intelligence and Arbitration: The Computer as an Arbitrator. Are We There Yet?' (2020) 4 *Dispute Resolution Journal*;
- Martinek J, 'Lisp – opis, realizacja i zastosowania' (Wydawnictwa Naukowo-Techniczne, Warszawa 1980);
- Martini M, 'Fundamentals of a Regulatory System for Algorithm-based Processes' (2019) <https://www.vzbv.de/sites/default/files/downloads/2019/07/19/martini_regulatory_system_algorithm_based_processes.pdf> accessed 18 November 2020;

- Masior M, 'Wolne zawody prawnicze w Anglii i Walii oraz reforma ich regulacji' w Michał. Masior (ed) *Analiza prawno-porównawcza ustroju korporacyjnego wolnych zawodów prawniczych oraz rynku usług prawniczych w wybranych państwach, w kontekście regulacji i rynku w Polsce z uwzględnieniem dostępności obywateli do tych usług*, (Instytut Wymiaru Sprawiedliwości 2018) <<https://iws.gov.pl/wp-content/uploads/2018/08/IWS-Masior-M-i-inni-Wolne-zawody-prawnicze.pdf>> accessed 25 April 2021;
- Masoni R, 'Diritto processuale civile dell'emergenza epidemiologica (a seguito della conversione in legge del decreto ristori)', (2021) *Giust. civ.*, available at <<https://giustiziacivile.com>> accessed 25 February 2021;
- Maxwell D, Speed Ch, Pschetz L, 'Story Blocks: Reimagining Narrative through the Blockchain.' (2017) 23 *Convergence*;
- Maxwell T and Schafer B, 'Concept and Context in Legal Information Retrieval' (Proceedings of the 2008 conference on Legal Knowledge and Information Systems: JURIX 2008: The Twenty-First Annual Conference, 8 July 2008);
- and Schafer B, 'Concept and Context in Legal Information Retrieval' (Proceedings of the 2008 conference on Legal Knowledge and Information Systems: JURIX 2008: The Twenty-First Annual Conference, 8 July 2008);
- Mazzarese T, 'Fuzzy Logic and Judicial Decision-Making: A New Perspective on the Alleged Norm-Irrationalism' (1993) 2 *Proceedings of the Computer and Vagueness: Fuzzy Logic and Neural Nets. Informatica e diritto*;
- McCarty L T and Sridharan N, 'The Representation of an Evolving System of Legal Concepts: II. Prototypes and Deformations' (Proceedings of the Seventh International Joint Conference on Artificial Intelligence: IJCAI-81, Vancouver, 24-28 August 1981);
- 'An Implementation of Eisner v. Macomber', in L. Thorne McCarty (ed) *Proceedings of the Fifth International Conference on Artificial Intelligence and Law, ICAIL '95* (ACM 1995);
- 'Some Arguments About Legal Arguments', in John Zeleznikow, Daniel Hunter, L. Karl Branting (eds) *Proceedings of the Sixth International Conference on Artificial Intelligence and Law, ICAIL '97* (ACM 1997);
- 'Reflections on TAXMAN: an experiment in artificial intelligence and legal reasoning' (1977) 90, 5 *Harv. Law Rev.*;
- McEwan I, *Maszyny takie jak ja*, (Albatros 2019);
- McIntyre H, 'Spotify Has Acquired Blockchain Startup Mediachain' <<https://www.forbes.com/sites/hughmcintyre/2017/04/27/spotify-has-acquired-blockchain-startup-mediachain/?sh=6c9ffaf369ee>> accessed 27 January 2021;
- McJohn S and McJohn I, 'The Commercial Law of Bitcoin and Blockchain Transactions' (2016) 16-13 *Legal Studies Research Paper Series Research Paper*;
- McKamey M, 'Legal Technology: Artificial Intelligence and the Future of the Law Practice' (2017) 45 *APPEAL 22 Review of Current Law and Law Reform* <ssrn.com/abstract=3014408> accessed: 19 January 2021;
- Medvedeva M, 'Using machine learning to predict decisions of the European Court of Human Rights', (2020) 28 *Artificial Intelligence and Law*;

Bibliography

- Mehl L, *Automation in the legal world* (National Physical Laboratory, 1958);
— *Automation in the legal world* (National Physical Laboratory 1958);
Mehrabi N, Morstatter F, Saxena N, Lerman K and Galstyan A, 'A Survey on Bias and Fairness in Machine Learning' (2019) arXiv preprint arXiv:1908.09635;
Meijer A and Wessels M, 'Predictive Policing: Review of Benefits and Drawbacks' (2019) 42, *International Journal of Public Administration*;
Mell P and Grance T, 'The NIST Definition of Cloud Computing: Recommendations of National Institute of Standards and Technology' (2011) No. 800-145 Computer Security Division, Information Technology Laboratory, National Institute of Standards and Technology <src.nist.gov/publications/nistpubs/800-145/SP800-145.pdf> accessed January 2021;
Metsker O, Trofimov E, Grechishcheva S, 'Natural Language Processing of Russian Court Decisions for Digital Indicators Mapping for Oversight Process Control Efficiency: Disobeying a Police Officer Case' (Electronic Governance and Open Society: Challenges in Eurasia, 5th International Conference, EGOSE 2018, St. Petersburg 2018);
Miller E, 'Can AI Be a Fair Judge in Court? Estonia Thins So' (WIRED 3 March 2019) <<http://www.wired.com/>> accessed 7 April 2021;
Miller M S, 'The Future of Law' CAPLET.COM (August 1997) <www.caplet.com/security/futurelaw> accessed 16 March 2021;
Mills M, 'Artificial Intelligence in Law: The State of Play, 2016, Part 3' <<https://www.neotalogic.com/wp-content/uploads/2016/04/Artificial-Intelligence-in-Law-The-State-of-Play-2016.pdf>> accessed 25 April 2021;
— 'Artificial Intelligence in Law: the State of Play 2016' (Thomson Reuters, 2016) <<https://britishlegalitforum.com/wp-content/uploads/2016/12/Keynote-Mills-AI-in-Law-State-of-Play-2016.pdf>> accessed 8 February 2021;
Minh Dung P, 'On the Acceptability of Arguments and Its Fundamental Role in Nonmonotonic Reasoning, Logic Programming and n-person Games' (1995) 77(2) *Artificial intelligence*;
Ministerstwo Cyfryzacji, Grupa robocza ds. rejestrów rozproszonych i blockchain, 'GDPR a technologia blockchain', <<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj1rtT-scTvAhVmsYsKHcsTAC8QFjAAegQIARAD&url=https%3A%2F%2Fwww.gov.pl%2Fattachment%2Fdc39a05b8-f04c-4e7c-93ac-3b5b9946ed0c&usq=AOvVaw2Ngh2B3Pcf1XAUCdeplnnC9>> accessed 19 February 2021;
Ministerstwo Gospodarki and Kancelaria Prezesa Rady Ministrów, 'Wytyczne do przeprowadzania oceny wpływu oraz konsultacji publicznych w ramach rządowego procesu legislacyjnego.' (Rządowe Centrum Legislacji) <<http://www1.rcl.gov.pl/?q=book/wytyczne>> accessed 5 February 2021;
Minsky M, 'A Framework for Representing Knowledge' in Patrick H. Winston (ed) *Psychology of Computer Vision* (MIT Press 1975);
Mitchell R L, 'Predictive policing gets personal' (ComputerWorld, 24 October 2013) <<https://www.computerworld.com/article/2486424/predictive-policing-gets-personal.html>> accessed 8 February 2021;

- Mitnick Security, 'The weakest link in safety is still man. Kevin Mitnick showed us how to outsmart us' < Sobczak K, 'Coraz więcej cyberataków na firmy prawnicze' <<https://www.prawo.pl/prawnicy-sady/cyberbezpieczenstwo-coraz-wiecej-atakow-na-firmy-prawnicze,505642.html>> accessed 25 April 2021;
- Modgil S, Prakken H, The ASPIC+ framework for structured argumentation: a tutorial, (2014) *Argument and Computation* 5(1);
- Modrák V and Šoltysová Z, 'Development of an Organizational Maturity Model in Terms of Mass Customization' in Dominik T. Matt, Vladimír Modrák and Helmut Zsifkovits (eds) *Industry 4.0 for SMEs* (Palgrave Macmillan 2020) 215 <https://doi.org/10.1007/978-3-030-25425-4_8> accessed 12 January 2021;
- Modrzejewski M, 'Podatkowe aspekty korzystania z oprogramowania komputerowego w modelu SaaS (Software as a Service)' (2016) 8 *Przegląd Podatkowy*;
- Moens M-F, Uyttendaele C and Dumortier J, 'Information extraction from legal texts: the potential of discourse analysis' (1999) 51 *International Journal of Human-Computer Studies*;
- Moens M-F, Uyttendaele C and Dumortier J, 'Abstracting of legal cases: The SALOMON experience' (ICAIL'97: Proceedings of the 6th international conference on Artificial Intelligence and Law, Melbourne, 30 June – 3 July 1997);
- Moguillansky M O, Rotolo A, Simari G R, 'Hypotheses and their dynamics in legal argumentation' (2019) 129 *Expert Systems and Applications*;
- Mohun J and Roberts A, 'Cracking the code. Rulemaking for humans and machines' (2020) 40 *OECD Working Papers on Public Governance* <<https://doi.org/10.1787/3afe6ba5-en>> accessed 5 February 2021;
- Molęda M, 'Cyber is the new black', (2018) 6 *Miesięcznik Ubezpieczeniowy*;
- Monash University, 'Deepfakes detect Zoom-bombing culprits' (monash.edu, 25 January 2021) <www.monash.edu/it/about-us/news-and-events/latest/articles/2021/deepfakes-detect-zoom-bombing-culprits> accessed 29 March 2021;
- Morand A-S, 'So kollidiert die DSGVO mit der Blockchain' (Netzwoche, 1 September 2020) <<https://www.netzwoche.ch/news/2020-09-01/so-kollidiert-die-dsgvo-mit-der-blockchain/0lt0>> accessed 25 February 2021;
- Mougayar W, 'Tokenomics — A Business Guide to Token Usage, Utility and Value' (Medium, 10 June 2017) <<https://medium.com/@wmougayar/tokenomics-a-business-guide-to-token-usage-utility-and-value-b19242053416>> accessed 6 February 2021;
- Mouttotos N, 'Reform of civil procedure in Cyprus: Delivering justice in a more efficient and timely way'(2020) 2 *Common Law World Review*;
- Murphy J P, 'E-Discovery in Criminal Matters - Emerging Trends & the Influence of Civil Litigation Principles' (2010) 11 *Sedona Conference Journal*;
- Myltseva V, 'The legal nature and principles of the predictive justice' (2019) 3 *Recht der Osteuropäischen Staaten*;
- Myrna G, 'Juzgado sin papel, un paso más de la justicia electrónica' (2018) 12, 41 *Revista Ius*;

- Najwyższa Izba Kontroli, 'Dokonywanie oceny wpływu w ramach rządowego procesu legislacyjnego.' (Najwyższa Izba Kontroli, 5 March 2018) <<https://www.nik.gov.pl/plik/id,16190,vp,18712.pdf>> accessed 5 February 2021;
- Nakamoto S, 'Bitcoin: A Peer-to-Peer Electronic Cash System ' (31 October 2008) <<https://nakamotoinstitute.org/bitcoin/>> accessed 1 December 2020;
- Nardi Y, 'Cloud computing and the use of legal technology in the cloud' (Legal Insights Europe, 7 August 2020) <<https://blogs.thomsonreuters.com/legal-uk/2020/08/07/cloud-computing-and-the-use-of-legal-technology-in-the-cloud/>> accessed 17 March 2021;
- Nastri N, 'Registri sussidiari, Blockchain: #Notaio oltre la lezione di Carnelutti' (2017) 4 *Notariato*;
- Navas S, 'LegalTech Services and the Digital Content and Digital Services Directive' <https://www.academia.edu/44791640/LegalTech_Services_and_the_Digital_Content_and_Digital_Services_Directive> accessed 12 January 2021;
- Nemitz P, 'Constitutional democracy and technology in the age of artificial intelligence' (2018) 2133 Royal Society Publishing;
- Neves Jr. P C, 'Judiciário 5.0' (Blucher, 2020);
- Newell A and Simon H A, *Human Problem Solving* (Prentice Hall 1972);
- Ng A, 'What Artificial Intelligence Can and Can't Do Right Now' (Harvard Business Review, 9 November 2016) <www.hbr.org/2016/11/what-artificial-intelligence-can-and-cant-do-right-now> accessed 21 November 2020;
- Nissan E, 'Digital technologies and artificial intelligence's present and foreseeable impact on lawyering, judging, policing and law enforcement' (2017) 32 *AI & Society*;
- , 'Digital technologies and artificial intelligence's present and foreseeable impact on lawyering, judging, policing and law enforcement' (2017) 32 *AI & Society*;
- , *Computer Applications for Handling Legal Evidence, Police Investigation and Case Argumentation* (Springer 2012);
- Nofer M, Gomber P, Hinz O and Schiereck D, 'Blockchain' (2017) 59 *Business & Information Systems Engineering* <doi 10.1007/s12599-017-0467-3> accessed 15 March 2021;
- Nutter P W, 'Machine learning evidence: admissibility and weight.' 21 (2018) *U. Pa. J. Const. L.*;
- O'Gorman V, 'Cybercrime during the coronavirus pandemic: what does it mean for the legal industry?', <<https://www.lexisnexis.co.uk/blog/in-house/cybercrime-during-the-coronavirus-pandemic-what-does-it-mean-for-the-legal-industry>> accessed 25 2021;
- OECD, 'Building Capacity for Evidence-Informed Policy-Making: Lessons from Country Experiences' (2020) *OECD Public Governance Reviews* <<https://doi.org/10.1787/86331250-en>> accessed 5 February 2021;
- Technology and innovation in the insurance sector (2017) <<https://www.oecd.org/pensions/Technology-and-innovation-in-the-insurance-sector.pdf>> accessed 27 January 2021;

- Ojczyk J, 'LegalTech to nieunikniona przyszłość prawników', <<https://www.prawo.pl/prawnicy-sady/legaltech-day-podsumowanie,503668.html>> accessed 25 April 2021;
- Omlor S, 'The CISG and libra: monetary revolution for international commercial transactions?' (2020) 3(1) *Stanford Journal of Blockchain Law & Policy*;
- Omni Legal, 'Artificial Intelligence Won't Replace Lawyers—It Will Free Them' (*Law Technology Today* 27 February 2018);
- Oñate S and Haissiner M, 'Tribunales digitales y jueces máquina' (2020) *El mundo del abogado*;
- Opila J, Pelech-Pilichowski T, 'Visual Analysis of Similarity and Relationships Between Legal Texts' (43rd International Convention on Information, Communication and Electronic Technology MIPRO, Opatija, 2020);
- Opilek P, 'Kryptowaluty jako przedmiot zabezpieczenia i poręczenia majątkowego' (2017) 6 *Prokuratura i Prawo*;
- Oskamp A, Tragter M and Groendijk C, 'AI and Law: What about the Future?' (1995) 3 *Artificial Intelligence and Law*;
- O'Sullivan D, 'Hacked Celebrity Law Firm Says It Has Not Worked With Trump' (CNN, 17 May 2020) <<https://edition.cnn.com/2020/05/17/politics/celebrity-law-firm-hacked-trump/index.html>> accessed 17 August 2021;
- Palazzo M, 'Informatica e diritto. Un dialogo necessario' in (2019) 5 *Notariato*;
- Paliwala A (ed), *A history of legal informatics* (Series 9 LEFIS, Prentice Hall de Zaragoza 2010);
- Palmirani M, 'Legislative Change Management with Akoma-Ntoso' in Giovanni Sartor and others (eds) *Legislative XML for the Semantic Web. Principles, Models, Standards for Document* (Springer 2011);
- Papageorgiou A, Mygiakis A, Loupos K and Krousalis T, 'DPKI: A Blockchain-Based Decentralized Public Key Infrastructure System' (2020 Global Internet of Things Summit (GIoTS) Dublin, June 2020);
- Parenti R, 'Regulatory Sandboxes and Innovation Hubs for FinTech' (European Parliament Think Tank, 30 September 2020) <[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652752/IPOL_STU\(2020\)652752_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652752/IPOL_STU(2020)652752_EN.pdf)> accessed 5 February 2021;
- Park J, 'Your Honor, AI.' (*Harvard International Review*, 3 April 2020) <<https://hir.harvard.edu/your-honor-ai/>> accessed 5 February 2021;
- Partyk A, 'Legitim 2.0., czyli o robocie przyszłości... rozstrzygającym spory zachowkowe' (2019) 2(25) *Studia Prawnicze*;
- Paschke A, *Digitale Gerichtsöffentlichkeit* (Duncker & Humblot, 2018);
- Pasquale F, 'A Rule of Persons, Not Machines: The Limits of Legal Automation' (2019) 87, 3 *Geo. Wash. L. Rev.*;
- , 'A Rule of Persons, Not Machines: The Limits of Legal Automation' (2019) 87, 1 *Geo. Wash. L. Rev.*;

- Patrick G and Bana A, 'Report. Rule of Law Versus Rule of Code: A Blockchain-Driven Legal Word' (2017) International Bar Association Legal Policy & Research Unit 16;
- Pavčnik M, 'Why Discuss Gaps in the Law?' (1996) 9/1 Ratio Juris;
- Pecyna M, Behan A, 'Smart contracts — nowa technologia prawa umów? ' (2020) 3 Transformacje prawa prywatnego;
- Peczenik A, *On Law and Reason* (Springer 2008);
- Pereira D, 'How Watson helps lawyers find answers in legal research', (Medium 5 January 2017), <<https://medium.com/@daryl/p/how-watson-helps-lawyers-find-answers-in-legal-research-672ea028dfb8>> accessed 20 January 2021;
- Perelman C, Olbrechts-Tyteca L, *The New Rhetoric. A Treatise on Argumentation* (University of Notre Dame Press 1971);
- Perrot P, 'What about AI in criminal intelligence? From predictive policing to AI perspectives' (2017) 16 European Police Science and Research Bulletin;
- Perry W L, McInnis B, Price C C, Smith S C and Hollywood J S, 'Predictive Policing: The Role of Crime Forecasting in Law Enforcement Operations' (2013) National Institute of Justice, Safety and Justice Program, RAND Corporation research report series <https://www.rand.org/pubs/research_reports/RR233.html> accessed 8 February 2021;
- Peterson A, 'NoCode And Lawyers' (NoCode Journal, 12 May 2020) <<https://www.nocodejournal.com/posts/nocode-and-lawyers>> access 17 March 2021;
- Petzel J, *Informatyka prawnicza. Zagadnienia teorii i praktyki* (LIBER 1999);
- Petzel J, *Systemy wyszukiwania informacji prawnej* (Wolters Kluwer 2017);
- Philipps L and Sartor G, 'Introduction: from legal theories to neural networks and fuzzy reasoning' (1999) 7 Artificial Intelligence and Law;
- Piètre-Cambacédès L and Chaudet C, 'The SEMA Referential Framework: Avoiding Ambiguities In The Terms "Security" And "Safety"' (2010) 3 International Journal of Critical Infrastructure Protection;
- Polański P P, (C. H. Beck LegalTech Forum conference, Warszawa, 16-17 June 2021);
- Customary law of the Internet (1st edn, T.M.C. Asser Press 2007);
- 'Zwalczanie bezprawnych treści oraz zapewnienie dostępności cyfrowej z pomocą algorytmów sztucznej inteligencji', in: Luigi Lai and Marek Świerczyński (eds), *Prawo sztucznej inteligencji* (C. H. Beck 2020);
- (ed.), *Ustawa o dostępności cyfrowej. Komentarz* (1st edn, C.H.Beck 2021);
- Pollock J L, 'Defeasible Reasoning' (1987) 11 Cognitive Science;
- Poullet Y and Jacquemin H, 'Blockchain: une révolution pour e droit?' (2018) 6748 Journal des tribunaux;
- Prabucki R, 'About Chinese Courts and Blockchain — A Simple Chain Foundation commentary' (Medium, 18 June 2020) <<https://medium.com/@prabucki.rafael/chinese-justice-and-blockchain-what-can-we-learn-ed4285e1a34d>> accessed 9 February 2021;

- Prakken H, 'An abstract framework for argumentation with structured arguments' (2010) 1(2) *Argument and Computation*;
- 'Comparing Alternative Factor- and Precedent-Based Accounts of Precedential Constraint' in Michal Araszewicz and Víctor Rodríguez-Doncel (eds): *Legal Knowledge and Information Systems - JURIX 2019: The Thirty-second Annual Conference, Frontiers in Artificial Intelligence and Applications* 322 (IOS Press 2019);
- Sartor G, 'Modelling Reasoning with Precedents in a Formal Dialogue Game' (1998) 6(2-4) *Artificial Intelligence and Law*;
- Preukschat A, 'Understanding the European Self-Sovereign Identity Framework (ESSIF) – Daniël Du Seuil and Carlos Pastor – Webinar 32' <<https://ssimeetup.org/understanding-european-self-sovereign-identity-framework-essif-daniel-du-seuil-carlos-pastor-webinar-32/>> accessed 21 February 2021;
- PRISM Litigation Technology, 'Predictive Coding: The Good, the Bad, and the Ugly' (Prism Blog, 7 August 2019) <<https://prismlit.com/predictive-coding/>> accessed 26 February 2021;
- Protalinski E, 'Google's speech recognition technology now has a 4.9% word error rate' <<https://venturebeat.com/2017/05/17/googles-speech-recognition-technology-now-has-a-4-9-word-error-rate/>> accessed 11 January 2021.
- Pullan T, 'Experience: the Critical Commodity in Deal Negotiation + Star-Studded Careers' (Artificial Lawyer, 12 February 2021) <<https://www.artificiallawyer.com/2021/02/12/experience-the-critical-commodity-in-deal-negotiation-star-studded-careers/>> access 17 March 2021;
- Pyrho Investments Limited v MWB Property Limited [2016] EWHC 256 (Ch);
- Raczyńska M, 'Modele dojrzałości procesowej organizacji' (2017) XLIV 2 *Acta Universitatis Nicolai Copernici. Zarządzanie*, 61;
- Ramos A, (coord.), 'Observatorio: Avances de Justicia Abierta en Línea en México 2020' (Escuela Libre de Derecho, 2020);
- Raso F A, Hilligoss H, Krishnamurthy V and Bavitz C, 'Artificial Intelligence & Human Rights: Opportunities & Risks, Berkman Klein Center for Internet & Society, (Harvard University 2018)' <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3259344> access 17 March 2021;
- Rawhan I and Simari G R (eds), *Argumentation in Artificial Intelligence*, (Springer 2009);
- Recommendation of the OECD Council on Artificial Intelligence, 'OECD/LEGAL/0449', <<https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>> accessed 8 April 2021;
- Redaktion beck-aktuell 'EDV-Gerichtstag sieht Fortentwicklung der Justiz-IT als wesentliche Zukunftsfrage' (beck-aktuell Heute im recht, 20 September 2019) <<https://rsw.beck.de/aktuell/daily/meldung/detail/edv-gerichtstag-sieht-fortentwicklung-der-justiz-it-als-wesentliche-zukunftsfrage>> accessed 26 February 2020;
- Regaldo A, 'Who Coined "Cloud Computing"?' (MIT Technology Review, 31 October 2011) <<https://www.technologyreview.com/s/425970/who-coined-cloud-computing/>> accessed 9 March 2021;

- Reidenberg J, 'Lex Informatica: The formulation of information policy rules through technology' (1998) 76 Texas Law Review;
- Reiter R, 'A Logic for Default Reasoning' (1980) 13 Artificial Intelligence;
- Remus D A, 'The Uncertain Promise of Predictive Coding' (2014) 99 Iowa Law Review;
- Ren Y, Tan X, Qin T, Zhao S, Zhao Z and Liu T-Y, 'Almost Unsupervised Text to Speech and Automatic Speech Recognition' (Volume 97: International Conference on Machine Learning, Long Beach, 9-15 June 2019);
- Richter M M and Weber R O, *Case-Based Reasoning. A Textbook* (Springer-Verlag 2013);
- Rissland E L, Skalak D B, 'CABARET: Rule Interpretation in a Hybrid Architecture' (1991) 34(6) International Journal of Man-Machine Studies;
- Rivera M A, 'An introduction to Amparo Theory' (2020) 12, 2 Krytyka Prawa;
- 'Las partes en el juicio de amparo' in Juan González and others (eds) *Teoría y Práctica del Juicio de Amparo*, (Flores Editor, 2018);
- ROFIEG, '30 Recommendations on regulation, innovation and finance. Final Report to the European Commission' (13 December 2019) 27 ff <https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/document/s/191113-report-expert-group-regulatory-obstacles-financial-innovation_en.pdf> accessed 24 February 2021;
- Roitblat H L, Kershaw A and, Oot P, 'Document categorization in legal electronic discovery: computer classification vs. manual review' (2010) 61 Journal of the American Society for Information Science and Technology;
- Rojek-Socha P, 'Rusza elektroniczny sąd polubowny, skorzysta z profile zaufanego', (Prawo.pl, of 24 April 2019), <<https://www.prawo.pl/prawnicy-sady/elektro-niczny-sad-polubowny-ultima-ratio-rusza-przy,402433.html>> accessed (11 March.03.2021);
- Rościszewski A, 'Odpowiedzialność cywilna adwokatów' (2014) 10 Palestra;
- Roslin R, 'Legal Technology and In-house Counsels Today' (Staranise, 1 June 2020) accessed 30 September 2020;
- Ross O, Jensen J R and Asheim T, 'Assets under Tokenization' (2019) <<https://ssrn.com/abstract=3488344>> accessed 9 March 2021;
- Roth N, 'An Architectural Assessment of Bitcoin: Using the Systems Modeling Language' (2015) 44 Procedia Computer Science;
- Rott-Pietrzyk E, Szostek D, 'A New Approach to the Legal Understanding of "Directness" and "Participation" in the Aftermath of COVID-19' in: Ewoud Hondius, Marta Santos Silva, Andrea Nicolussi, Pablo Salvador Coderch, Christiane Wendehorst, Fryderyk Zoll (eds) *Coronavirus and the Law in Europe* <<https://www.intersentiaonline.com/publication/coronavirus-and-the-law-in-europe/658?version=v-2f6f01ec-324e-637b-c7ca-a6bc0e384e16>> accessed 15 December 2020;
- Rowley J, 'The wisdom hierarchy: representations of the DIKW hierarchy' (2007) 33(2) Journal of Information Science;

- ‘The wisdom hierarchy: Representations of the DIKW hierarchy’ (2007) *Journal of Information Science* <<https://journals.sagepub.com/doi/10.1177/0165551506070706>> accessed 11 January 2021;
- Ruffini G, ‘Il Processo Civile di fronte alla svolta telematica’ in (2019) 4-5 *Riv. dir. Proc.*;
- Russell S and Norvig P, *Artificial Intelligence. A Modern Approach*, (3rd ed. Pearson 2016);
- Russell S J, ‘Artificial Intelligence. A Binary Approach,’ in S. Matthew Liao (ed.), *Ethics of Artificial Intelligence* (Oxford University Press 2020);
- Sajfert J and Quintel T, ‘Data Protection Directive (EU) 2016/680 for Police and Criminal Justice Authorities’ in Mark Cole and Franziska Boehm (eds) *GDPR Commentary* (Edward Elgar Publishing 2020) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3285873> accessed 8 February 2021;
- Salen K and Zimmerman E, *Rules of play: game design fundamentals* (MIT Press 2003);
- Salomão L F (ed), *Tecnologia Aplicada à Gestão Dos Conflitos No Âmbito Do Poder Judiciário Brasileiro* (FGV Conhecimento 2020) <<https://ciapj.fgv.br/publicacoes>> accessed 5 February 2021;
- Salter S, ‘Online dispute resolution and justice system integration: British Columbia’s Civil Resolution Tribunal’ (2017) 34 *Windsor Yearbook of Access to Justice*;
- Samek W, Wiegand T and Müller K-R, ‘Explainable Artificial Intelligence: Understanding, Visualizing and Interpreting Deep Learning Models’ (2017) 1 *ITU Journal: ICT Discoveries*;
- Samoili S and others, ‘AI Watch. Defining Artificial Intelligence. Towards an operational definition and taxonomy of artificial intelligence, EUR 30117 EN, Publications Office of the European Union’ (2020);
- Samonas S and Coss D, ‘The CIA Strikes Back: Redefining, Confidentiality, Integrity And Availability In Security’ (2014) 10,3 *Journal of Information System Security* <<http://www.proso.com/dl/Samonas.pdf>> accessed 17 August 2021;
- Sartor G, ‘Doing justice to rights and values: teleological reasoning and proportionality’ (2010) 18(2) *Artificial Intelligence and Law*;
- ‘Legislative Information and the Web’ in Giovanni Sartor and others, (eds) *Legislative XML for the Semantic Web. Principles, Models, Standards for Document* (Springer 2011);
- Casanovas P, Biasiotti M A and Fernández-Barrera M (eds) *Approaches to Legal Ontologies. Theories, Domains, Methodologies* (Springer 2011);
- *Legal Reasoning*, (Springer 2005);
- ‘Legal concepts as inferential nodes and ontological categories’ (2009) 17(3) *Artificial Intelligence and Law*;
- Šavelka J, Westermann H and others, ‘Lex Rosetta: Transfer of Predictive Models across Languages, Jurisdictions and Legal Domains’ (ICAIL 2021: Proceedings of the Eighteenth International Conference on Artificial Intelligence and Law, São Paulo, 21-25 June 2021);

- Sawicki J, 'Ubezpieczenie Business Interruption (BI) jako zabezpieczenie przyszłych dochodów przedsiębiorstwa' (2008) 7 *Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania*;
- Scharf J, *Künstliche Intelligenz un Recht. Von den Wissensrepräsentation zur automatisierten Entscheidungsfindung* (Weblaw 2015);
- Scherer M, 'Artificial Intelligence and Legal Decision-Making: The Wide Open?' (2019) 36 *Journal of International Arbitration*;
- Schmidt A, 'Technologie komunikacyjno-informatyczne w sądownictwie w Holandii – aktualna sytuacja' (2006) 16 *Prawo mediów elektronicznych*;
- Schwartz J and Pelster B, 'Global Human Capital Trends 2014: Engaging the 21st-century workforce', <<https://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2014/hc-trends-2014-introduction.html/#endnote-sup-10>> accessed 25 April 2021;
- Schweighofer E, *Legal Knowledge Representation* (Kluwer Law International 1999);
- Sergot M J, Sadri F, Kowalski R A, Kriwaczek F, Hammond P and Cory H T, 'The British Nationality Act as a logic program' (1986) 29 *Communications of the ACM*;
- Shah R, 'Law Enforcement and Data Privacy - A Forward-Looking Approach' (2015) 125 *Yale Law Journal*;
- Shcherbak S, 'Integrating Computer Science into Legal Discipline: The Rise of Legal Programming.' (14 September 2014) <<https://ssrn.com/abstract=2496094>> accessed 5 February 2021;
- Shekhar S'Sarmah, 'Application of Blockchain in Cloud Computing' (2019) 8 12 *International Journal of Innovative Technology and Exploring Engineering*;
- Sheppard B, 'Incomplete Innovation and the Premature Disruption of Legal Services' (2015) 1797 *Michigan State Law Rev*;
- Singh B P and Tripathi A K, 'Blockchain Technology and Intellectual Property Rights' (2019) 24 *Journal of Intellectual Property Rights*;
- Sirena P, '*I sistemi di ADR nel settore bancario e finanziario*' (2018) 9 *Nuova giur. civ. Comm*;
- Siwek M, 'Prawa i obowiązki sędziego'(2006) 13 *Studenckie Zeszyty Naukowe*;
- Size R, 'Taking advantage of advances in technology to enhance the rule of law' (2017) 91 *Australian Law Journal*;
- Smetana D, 'The Future of Legal Technology: 3 Emerging Trends' (5 August 2020) <<https://www.chalkline.tech/blog/future-of-legal-technology-3-trends>> accessed 30 September 2020;
- Smith JC, 'Machine Intelligence and Legal Reasoning' (1998), 73 *Chi.-Kent L. Rev.*;
- Smoloń D, Sokoliński O and Szarek G, 'Polisa od sztucznej inteligencji', (2018) 10 *Miesięcznik Ubezpieczeniowy*;
- Songkai X, Yurochkin M and Sun Y, 'Auditing ML Models for Individual Bias and Unfairness' (2020) 108 (PMLR 108/2020) *Proceedings of the Twenty Third International Conference on Artificial Intelligence and Statistic*;

- Sourdin T and Cornes R, 'Do Judges Need to Be Human? The Implications of Technology for Responsive Judging' in Tania Sourdin and Archie Zariski (eds) *The Responsive Judge* (Springer, 2018);
- Sourdin T, 'Judge v. robot? Artificial Intelligence and judicial decision making' (2018) 4 UNSW Law Journal;
- Sowiński R, Majrzak M, 'Programy do zarządzania kancelarią prawną. Jak wybrać i wdrożyć najlepszy program dla Twojej kancelarii?' <<https://kirp.pl/raport-programy-do-zarzadzania-kancelaria-prawna-juz-dostepny/>> accessed 17 March 2021;
- Special Counsel, 'What Predictive Coding Court Rulings Can Teach Us' [blog.specialcounsel.com](https://blog.specialcounsel.com/ediscovery/what-predictive-coding-court-rulings-can-teach-us) (3 November 2016) <<https://blog.specialcounsel.com/ediscovery/what-predictive-coding-court-rulings-can-teach-us>> accessed 26 February 2021;
- Speech by Commissioner for Digital Economy and Society Mariya Gabriel on blockchain applications, Brussels 3 April 2019 <https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_19_1973> accessed 2 December 2020;
- Spinosa P L, Giardiello G, Cherubini M, Marchi S, Venturi G, Montemagni S, 'NLP-based metadata extraction for legal text consolidation' (Proceedings of the 12th International Conference on Artificial Intelligence and Law, ACM, Barcelona 2009);
- Srikanteswara R and others 'Data security using encryption on multi-cloud' (2018) 5, 6 International Research Journal of Engineering and Technology;
- Srinivasan S, *Cloud Computing Basics* (Springer 2014);
- State v. Loomis, 881 N.W. 2d 749, (Wisconsin 2016);
- STF. First Panel. AI 564.765-RJ, DJ 17/3/2006;
- Strutin K, 'Databases, E-Discovery and Criminal Law' (2008) 15 Rich. JL & Tech.;
- Studnicki F, Łachwa A, Fall J and Stabrawa E, *Odesłania w tekstach prawnych. Ku metodom ich zautomatyzowanej interpretacji* (ZNUJ 1990);
- Surden H, 'Machine Learning and Law' (2014) 89 Washington Law Review;
- Susskind R, *Online Courts and the Future of Justice* (Oxford University Press 2019);
- , *Tomorrow's Lawyers. An Introduction to Your Future* (Oxford University Press 2nd edn, 2017);
- , 'The Latent Damage System: a jurisprudential analysis' (ICAIL '89: Proceedings of the 2nd International Conference on Artificial Intelligence and Law, Vancouver 1989);
- and Susskind D, *The Future of the Professions* (Oxford University Press 2015);
- and Susskind D, *The Future of the Professions: How Technology Will Transform the Work of Human Experts* (Oxford University Press 2015);
- Swan M, *Blockchain - A Blueprint for a New Economy* (O'Reilly 2015);
- Szabo N, 'Smart Contracts', <<https://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart.contracts.html>> accessed 25 April 2021;

- Szalai P, 'Elektronikus kommunikáció a polgári perben' in Gergely G. Karácsony (ed) *Az elektronikus eljárások joga* (Gondolat, 2018) <http://real.mtak.hu/80535/1/e-elj%C3%A1r%C3%A1s-jog_Tank%C3%B6nyv_LO.pdf> accessed 1 March 2021;
- Szewczuk A, 'Business interruption: ewolucja kompleksowego programu ubezpieczeniowego dla sektora małych i średnich przedsiębiorstw' (2010) 50 "Ekonomiczne Problemy Usług;
- Szлак G, 'Online Dispute Resolution in Latin America: Challenges and Opportunities', in Mohamed Abdel Wahab and others (eds) *Online dispute resolution: Theory and Practice* (Eleven International Publishing, 2012);
- Szmit M, 'Biegły informatyk w postępowaniu cywilnym' (2010) 121/1078 Zeszyty Naukowe Politechniki Łódzkiej;
- Szmit M, 'O standardach informatyki śledczej' (2018) 355 Studia Ekonomiczne;
- Szostek D (ed), Bezpieczeństwo danych i IT w kancelarii prawnej radcowskiej/adwokackiej/notarialnej/komorniczej. Czyli jak bezpiecznie przechowywać dane w kancelarii prawnej (Wydawnictwo C.H.Beck 2018);
- 'Consequences of applying new technologies to sources of law' in García G. Javier, Alzina L. Álvaro and Martín R. Gabriel (eds), *El derecho público y privado ante las nuevas tecnologías* (Dykinson 2020);
- 'IBAC (IoT, Blockchain, AI i Cyberbezpieczeństwo) – samoregulacja kodów czy kontrola uprzednia?' in Kinga. Flaga-Gieruszyńska, Jacek Gołaczyński and Dariusz Szostek (eds), *Sztuczna inteligencja, blockchain, cyberbezpieczeństwo oraz dane osobowe. Zagadnienia wybrane* (C. H. Beck 2019);
- 'Sztuczna inteligencja a kody. Czy rozwiązaniem dla uregulowania sztucznej inteligencji jest smart contract i blockchain?' in Luigi Lai and Marek Świerczyński (eds), *Prawo sztucznej inteligencji* (C.H.Beck 2020);
- Blockchain and the law (1st edn, Nomos 2019);
- in Dariusz Szostek (ed) *Legal tech. Czyli jak bezpiecznie korzystać z narzędzi informatycznych w organizacji, w tym w kancelarii oraz dziale prawnym* (C. H. Beck 2021);
- Tanenbaum A S and Wetherall D J, *Computer Networks* (Prentice Hall 2011);
- Tapscott D and Tapscott A, *Blockchain revolution. How The Technology Behind Bitcoin Is Changing Money, Business, And The World* (Penguin Random House 2016);
- Thagard P, *Coherence in Thought and Action* (The MIT Press 2000);
- Thakur V, Doja M N, Dwivedi Y K, Ahmad T, Khadanga G, 'Land records on Blockchain for implementation of Land Titling in India' (2020) 52 International Journal of Information Management;
- The European Union Blockchain Observatory & Forum, EU Blockchain Ecosystem Developments, <https://www.eublockchainforum.eu/sites/default/files/reports/EU%20Blockchain%20Ecosystem%20Report_final_0.pdf> accessed 2 January 2021;
- The Geneva Association, 'Ten key questions on Cyber Risk and Cyber Risk Insurance' <https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public/cyber-risk-10_key_questions.pdf>;

- The Legal Technologist, 'An interview with Mariana Hagström – From Managing Partner to Legaltech Founder' (The Legal Technologist 12 August 2020) <<https://www.legaltechnologist.co.uk/an-interview-with-mariana-hagstrom-from-managing-partner-to-legaltech-founder/>> access 17 March 2021;
- The Service Innovation Lab (LabPlus), 'Better Rules for Government Discovery Report' (NZ Digital Government, March 2018) <<https://www.digital.govt.nz/dmsdocument/95-better-rules-for-government-discovery-report/html#summary>> accessed 31 January 2021;
- Thomson Reuters Legal, 'How to make the e-discovery process more efficient with predictive coding?' <<https://legal.thomsonreuters.com/en/insights/articles/how-predictive-coding-makes-e-discovery-more-efficient>> accessed 26 February 2021;
- Thordsen T, Murawski M and Bick M, 'How to Measure Digitalization? A Critical Evaluation of Digital Maturity Models' in Marié *Hattingh*, Machdel *Matthee*, Hanlie *Smuts*, Ilias *Pappas*, Yogesh K. *Dwivedi*, Matti *Mäntymäki* (eds) *Responsible Design, Implementation and Use of Information and Communication Technology* (Springer 2020) <https://doi.org/10.1007/978-3-030-44999-5_30P> accessed 11 January 2021;
- Thornhill J, 'Is AI finally closing in on human intelligence' (Financial Times, 12 November 2020) <<https://www.ft.com/content/512cef1d-233b-4dd8-96a4-0af07bb9ff60>>, accessed 13 November 2020;
- Tolan S, Miron M, Gómez E and Castillo C, 'Why Machine Learning May Lead to Unfairness: Evidence from Risk Assessment for Juvenile Justice in Catalonia' (Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law (ICAIL '19), Montreal, 17 – 21 June 2019);
- Tönnissen S, Beinke J H and Teuteberg F, 'Understanding Token-based Ecosystems – a Taxonomy of Blockchain-based Business Models of Start-ups' (2020), 30 *Electron Markets* <<https://doi.org/10.1007/s12525-020-00396-6>> accessed 8 February 2021;
- Toulmin S, *The Uses of Argument*, Cambridge University Press 2003 (1st ed. 1958);
- Trautman L J, 'Is Disruptive Blockchain Technology the Future of Financial Services?' (2016) 69 *The Consumer Finance Law Quarterly Report* <<https://ssrn.com/abstract=2786186>> accessed 15 March 2021;
- Tresise A, Goldenfein J and Hunter D, 'What Blockchain Can and Can't Do for Copyright' (2018) 28 *Australian Intellectual Property Journal* 144 <<https://ssrn.com/abstract=3227381>> accessed 7 February 2021;
- Tribunal de Contas da União, 'Apêndice 1 -Aplicações Blockchain No Setor Público Do Brasil', (TCU 2020) <<https://portal.tcu.gov.br/levantamento-da-tecnologia-blockchain.htm>> accessed 9 February 2021;
- Tribunal de Contas da União, 'Levantamento Da Tecnologia Blockchain' (TCU 2020) <<https://portal.tcu.gov.br/levantamento-da-tecnologia-blockchain.htm>> accessed 9 February 2021;
- Triumph Controls UK Ltd & anr v Primus International Holding Co & ors [2019] EWHC 565 (TCC);

- Turner J, 'Managing Digital Discovery In Criminal Cases' (2019) 109 *The Journal of Criminal Law and Criminology*;
- *Robot Rules. Regulating Artificial Intelligence* (Springer 2019);
- Uliasz M in Jacek Gołaczyński and Dariusz Szostek (eds) *Kodeks postępowania cywilnego. Komentarz do ustawy z 4.7.2019 r. o zmianie ustawy – Kodeks postępowania cywilnego oraz niektórych innych ustaw* (C. H. Beck 2019);
- Ultima Ratio 'Sztuczna inteligencja w Ultima Ratio. Czy roboty zastąpią arbitrów?' ([ultimaratio.pl](https://ultimaratio.pl/sztuczna-inteligencja-w-ultima-ratio-czy-roboty-zastapia-arbitrow)) <<https://ultimaratio.pl/sztuczna-inteligencja-w-ultima-ratio-czy-roboty-zastapia-arbitrow>> accessed 12 March 2021;
- Uzsoki D, 'Tokenization of Infrastructure: A blockchain-based solution to financing sustainable infrastructure, (International Institute for Sustainable Development 2019) <[doi:10.2307/resrep22004.3](https://doi.org/10.2307/resrep22004.3)> accessed: 9 March 2021;
- Valles G, 'Financiamiento Público de los Partidos Políticos en México: tópicos controversiales y propuesta de alternativa tecnológica para su fiscalización', (2018) 27, 2 *Dikaion*;
- Van de Ven S, Hoekstra R, Winkels R, De Maat E and Kollár A 'MetaVex: Regulation Drafting meets the Semantic Web' in Pompeu Casanovas and others (eds) *Computable Models of the Law* (Springer 2008);
- van der Meulen R, '5 Legal Technology Trends Changing In-House Legal Departments' (Gartner, 9 February 2021) <www.gartner.com/smarterwithgartner/5-legal-technology-trends-changing-in-house-legal-departments/> accessed 24 February 2021;
- van der Put M, 'Kan artificiële intelligentie de rechtspraak betoveren' (2019) 2 *Rechtstreeks*;
- van Kralingen R, *Frame-based Conceptual Models of Statute Law* (Kluwer Law International 1995);
- Verheij B, 'Artificial Argument Assistants for Defeasible Argumentation', (2003) 150 (1-2) *Artificial Intelligence*;
- Verheij B, 'Artificial intelligence as law. Presidential address to the seventeenth international conference on artificial intelligence and law' (2020) 28 *Artificial Intelligence and Law*;
- 'DefLog: on the Logical Interpretation of Prima Facie Justified Assumptions', (2003) 13(3) *Journal of Logic and Computation*;
- Verifiable Credentials Data Model 1.0. Expressing verifiable information on the Web' (W3C, 19 November 2019) <<https://www.w3.org/TR/vc-data-model/>> accessed 21 February 2021;
- Vigliotti M G, Jones H, *The Executive Guide to Blockchain* (Palgrave Macmillan 2020);
- Villaronga E F, Kieseberg P and Li T, 'Humans forget, machines remember: Artificial intelligence and the Right to Be Forgotten' (2018) 34, 2 *Computer Law & Security Review*;
- Virtual Financial Assets Act (VFA) <<https://legislation.mt/eli/cap/590/eng/pdf>> access 2 February 2021;

- Vitali F, 'A Standard-Based Approach for the Management for Legislative Documents' in Giovanni Sartor and others, (eds) *Legislative XML for the Semantic Web. Principles, Models, Standards for Document* (Springer 2011);
- Von der Leyen U, Mission letter of President-elect Von der Leyen to Vice-President Dombrovskis (10 September 2019) <https://multimedia.europarl.europa.eu/documents/20143/0/mission-letter-valdis-dombrovskis-2019_en+%281%29.pdf/d3645133-8c2e-7fdd-4367-77059b892232?t=1569412036000&download=true> accessed 15 March 2021;
- Vorhies W, 'An Argument in Favor of Centaur AI' <www.datasciencecentral.com/profiles/blogs/an-argument-in-favor-of-centaur-ai>, accessed: 15 January 2021;
- Waddington M, 'Machine-consumable legislation: A legislative drafter's perspective – human v artificial intelligence' (2019) 2 The Loophole - Journal of Commonwealth Assoc of Legislative Counsel;
- Wagner J, *Legal Tech und Legal Robots. Der Wandel im Rechtswesen durch neue Technologien und Künstliche Intelligenz* (Springer 2020);
- *Legaltech und Legal Robots. Der Wandel im Rechtswesen durch neue Technologien und Kunstliche Intelligenz*, (Springer 2020);
- Walton D, *Argumentation Methods for Artificial Intelligence in Law* (Springer 2005);
- , Reed C and Macagno F, *Argumentation Schemes* (Cambridge University Press 2008);
- , Sartor G and Macagno F, *Statutory Interpretation: Pragmatics and argumentation* (Cambridge University Press 2020);
- Wang Q, Li R, Zhan L, 'Blockchain technology in the energy sector: From basic research to real world applications' (2021) 39 Computer Science Review;
- Waszczuk P, 'Trend Micro: W jaki sposób zapewnić bezpieczeństwo infrastruktury IT w modelu multicloud?' <<https://www.itwiz.pl/trend-micro-jaki-sposob-zapewnic-bezpieczenstwo-infrastruktury-modelu-multicloud/>> access 8 December 2020;
- Waterman D A and Peterson M A, 'Models of Legal Decision Making: Research Design and Methods' (Rand Corporation, The Institute for Civil Justice 1981);
- Weather M, 'Predictive coding: the current landscape' disputeresolutionblog.practicallaw.com/ (Thomson Reuters 21 July 2016) <<http://disputeresolutionblog.practicallaw.com/predictive-coding-the-current-landscape/>> accessed 26 February 2021;
- Weinberger D, 'The problem with the data-information-knowledge-wisdom hierarchy' (2010) Harvard Business Review <<https://hbr.org/2010/02/data-is-to-info-as-info-is-not>> accessed 11 January 2021;
- Weinstein J, Abrams N, Brewer S and Medwed D, *Evidence* (Foundation Press 2017);
- Wen T, 'How coronavirus has transformed the way we communicate' (BBC, 9 April 2020) <<https://www.bbc.com/worklife/article/20200408-coronavirus-how-lockdown-helps-those-who-fear-the-phone>> accessed 15 December 2020;

- Weng Wong M, 'Rules as code – Seven levels of digitisation.' (Research Collection School Of Law, April 2020) <https://ink.library.smu.edu.sg/sol_research/3093/> accessed 17 April 2021;
- Werbach K, 'Trust, But Verify: Why the Blockchain Needs the Law' (2019) 33/2 Berkeley Technology Law Journal;
- Werbach K, *The Blockchain and the new architecture of trust* (MIT Press 2018);
- Wiewiórowski W R and Wierczyński G, *Informatyka prawnicza* (4th edn, Wolters Kluwer 2006);
- Wilkens R, Falk R, Smart Contracts, Grundlagen, Anwendungsfelder und rechtliche Aspekte (Springer 2019);
- , Falk R, Smart Contracts, Grundlagen, Anwendungsfelder und rechtliche Aspekte (Springer 2019);
- Witkowska-Nowakowska K in Edyta Bielak-Jomaa and Dominik Lubasz (eds), *RODO. Ogólne rozporządzenie o ochronie danych. Komentarz* (Wolters Kluwer 2018);
- Włodarczyk D, 'Bezpieczny przedsiębiorca', (2018) 6 Miesięcznik Ubezpieczeniowy;
- Wódczak M and others, 'Standardizing a Reference Model and Autonomic Network Architectures for the Self-Managing Future Internet' (2011) 25(6) IEEE Network;
- Wódczak M, *Autonomic Computing Enabled Cooperative Networked Design* (Springer 2014);
- Wódczak M, *Autonomic Cooperative Networking* (Springer 2012);
- Wódczak M, *Autonomic Intelligence Evolved Cooperative Networking* (Wiley 2018);
- Wood G, 'Ethereum: A secure decentralised generalised transaction ledger' GAV-WOOD.COM <<https://gavwood.com/paper.pdf>> accessed 11 December 2020;
- Woodrow B and Ugo P, *Advanced Introduction to Law and Artificial Intelligence* (Edward Elgar Publishing 2020);
- World Economic Forum, 'Bridging the Governance Gap: Dispute resolution for blockchain-based transactions' (White Paper, December 2020) access 16 March 2021;
- Wright A and De Filippi P, 'Decentralized blockchain technology and the rise of Lex Cryptographia' (2015) <<https://ssrn.com/abstract=2580664>> accessed 11 December 2020;
- Wróblewski M, 'Gdzie zaczęła się LegalTechowa rewolucja?', <<https://blockchainex.t.io/gdzie-zaczela-sie-legaltechowa-rewolucja-wywiad/>> accessed 25 April 2021;
- Wyner A, 'An ontology in OWL for legal case-based reasoning' (2008) 16, Artificial Intelligence and Law;
- Xu A L, 'Chinese Judicial Justice on the Cloud: A Future Call or a Pandora's Box? An Analysis of the 'Intelligent Court System' of China'(2017) 1 Information & Communications Technology Law;
- Yankovskiy R M, 'Legal Design: New Challenges and New Opportunities' (2019), 5 Zakon;

- Yano M, Dai Ch, Masuda K, Kishimoto Y, 'Creation of Blockchain and a New Ecosystem' in Makoto — Chris Dai, Kenichi Masuda, Yoshio Kishimoto (eds) *Blockchain and Crypto Currency* (Springer 2019);
- Yeung K, 'A study of the implications of advanced digital technologies (including AI systems) for the concept of responsibility within a human rights framework' <<https://rm.coe.int/a-study-of-the-implications-of-advanced-digital-technologies-including/168096bdab>> access 17 March 2021;
- Yu D and Li D, *Automatic Speech Recognition* (Springer London Limited 2016);
- Yu M, 'Filing Lawsuits While Living Abroad: China's New Policy' (China Justice Observer, 7 March 2021) <<https://www.chinajusticeobserver.com/a/filing-lawsuit-s-while-living-abroad-china-s-new-policy>> accessed 12 March 2021;
- Zaccaria G, 'Figure del giudicare: calcolabilità, precedenti, decisione robotica' in *Rivista di diritto ir. civile.*, (Cedam, 2020).
- Żaczkiewicz-Zborska K, 'Kancelaria w chmurze obliczeniowej naraża na szwank tajemnicę zawodową' <https://www.prawo.pl/prawnicy-sady/kancelaria-w-chmurze-obliczeniowej-naraza-na-szwank-tajemnice,175923.html> accessed 9 March 2021;
- Zakrzewski P, 'Sztuczna inteligencja rozsadza ramy, w których funkcjonowaliśmy do tej pory – interview with A. Przeglasińska' <culture.pl/pl/artikul/aleksandra-przegalinska-sztuczna-inteligencja-rozsadza-ramy-w-ktorych-funkcjonowalismy-do-tej-pory-wywiad> accessed 14 March 2021;
- Zalesińska A, 'Electronic Court' in Jacek Gołaczyński, Wolfgang Kilian and Tomasz Scheffler (eds) *Legal Innovation in Polish Law* (C. H. Beck 2019);
- 'Electronic Court Report in Proceedings Before Common Courts in Poland' in: Jacek Gołaczyński, Wolfgang Kilian and Tomasz Scheffler (eds) *Legal Innovation in Polish Law* (C. H. Beck 2019);
- Zalewski T, 'Definicja sztucznej inteligencji' in Luigi Lai and Marek Świerczyński (eds), *Prawo sztucznej inteligencji* (C.H.Beck 2020);
- 'LEGALTECH – wyzwanie przyszłości', (2019) 3 Temidium;
- Żałucki M, 'Computers in gowns and wigs. Some remarks about a new era of judiciary' in Laura Miraut Martin and Mariusz Żałucki (eds) *AI and human Rights*, (in print 2021).
- 'Wykorzystanie sztucznej inteligencji do rozstrzygania spraw spadkowych' in Luigi Lai and Marek Świerczyński (eds) *Prawo sztucznej inteligencji* (C. H. Beck, 2020);
- in Dariusz Szostek (ed) *Legal tech. Czyli jak bezpiecznie korzystać z narzędzi informatycznych w organizacji, w tym w kancelarii oraz dziale prawnym* (C. H. Beck 2021);
- Zamil A M, 'Customer Relationship Management: A Strategy to Sustain the Organization's Name and Products in the Customers' Minds' (2011) 3 *European Journal of Social Sciences*;
- Zanfir-Fortuna G, 'Commentary to Article 82' in Christopher Kuner, Lee A. Bygrave, Christopher Docksey (eds) *The EU General Data Protection Regulation (GDPR). A Commentary* (OUP 2020);

- Završnik A, 'Algorithmic justice: Algorithms and big data in criminal justice settings' (2019) 11 *European Journal of Criminology*;
- Zębala J, 'Wybrane problemy ubezpieczeń cyber risk' (2018) 6 *Monitor Ubezpieczeniowy*;
- Zelevnikov J, 'Using Artificial Intelligence to provide Intelligent Dispute Resolution Support' (2021) 30 *Group Decision and Negotiation*;
- Zhong H, Guo Z, Tu C, Xiao C, Liu Z and Sun M, 'Legal Judgment Prediction via Topological Learning' (Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing, Brussels 2018);
- Zhong H, Xiao C, Tu C and others, 'How Does NLP Benefit Legal System: A Summary of Legal Artificial Intelligence' (Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics, on-line, July 2020) 5218-5230 <www.aclweb.org/anthology/2020.acl-main.466.pdf> accessed 1 July 2020;
- Zhong H, Xiao C, Tu C, Zhang T, Liu Z and Sun M, 'How Does NLP Benefit Legal System: A Summary of Legal Artificial Intelligence', (2020) arXiv:2004.12158 arXiv.org;
- Zhu H, "Zhejiang Experience": Problems and Countermeasures in the Construction of Internet Courts' (Atlantis Press, September 2019) <<https://www.atlantis-p.com/proceedings/jahp-19/125917489>> accessed 21 August 2021;
- Zieliński M, *Wykładnia prawa. Zasady – reguły – wskazówki* (7 ed., Wolters Kluwer 2017);
- Zimmerman E, 'Jerked Around by the Magic Circle - Clearing the Air Ten Years Later' (Gamasutra, 7 February 2012) <https://www.gamasutra.com/view/feature/135063/jerked_around_by_the_magic_circle_.php> accessed 17 January 2021;
- Zimmermann Ch, 'Legal Tech – Vielfalt der Anwendungen und richtige Haftungs-vorsorge' <<https://anwaltsblatt.anwaltverein.de/files/anwaltsblatt.de/anwaltsblatt-online/2019-815.pdf>> accessed 25th April 2021;
- Zins C, 'Conceptual approaches for defining data, information, and knowledge' (2007) 58(4) *Journal of the American Society for Information Science and Technology*, 479 <<https://doi.org/10.1002/asi.20508>> accessed 11 January 2021;
- Żok K, 'Kwalifikacja umowy o korzystanie z programu komputerowego jako usługi (Software as a Service, SaaS) – uwagi na tle prawa polskiego i wybranych zagranicznych systemów prawnych' (2015) 3 *Zeszyty Naukowe Uniwersytetu Jagiellońskiego*;
- 'Prawna i ekonomiczna analiza umowy o korzystanie z programu komputerowego jako usługi (Software as a Service, SaaS)' (2017) 4 *Zeszyty Naukowe Uniwersytetu Jagiellońskiego*;
- Zsolt Z, 'Law and Legal Science in the Age of Big Data' (2017) 3 *Intersections. EEJSP*;
- Zuckerman M J, Swedish government land registry soon to conduct first blockchain property transaction <<https://cointelegraph.com/news/swedish-government-land-registry-soon-to-conduct-first-blockchain-property-transaction>> accessed 27 January 2021;

- Żurek T, Araszkiewicz M, 'Modeling teleological interpretation' in Enrico Francesconi and Bart Verheij (eds) *International Conference on Artificial Intelligence and Law, ICAIL '13* (ACM 2013);

