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

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SECTION ONE.
The Concept of Legal Technology and its Borderlands

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The Concept of Legal Technology (LegalTech) and Legal Engineering

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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 law[2].

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 Kunstliche Intelligenz*, (Springer 2020) 2; Michael Grupp, 'Legal tech – Impulse fur 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&paramfromHL=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 Sevices' (2015) 1797 Michigan State Law Rev 1800.

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

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the benefit of law and lawyers, including expert systems), was subject to research as early as in the 1950s[5].

One of the first definitions of LegalTech in Europe[6] (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 described[7]. 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 industry[8]. 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 making[9]. 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 Sheppard[10] (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 Matthaei (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.

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2. The Categorisation of LegalTech

There are three stages of Legal Technology indicated by the German academic literature[11], pursuant to the proposal by O. Goodenough[12] 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

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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_4BEIooGzWowCm_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_4BEIooGzWowCm_XIpcCaJidFyB_gju_bruNDzgN9wcy-tWt9MbzUWKIDaN8n4FSY6sEDJ5t-RSeB> accessed 19 November 2020.

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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 doctrine[13]. 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 automatic[14]. 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.

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3. solutions supporting activities in the scope of substantive law, such as automatic contract drafting, Online Dispute Resolution (ODR), smart contract[15].

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 blockchain[16].

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 FinTech[17], RegTech[18], or lately, InsureTech[19]. 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).

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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 Kerikmae (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* (Palgrawe McMillan 2021).

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While not going into much detail, LegalTech should be distinguished from legal informatics[20], 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 Susskind[21] 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 authors[24], 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 Kluver 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.

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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 Union[1], 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 codes[2], 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 stages[3]. 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

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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 processes[5]. 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 user[6]. 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 enforcement[7]. This is the so-called legal engineering[8] - 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 presumptions[9].

Other views on the interaction of the law and algorithms are appearing, as well[10]. 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 precents referring directly or indirectly to algorithms. Cyberspace is (made of) algorithms. By

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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. And 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 codes[12]. As a result, lawyers and programmers contribute to the mechanism of regulating social relations – which is their joint regulatory contribution[13], by forming an approach to regulating social norms. An intersec-

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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 change[14], 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 Susskind[15] 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.

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