measures under the ETSI IPR Policy are rather limited and therefore the successful functioning of standards today rather depends on the involved patent holders' own attitude.

In particular, this aspect I had the pleasure of discussing during a personal interview with *Mr. Timo Ruikka* held in March 2009. *Mr. Ruikka* has been with Nokia since 1988 and has extensive experience in standardization and industry policy issues. Also, he has represented Nokia in multiple litigations touching upon the issues discussed in this paper. During the interview *Mr. Ruikka* also highlighted how difficult and burdensome it is for licensees to challenge an offered royalty rate with reference to FRAND commitments, even if it is quite apparent that such commitments have been violated.[39]

1.3 Criticized Pitfalls of the Current FRAND Regime

While the SSOs have significantly contributed to the development of an effective standardization process, concerns remain as the current FRAND commitments are not deemed sufficient to reduce the risk of anti-competitive behaviour. For the purposes of this paper, the main conceptual difficulties under the current framework can be discerned into two different concepts. The owner of relevant standard-essential patents has in theory the ability to block the standard. Firstly, the standard-essential patent holder can choose not to disclose his essential patents and simply block the standardization process (also known as patent-hold up or patent ambush). Secondly, the standard-essential patent holder can take part in the standardization process and then block it subsequently by demanding royalties for his patents that are significantly higher than the royalties he could have charged before his IPRs were included into the standard (also know as royalty stacking).

1.3.1 The Patent Hold-Up Problem

In short, so-called patent hold-ups generally refer to a situation where a company holding a patent relevant for a specific standard emerges only after the standard has already been set and start to demand high royalty rates *ex post*. As described by *Shapiro* in his article *"Injunctions , Hold-Up, and Patent Royalties",* in this

39 Interview: Timo Ruikka, Nokia Corporation, Strategy Advisor of IPR Legal Department, personal interview, 28 March 2009.

type of situation the focus is on the rather questionable behaviour by one individual patent holder who only after the standard has already been adopted discloses its essential patents to the SSO and tries to set the level of royalties beyond the level acceptable under FRAND.[40] As mentioned above, ETSI's IPR Policy addresses this problem by imposing a general requirement on its members obliging them to "*reasonable endeavour*" to identify their standard-essential patents to other members during the standardization process.[41] However, as evaluated by *Shapiro*, despite the formal commitment to identify essential patents and licence it to third parties once implemented on FRAND terms, hold-ups regularly occur.[42]

As pointed out by *Shapiro*, outside the standardization context, patent owners are generally free to exploit their IPRs without the fear of competition law intervention. However, it is essential to understand that collective standardization imposes obligations on patent holders, which means that they are not any more allowed to freely exploit their rights, but has to consider possible antitrust limitations. In other words, if the patentee tries to abuse its position as a membership of a SSO and in order to gain extra market power within the respective technology market, he risks violating competition law. In fact, this type of practice has become increasingly risky during recent years, since a growing number of companies engaged in such kind of tactics have been prosecuted for patent misuse or breach of antitrust laws.[43]

40 See Carl Shapiro, *"Injunctions , Hold-Up, and Patent Royalties,"* Working paper draft, 17 April 2006, available at http://faculty.berkley.edu/shapiro/royalties.

41 See ETSI IPR Policy Clause 4.1.

42 Supra note Carl Shapiro.

43 The most famous patent ambush case is the *Rambus* case handled before the U.S. Federal Trade Commission in 2007. Interestingly, the EC is currently in the midst of a similar type of investigation concerning the computer memory technology, also know as the DRAM standard. In August 2007, the European Commission confirmed that is had sent a Statement of Objections to Rambus (US based developer and licensor of DRAM technology, who participated in the standardization process within the JEDEG) based on preliminary findings that Rambus had breached former Article 82 EC "*by not disclosing the existence of patents which it later claimed were relevant to the adopted standard"* and by *"subsequently claiming unreasonable royalties for the use of those relevant patents*". See the European Commission's Press Release of 23 August 2007, "*Antitrust: Commission confirms sending a Statement of Objections to Rambus*", MEMO /07/330.

1.3.2 Royalty Stacking

So-called "*royalty stacking"* is an established economic theory that can be explained as follows: If a company wishes to produce a good, especially one, which embodies technical standards, it needs to acquire licenses to all of the underlying IPRs from multiple licensors. When a good consists of complementary products each representing an essential input for the standard, multiple IP holders can set the price for all of these rights independently. As a result, the aggregate amount of the royalty fees can end up exceeding the cost rate and it will not any longer be feasible for the manufacturer to produce the good.[44] This phenomenon can occur even if the individual licensor would agree to offer his individual license on "*reasonable terms*", since when stacking up all of the licenses needed for producing the good, the overall royalty level will still amount to an unreasonable sum. As noted by *Mr. Ruikka* in article *"FRAND" Undertakings in Standardization- A Business Perspective"*: Even if some licensors may accede to royalty rates that are above FRAND, such excessive rates are not so high as to drive implementers completely from the market.

Lemley and *Shapiro* argue, in a paper published in 2006, that particularly licensing arrangements for mobile telecom standards are candidates for royalty stacking.[45] This is especially true since most often (i) the standard-essential patents are complementary (a license for one patent has no value unless all other essential patents are licensed too), (ii) there are large numbers of companies holding large numbers of standard essential patents, and (iii) the royalty rate is only mark-up since the marginal cost of licensing per unit produced is zero.[46] Accordingly, the risk of royalty stacking inherent in mobile telecoms standards, could, and according to many industry representatives, has exposed consumers to end up paying higher prices. Recently, Ericsson's representative *Mr. Philippe Chappatte* commented on this issue in the European Competition Journal, while referring to a MLex report on the significant consumer harm created by Qualcomm's abusive royalty practices.[47] According to *Chappatte,* excessive royalty rates result in increased consumer prices, which constitute an inherent risk in the mobile industry due to the longevity of the implemented standards.

44 Damien Geradin and Miguel Rato: *" Can Standard-setting Lead to Exploitative Abuse?"* European Competition Journal, Vol.3 Nr.1, June 2007, p.125.

45 Mark Lemley and Carl Shapiro, "*Patent Hold Up and Royalty Stacking In High Tech Industries: Separating Myth from Reality,"* Stanford Law and Economics Olin Work Paper No.324, July 2006.

46 Ibid.

47 See also Philippe Chappatte, "*FRAND Commitments- The Case of Antitrust Intervention, "*European Competition Journal, Vol.5 Nr.2, August 2009, p.334-335.