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INTELLECTUAL PROPERTY AND STANDARD SETTING

Background note by the Secretariat

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INTELLECTUAL PROPERTY AND STANDARD SETTING

Background Paper by the Secretariat[*]

1. Introduction

1. Standard setting is the process of determining a common set of characteristics for a good or service (OECD, 2010). Technical standards concern "the establishment of norms and requirements for technical systems, specifying standard engineering criteria, methodologies or processes" (ITU, 2014). Within this broader category, there are interoperability standards, which determine "how technologies such as a mobile phone and a mobile network, or a compact disc and a compact disc player, interact with one another and work together successfully" (ITU, 2014).[1] The benefits of standards include facilitating the adoption of a technology, achieving economies of scale and improving firms' incentives to innovate and invest (OECD, 2010). In particular, standards allow products to interoperate and therefore make networks, such as the Internet, more valuable to users and firms.

2. In information and communications technology (ICT) markets, standards often rely on proprietary technology protected by patents and cannot be implemented without access to that technology. Proprietary technology that has been declared necessary to the implementation of a standard is referred to as a standard-essential patent (SEP). A tension between standards and patents arises because patents protect the owner's exclusionary right to exploit an innovation, while standards are intended for widespread use in the market.[2] On the one hand, a reasonable return on research and development (R&D) investment by the patent holder is necessary to incentivise innovation; on the other, it is desirable to ensure that third parties can access patented technology to encourage standards adoption and to spur further innovation.

3. Since standard setting often involves co-operation among horizontal competitors, it is not surprising that it has long been a focus of competition policy. As described in OECD (2010)[3] the potential harms to competition resulting from standardisation may include: facilitating exclusion and quantity constraints; promoting co-ordinated high prices; picking a winner that would not maximise social welfare; picking a winner through deceit (patent ambush); and yielding asymmetric cost impacts.

4. More specifically in the context of SEPs, potential anticompetitive harm could arise if a SEP holder excluded other firms from using its patented technology (e.g., by refusing to license, by refusing to license on "reasonable" terms, or by seeking an injunction) and therefore from implementing a given

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[*] This background paper was prepared by Federica Maiorano and Matthew Chiasson with support from Ozgur Ozbek, OECD Competition Division Secretariat.

[1] For instance, the Communication on the Digital Agenda for Europe, put forward by the European Commission in 2010, highlights the importance of interoperability in the ICT market.

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:PDF.

[2] OECD (2006) describes the role of patents. Rockett (2010) outlines theories of intellectual property design.

[3] OECD (2010), Background Note, Section 5.

standard. These competition issues involve the potential for "hold-up" by the owner of a SEP: after a patent has been incorporated in the standard and has been declared as standard-essential, the patent holder "may have the power to extract higher royalties or other licensing terms that reflect the absence of competitive alternatives" (DoJ-FTC, 2007).

5. To address the risk of hold-up, standard-setting organisations (SSOs) usually adopt intellectual property rights (IPR) policies that require participants to disclose and license their SEPs free of charge or on fair, reasonable and non-discriminatory (FRAND) terms.[4] Against this backdrop, a number of market developments have led to more intense litigation on SEPs: a substantial increase in SEP declarations and in the number of patents relevant to a device; reliance on standards in a wider range of products; and an increase in the valuations of SEPs as business assets (ITU, 2014).

6. This paper focuses on SEPs, FRAND licensing commitments and the use of injunctions. It focuses on the competition implications, and possible responses by authorities, but does not address whether and how patent policy might solve competition problems. It provides an introductory overview of the main concepts and references to the relevant literature. Section 2 provides a brief outline of the standard-setting process. Section 3 introduces SEPs and explains their importance from a competition point of view. Section 4 addresses some of the key issues associated with FRAND commitments. Section 5 outlines the questions arising from the request for injunctive relief by SEP holders. Section 6 offers an overview of some proposed alternatives to FRAND commitments and Section 7 concludes.

7. The main points emerging from this paper are:

- Ambiguity over what constitutes FRAND terms can sometimes lead to disputes between SEP holders and prospective licensees. While there is currently no generally accepted methodology for determining FRAND rates, certain principles have emerged in recent court decisions and in the academic literature. There is also a question about whether antitrust law can/should apply to FRAND disputes, with some agencies deferring such matters to the courts, while others have taken a more active role.

- While injunctions are normally a legitimate remedy for patent infringement, there is a question of whether such remedies should be available in respect of FRAND-encumbered SEPs when an implementer of a standard is able and willing to accept a licence on FRAND terms. Courts in different jurisdictions have different injunction and contract law standards and have approached this issue in different ways.

- Some competition authorities have found that the seeking and/or enforcement of injunctions in respect of FRAND-encumbered SEPs, against willing licensees, has amounted to an abuse of dominance or other antitrust violation, and have imposed/accepted remedies to address such concerns. However, some commentators have expressed the view that antitrust enforcement action in this area violates the fundamental right of parties to access the courts.

- Challenges associated with FRAND commitments have led some to question whether there are better or more workable ways of avoiding hold-up issues in the context of SEPs. Various proposals have been advanced, but each has its own drawbacks and so far none has been implemented widely.

[4] These terms are also referred to as RAND terms. In what follows, only the term "FRAND" will be used for convenience.

2. Innovation and standard setting in the ICT industry

2.1 The nature of the innovation process in ICT

8. The specific characteristics of innovation in the ICT sector are important to understand the challenges to the patent system and the nature of interaction among market participants. In the ICT sector, a large number of patents are usually incorporated in a single product ("complementary" innovation) and new ideas are developed in an incremental way, building on existing technology ("cumulative" innovation).[5] For instance, a smartphone is the result of convergence between telecommunications, media and consumer electronics. It incorporates complementary innovations, including not only telecommunications patents and standards, but also technology for video compression, LCD screens, etc.[6] As outlined in FTC (2003), this differs from other sectors where innovation relies mostly on patents developed by a single firm and where a small number of patents may be needed to protect a product, such as in the pharmaceutical industry. [7]

9. Cumulative innovation, where new ideas build on previous inventions, creates externalities from one innovator to another (Scotchmer, 1991). If, without a first innovation, it is not possible to develop the follow-on then this first innovation generates a positive externality. The benefit of the first innovation, from society's point of view, also includes the later inventions that follow. However, it is challenging to allocate the externality between the first inventor and the follow-on innovators when these are separate entities. If all the social value deriving from the second innovation were allocated to its inventor, the policy maker would create full incentives to invest in the second innovation. But this method would not properly remunerate the first innovator. For both innovators to have the incentives to invest, the value of the second invention should be theoretically allocated twice ("double allocation" problem). Otherwise, private incentives would not be sufficient to deliver the level of innovation that would be optimal from society's point of view. Exclusive rights and licensing can help address the issue: the first innovator can be granted exclusionary rights to subsequent innovations and license to another innovator the right to develop them. If the license fee is at a level that enables the second innovator to at least cover its costs, the arrangement would be mutually beneficial for the parties (Rockett, 2010).

10. In the case of complementary innovation, a product is made possible by the combination of two or more patents. [8] Unlike cumulative innovation, one patent is not necessarily developed before the other. In consequence, in addition to the externality explained above, an investment co-ordination problem may also arise. If multiple patents are required by an implementer there is a risk of a "patent thicket". Shapiro (2001) draws the following analogy with Cournot complements. When a number of essential patents are required to manufacture a product and these are owned by separate firms, the royalties are presumably set independently and non-cooperatively. If this were the case, the price of the final product would be higher than under a single patent holder, owning all the patents,[9] since the negative pricing externality would not be internalised by the individual firms (potentially leading to a problem known as "royalty stacking"). As summarised by Rockett (2010), the literature has investigated whether it would be reasonable for firms to

5 The literature and the implications for patent policy are reviewed by Rockett (2010).

6 A number of complementary technologies are needed also for less "convergent" devices such as a computer.

7 FTC (2003), Chapter 3.

8 Some of the implications for patent licensing and merger control are analysed by Regibeau and Rockett (2011).

9 Given the price elasticity of final demand, the price is set based on the cost of production and the sum of the royalty payments due for the use of the technology.

accumulate large portfolios of patents to address the Cournot complements problem. There is evidence that the increase in patent applications could be explained by the defensive use of patents in industries characterised by cumulative innovation (e.g., Hall and Ziedonis (2001); von Graevenitz *et al*. (2008)). In some cases, "patent pools" have emerged as a means of aggregating firms' complementary patent portfolios, enabling efficient cross-licensing and reducing transactions costs.[10]

11. The importance of R&D investment and innovation is not the only factor that affects firms' behaviour and market outcomes in the ICT sector. As described in OECD (2013), economic characteristics of this sector that are especially relevant for competition, include: "economies of scale for information products; interoperability issues (given that many high-technology products are composed of complex systems of components that need to interface with each other and, in some cases, with external networks); and the importance of networks and the effects of network economies." For some services and products, network effects and platform competition (e.g., between operating systems, between e-commerce platforms or social networks) often lead to a "winner takes all" outcome.[11] In summary, the need for co-operation, the importance of innovation in these markets and the role of network effects and switching costs can affect how firms compete and co-operate in these markets.

[10] However, there are circumstances where such pools may raise antitrust concerns. For a recent discussion see WIPO (2014).

[11] The characteristics of the digital economy and their implication for the market and for competition enforcement have been discussed in OECD (2012).

Box 1. ICT Innovation

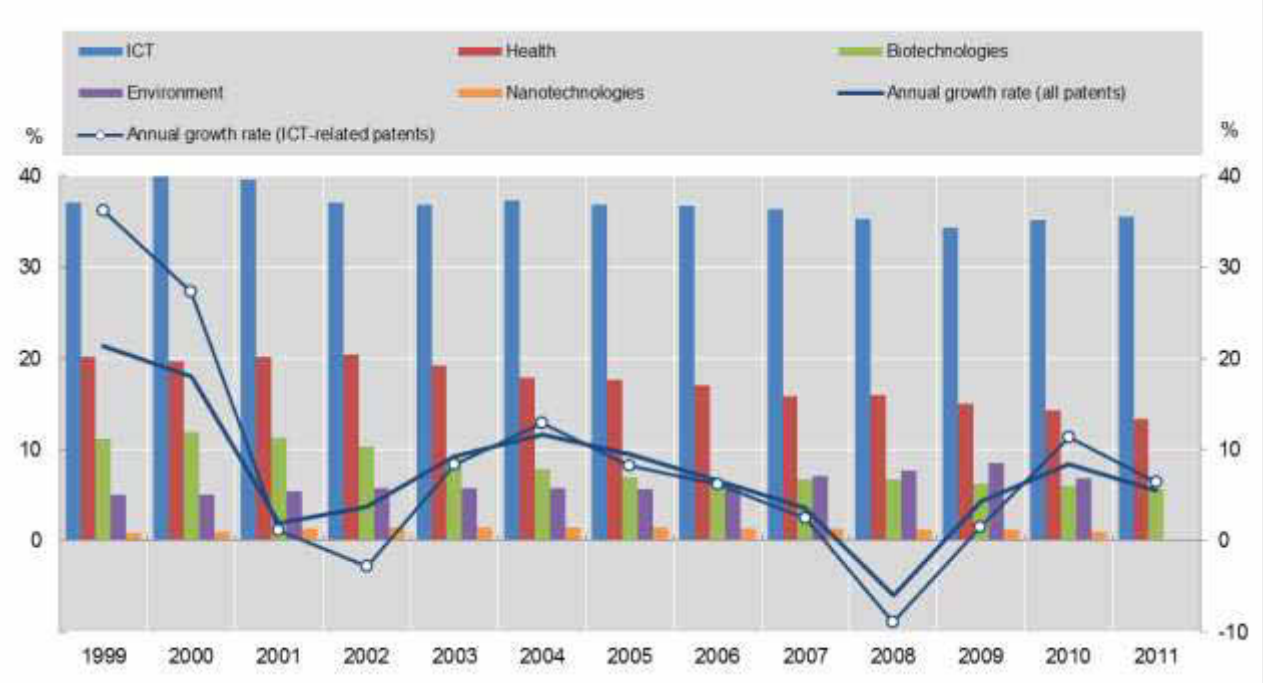
As noted in OECD (2013a), business enterprise expenditure on research and development (BERD) is an important driver of innovation and economic growth. The importance of such R&D investment in the innovation-driven ICT sector cannot be overstated.

For example, in 2011, in the majority of OECD countries information industries accounted for over 20% of BERD and over 0.25% of GDP. In several countries, such as Korea, Finland, Japan, the United States and Sweden, these shares are much higher, ranging from 29% to 59% or more of all BERD and from 0.74% to 1.65% of GDP (OECD, 2013a).

The relative importance of innovation in the area of ICT is also reflected in its share of patent applications compared to other technology fields. As shown in Figure 1, OECD patent data shows that ICT-related patents accounted for 35-40% of all patent applications between the years 1999-2011, more than all patents in the fields of health, biotechnology, environment and nanotechnology combined. Moreover, the annual growth rate of ICT patents over that time period has largely tracked the growth rate of all patents, largely maintaining its relative position despite a slight decline since the early 2000's.

Figure 1. Patents by technology fields, 1999-2011

As a percentage of total patent applications



Source: OECD (2013a)

Data available at: http://dx.doi.org/10.1787/888932889649

2.2 Participation in formal standard setting

12. Assuming that firms have invested in R&D and developed successful innovations, the next step is to understand the innovators' incentives to participate in a standard-setting effort.[12] A firm may independently develop a technical solution that is so widespread that it becomes a *de facto* standard.[13] Firms may compete in standards wars resulting in a winner-take-all market outcome (e.g., VHS vs. Betamax). As discussed in OECD (2010), a co-operative standardisation effort has the added benefit of helping ensure that the standard will be widely adopted.[14] In addition, when competitors co-operate and agree on a standard, they may reduce costs for both consumers and firms.[15]

13. Firms' participation in standard setting is an important factor in the innovation process and, as suggested by a recent paper, this involvement should not be taken for granted.[16] More specifically, participation in standardisation is affected by the IPR policies adopted by SSOs. Layne-Farrar *et al*. (2014) study in a theoretical paper how "the licensing rules that SSOs establish affect innovation and participation of firms in a standard." They examine licensing rules which remunerate patent holders according to the incremental value that a given patent contributes to the standard. For complex standards, they conclude that these licensing rules discourage firms from joining the SSO. However, participation can be ensured if SSO participants are willing to share some of the surplus created through the standard, so that patent owners receive some additional value on top of the mere value contributed by their technology.

14. The participation in formal standardisation processes also has disadvantages. It is slower than development by a single innovator and is a complex and time-consuming effort, involving substantial costs for the parties more actively involved. In addition, as highlighted by Brooks (2013), participants are typically subject to disclosure obligations and FRAND commitments for SEPs. Non-members have the right to implement the standards and to benefit from those commitments, even though they are under no obligation themselves to commit.

15. To appreciate SEPs it is useful to consider how the standard-setting process works in practice. While specific working methods may vary, the process is similar across SSOs. Work on a standard is

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12 One can distinguish standardisation that occurs in consortia and other *fora* from the activities of formal standards bodies. A possible distinction between these two types of organisations could be based on whether they are recognised by public authorities: for example, CEN, CENELEC and ETSI are designated as regional standards bodies in the European Union. Other criteria could be based on whether these bodies have certain rules in place, such as intellectual property policies and openness criteria.

13 There have been cases in which the firm has acquired, by virtue of this standard, a dominant position in a market and has been subject to enforcement action by competition authorities for specific conduct. For example, see the European Commission's Microsoft Windows case, http://ec.europa.eu/competition/sectors/ICT/microsoft/investigation.html. ITU (2014) provides examples of standards developed by single companies, by SSOs and by *fora* and consortia.

14 The main sources of standards, i.e. uncoordinated processes, industry collaboration and government standard setting are described in OECD (2010).

15 DoJ-FTC (2007) summarises the main effects on consumers and firms. For instance, consumers may delay their purchases until the end of the standards war. This is because consumers want to buy the product that incorporates the winning standard, instead of having to switch away from a losing standard and incur additional costs. From the companies' point of view, a war involves significant costs. For example, a firm will try to establish a large customer base so that its product to become the dominant standard.

16 The choice among SSOs is studied by Lerner and Tirole (2006) and investigated empirically by Chiao *et al*. (2007).

generally conducted by 'technical committees', where participants are typically employees[17] of the member firms and institutions. While the formal acceptance of a standard typically takes place at higher level within the SSO, in many cases, these technical committees make the actual choices of which technologies to include in the standards.[18] Decisions are taken by consensus, which is often defined as "the absence of persistent resistance" rather than unanimity.[19] More important decisions are taken on the basis of more structured voting procedures.

16. The process by which the technical committees develop the standard and choose what technologies will be included is a continuous one, where proposals are made, discussed, and debated through meetings and written submissions over the course of many months and in some cases years. When firms propose certain technologies to be included in the standard that they know are covered by patent, they must often disclose it pursuant to the SSOs disclosure policy. This disclosure requirement aims at addressing the risk that companies hide their pending or granted patents until the standard is agreed on, in so-called patent ambushes.[20]

17. While a large number of firms and institutions may be members of an SSO, and may be said to be 'involved' in a particular standardisation process, there may only be a small number of members actively participating, for instance by submitting documents, drafting proposals, and attending meetings. This may be expected given the costly nature of participation and the asymmetric position of members vis-à-vis technical expertise, patent ownership, size, and the degree to which they are likely to benefit from the standard.

18. For instance, Bekkers *et al*. (2011) reports data on participation in the 3GPP working groups in the context of setting the highly successful W-CDMA standard for third-generation mobile networks. In 3GPP, work was divided into work streams known as "work items". Work items were carried out if they obtained the support of at least four firms, with the understanding that those firms would then be expected to "contribute to and progress the new work item throughout the drafting phases".[21] The authors use data on the number of work items supported by member firms to proxy their level of participation in the development of the standard. They find that of the 300 members of 3GPP at the time the standard was being developed, only 58 (less than 20%) supported one or more work items. Further they find that of the 752 patents declared as essential to W-CDMA in their dataset, approximately 90% (672) were owned by only 12 firms (or 4% of all members). The authors note that while support of work items may be driven by "genuine technological capabilities of the different companies in the areas in question", such participation may be driven by the strategic considerations of patent holders because "active involvement of the holder

17 The employees are often technical experts rather than legal or business strategy personnel. For example, see Gupta, K. (2013) (Arguing against the view that SEPs derive their value primarily from hold-up rather than their inherent technical merit, "[s]uch a view of SEPs is overlooking the reality of how SSOs function. Most SSOs are organizations requiring voluntary participation, with hundreds of participating firms collaborating together to form the best technical standard. The delegates attending these standards are not IP savvy attorneys, but purely technical engineers tuned to arguing over the technical merits of each other's contributions.").

18 For example, see Bekkers *et al*. (2011) ("Although higher bodies…will still need to vote on the acceptance of a standard, the real technical inclusion process – including decisions to incorporate patented technologies – usually takes place in the Technical Committees").

19 *Ibid.* See also ITU (2014) ("Consensus is not unanimity, but rather the absence of sustained opposition to substantive issues." [footnote omitted]).

20 This anticompetitive practice is discussed in detail in OECD (2009) and OECD (2010).

21 Bekkers *et al*. (2011), citing Bar, T., Leiponen, A. (2008), 'Collaboration and Networking in Cooperative Standard Setting. Paper presented at the 25th DRUID Celebration Conference, Copenhagen June 17–20, 2008'.

of a patent in the standards' creation process increases the likelihood of that patent being claimed essential to a standard" (finding it a stronger determinant of whether a patent is an SEP than the inherent value of the patent as measured by forward citations).

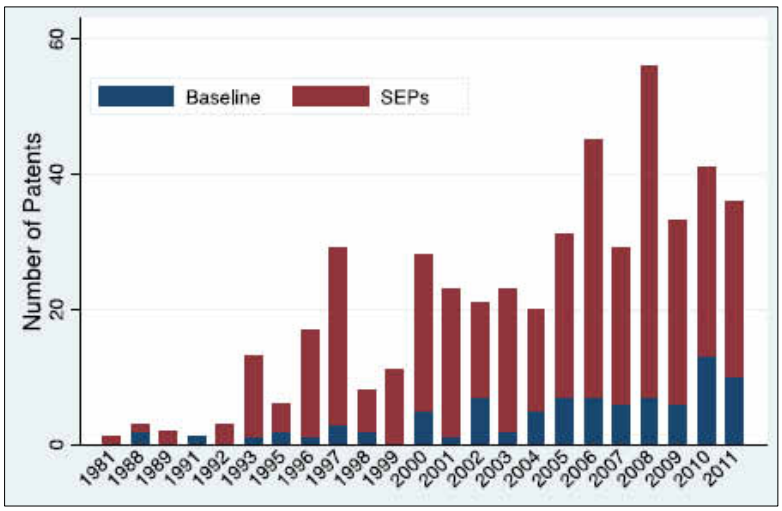
3. Standard-essential patents

19. Standard-essential patents are patents that are declared by their owner as being necessary to implement a technical standard.[22] The European Telecommunications Standards Institute (ETSI), one of the main SSOs in the ICT sector, has adopted the following definition: "It is not possible on technical (but not commercial) grounds, taking into account normal technical practice and the state of the art generally available at the time of standardisation, to make, sell, lease, otherwise dispose of, repair, use or operate equipment or methods which comply with a standard without infringing that IPR" (ETSI, 2013). Other patents may be seen as "commercially necessary" because they cover features that customers would normally expect to find in a device, such as its operating system and camera (Armstrong *et al*., 2014).[23]

3.1 The growth in SEP declarations and litigation

20. As illustrated in Figure 2, despite some observed cyclicality, there has been a notable increase in patent litigation, including litigation of SEPs, in recent decades. Below are some of the factors that may have contributed to this trend.

Figure 2. Number of litigation cases of SEPs and control group patents by litigation years (US)



Source: Reproduced from ECSIP Consortium (2014), p.126, Fig 4.10

22 As set out in greater detail below, due to complexity, time and cost considerations, there is no independent verification of whether a patent or patent pending is, in fact, essential (in other words, that the declaration of essentiality is accurate). On the one hand, repeated interaction between patent owners encourages accurate SEP declarations. On the other hand, SSOs typically encourage declarations to be made as early as possible in the process so that members can make better informed decisions and consider possible alternative technologies, if necessary. The result is that the standard or patent application may evolve in the period after having been declared as essential, so that it is not actually essential when the standard is adopted. Also, patent holders may risk being accused of patent ambush and risk antitrust scrutiny if they are seen as concealing their essential patents, which may further militate in favour of over-declaration rather than under-declaration.

23 These patents may not be covered by a formal standard, but they of course attract royalties for their use.

3.1.1 Growth in the number of SEPs

21. There has been a significant growth in the number of SEPs. ITU (2014) reports that disclosed SEPs have been, on average, doubling every five years since the early 1990's.[24] Commentators have attributed this growth to, among other things, technological developments (e.g., in computing, Internet, and wireless telecommunication), increased demand for and participation in standard-setting activities, and changes in SSO disclosure policies that have incentivised greater disclosure of SEPs.[25]

22. SEP growth effectively increases the set of potential negotiations (and therefore disputes) between licensors and would-be licensees. While this is true of patent growth generally, it is particularly true in the case of SEPs because, by definition, every implementer of a standard infringes a standard's SEPs unless it acquires a licence.[26] Further, there is evidence that SEPs are more likely to be litigated than non-essential patents - ECSIP Consortium (2014) reports that SEPs have a 16% chance of being litigated over their lifetime, compared to 3% for a matched set of patents with otherwise similar characteristics. This is consistent with Geradin *et al*. (2008), which notes that "the more valuable patents tend to be the ones litigated."[27]

3.1.2 Technological convergence and increased complexity

23. Technological convergence has also played a role by increasing the complexity of SEP licensing negotiations. Examples include smartphones and tablets, which integrate numerous previously distinct technologies in a single device (e.g., a phone, camera, Wi-Fi, radio, GPS, etc.). In 2011, it was estimated that there were more than 250,000 patents in a smartphone compared to 70,000 in 2000.[28] While not all of these patents are necessarily SEPs, the number of SEPs is expected to be significant. For example, it has been estimated that over 3,000 SEPs are required to implement the LTE wireless standard alone, with over 30 different companies holding more than five such SEPs, and 11 companies holding more than 100.[29] Similarly, it has been estimated that there are at least 251 interoperability standards included in a laptop, borne out of a diversity of SSOs, consortia and individual companies with varying licensing policies.[30]

24. The multitude of patents, parties and standards involved in these new consumer products undoubtedly increases the complexity of SEP licensing negotiations (and thus the potential for licensing disputes resulting in litigation). Convergence has also meant that some companies that were previously operating in separate markets have become rivals, further complicating SEP licensing incentives.

3.1.3 Growth in the value of SEPs

25. While SEPs are growing in number, many are also growing in value (increasing the 'stakes' in potential licensing disputes and therefore the likelihood of recourse to litigation). The value of an SEP is

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24 ITU (2014) citing data from Bekkers *et al*. (2012). See also ECSIP Consortium (2014).

25 See, for example, Bekkers *et al*. (2012), ECSIP Consortium (2014).

26 ITU (2014).

27 See Geradin *et al*. (2008), citing Lanjouw, J., and Schankerman, M. 'Stylized Facts of Patent Litigation: Value, Scope and Ownership', (NBER Working Paper No. W6297, 1997).

28 Armstrong *et al*., citing RPX Corp., Registration Statement (Form S-1), 59 (Sept. 2, 2011), available at http://www.sec.gov/Archives/edgar/data/1509432/000119312511240287/0001193125-11-240287-index.htm.

29 Cyber Creative Institute (2013).

30 Biddle *et al*. (2010).

linked to the value of the end product that uses the SEP. Building on the example of smartphones, it is estimated that Original Equipment Manufacturer (OEM) factory revenue of smartphones and tablets grew from $41 billion in 2007 to $354 billion in 2013 (almost a nine-fold increase).[31] Examining the publicly available information on licensing rates, Armstrong *et al*. (2014) estimates potential patent royalties in excess of $120 on a hypothetical $400 smartphone. Even allowing for the fact that not all of these smartphone patents are SEPs, and some SEPs will be more important than others, the commerce affected by SEPs has clearly increased.

3.1.4 Growth of NPEs

26. ECSIP Consortium (2014) also partly attributes SEP litigation to the behaviour and growth of some non-practicing entities (NPEs). Because the NPE business model is entirely reliant on royalty collection, and because NPEs do not depend on cross-licensing (and therefore do not face the same risks of retaliation), it is said that NPEs have been more inclined to litigate or threaten litigation.[32]

3.1.5 But will the trend continue?

27. Despite the factors above, some argue that the growth in SEP litigation has been overstated and that public perception has been influenced by a small number of high-profile litigations that are not related to SEPs. For example, Gupta and Snyder (2014) look at the history of smartphone litigation in the US and find that only one third of cases involve SEPs (whereas, the majority are related to implementation or design specific features of mobile devices). They also find that litigation outcomes are driven primarily by patent *quality* rather than whether the patent is an SEP, and suggest that the spike in SEP litigation may be explained by the disruptive entry of new handset manufacturers, and not indicative of a trend.

28. While it is perhaps too early to tell, recent adverse outcomes for SEP holders in the context of SEP litigation could also limit SEP litigation growth.[33] For example, requests by SEP holders for injunctions or exclusion orders against willing licensees have been denied in the US and EU, and in some cases the SEP holder was found to have engaged in an abuse of dominance or unfair method of competition for having sought the injunction, as described in Section 5 of this paper. And in some cases involving FRAND royalty disputes, the courts have imposed FRAND rates significantly lower than the rates initially sought by the SEP holders.[34]

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31 IHS news release (Oct 2013), 'Combined Smartphone and Tablet Factory Revenue to Exceed Entire Consumer Electronics Market This Year', available at: http://press.ihs.com/press-release/design-supply-chain-media/combined-smartphone-and-tablet-factory-revenue-exceed-entire.

32 ECSIP Consortium (2014), at p. 68 (noting numerous examples of patent acquisitions by NPEs), p. 123 (noting that "NPEs may seek the boundaries of what is a Fair and Reasonable royalty rate, either during negotiations or immediately in the courtroom"), and p. 249 (noting that NPEs "are more inclined to litigate").

33 For example, see Armstrong *et al*. (2014) ("It is worth noting that when actually litigated the SEP success rate is very poor. A recent study shows that of 58 SEPs asserted in litigation globally by InterDigital, Motorola, and Samsung, only 7 were found valid and infringed, with 18 found invalid, 17 found not infringed, and a further 16 withdrawn or dismissed." [footnote omitted]).

34 See Armstrong *et al*. (2014) (showing that in cases involving Innovatio IP Ventures, Motorola and Ericsson, the court approved RAND rate is orders of magnitude below what the patent holder sought.).

29. Indeed, though not necessarily related to SEPs, recent decisions by Apple and Samsung to drop patent suits outside the US[35], and by Apple and Google/Motorola[36] to drop all patent suits against one another, have led some to question whether the "patent war" may be replaced by "patent peace".

3.2 The declaration of essentiality

30. As explained in detail in the Background Notes in OECD (2010) and OECD (2009), the standard-setting process, while beneficial, is open to anti-competitive practices, including patent ambushes and hold-up, by participants. This risk of strategic behaviour is one of the reasons SSOs adopt IPR policies with disclosure obligations.[37] According to this obligation, participants are required to make a reasonable effort to inform the SSO of any patent that may become essential when a proposed standard is adopted. However the level of required disclosure varies across SSOs, for instance concerning updates when there are changes in the standard or in the patent (e.g., expiration, challenge of an essentiality claim). Disclosures are typically required in a timely manner, when a company realises that it may hold a SEP (Maskus and Merrill, 2013).

31. Bekkers *et al*. (2011) empirically investigates the factors leading to the declaration of essential patents.[38] The authors study a database of patents that belong to W-CDMA, the leading third-generation standard for mobile telecommunications services. They find that the intrinsic value of a patent, measured by forward citations, is positively related to the probability that a patent will be declared essential by its owner. However, as noted in Section 2.2 above, they find that the active involvement of the holder of a patent in the standards' creation process is an even stronger determinant of essentiality.[39] The authors postulate that this active involvement provides "room for strategic conduct such as influencing the standards' content into the 'direction' of the patents of the firm" (Bekkers *et al*., 2011).

32. The benefits for patent holders of having their declared patent incorporated into the standard include licensing revenues and the opportunity of cross-licensing. In view of these benefits, firms may have an incentive to claim that patents are essential, even when in fact they are not. Given that challenging a patent is expensive and may take time, an implementer may prefer to pay the royalties demanded by the patentee instead of challenging the patent. As a result, a firm may have an incentive to over-declare. However, over-declaration may also involve disadvantages for patent holders. First, when declaring the essentiality of patents firms are required to comply with the SSOs' IPR policies on licensing (which often require the SEP holder to commit to licensing its SEPs on royalty free or FRAND terms). Second, in the event of litigation the patent could be challenged in court and the patent holder would face the risk of

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35 See Tech Times article (Aug 6, 2014), 'War and Peace? Apple, Samsung drop patent lawsuits outside U.S.', available at: http://www.techtimes.com/articles/12259/20140806/war-and-peace-apple-samsung-drop-patent-cases-outside-u-s.htm.

36 See Fortune article (May 17, 2014), 'Apple and Google make peace in their long running patent fight', available at: http://fortune.com/2014/05/19/apple-and-google-make-peace-in-their-long-running-patent-fight/.

37 There are SSOs that do not require standards developers to disclose patents. For instance, the American National Standards Institute (ANSI) only encourages participants to follow disclosure rules (Maskus and Merrill, 2013).

38 Rysman and Simcoe (2008) and Layne-Farrar (2008) also investigate the relationship between the essentiality of patents and their intrinsic value, as measured by received citations.

39 The authors use the active involvement in the standard-setting process and voting weights as proxies for strategic motives. Active involvement is measured by participation in work items, i.e. how many technological features of the standard the firm contributes to. Voting weights depend on the contribution fees paid to the SSO, which are set in relation to revenues.

losing royalties. In the Microsoft Corp. v. Motorola Inc. case, only a share of the patents declared essential[40] were indeed necessary to implement the standards.[41] A preliminary examination by Goodman and Myers (2005) finds that only approximately 21% of the 7,796 patents and patent applications declared essential to the W-CDMA and CDMA2000 third-generation cellular standards are actually essential to those standards. While part of the explanation for over-declaration may be related to strategic motives, the rules on disclosure may also play a role. As mentioned, members of SSOs are required to make their disclosures at an early stage and, given the uncertainty on the final version of a standard, over-declaration may be a rational response.

3.3 Standard setting and market power

33. Given the definition of SEPs and the brief overview of the motives for declaration, a relevant question is whether standard-essential patents necessarily confer market power to their holders. DoJ-FTC (2007) distinguishes two sources of potential market power: "the market power that comes from the technology on its own and the market power that comes just from the standard, the act of setting a standard that elevates a technology above the competitors."[42] The empirical literature does not seem to have focused extensively on the subject. The question has been studied, for example, in a working paper by Layne-Farrar and Padilla (2010). The authors analyse a database of patents declared as essential to a range of standards including telecommunications technology (e.g., W-CDMA) and imaging standards, such as MPEG2 and MPEG4. They find that the inclusion in a standard has no or negligible impact on the value or importance of a patent, measured by forward citations. Their dataset suggests that there are limited cases in which a standard makes a patent a "winner" in the market. They interpret the result by arguing that the more important technologies are natural candidates for inclusion in standards and therefore SSOs tend to "crown winners" (Layne-Farrar and Padilla, 2010). The implication is that the inclusion in a standard in itself does not create market power.

34. Earlier studies, by Rysman and Simcoe (2008) and Lerner *et al*. (2007), also investigate whether the inclusion in a standard increases the patents' value. Rysman and Simcoe (2008) find that SEPs have a much higher number of forward citations than the average patent and observe that the inclusion in a standard can have a positive effect on the value of a patent. Lerner *et al*. (2007) study data from patent pools and conclude that the pool patents are more important, i.e. receive more citations, and that this holds both before and after the pool formed.

35. In enforcement cases, there are a few instances in which SEPs have been found to confer significant market power. For example, this is the finding of the European Commission in some high-profile cases.[43] In the 2012 decision on the Google/Motorola merger,[44] the Commission concluded that "each SEP constitutes a separate relevant technology market on its own".[45] Similarly, in the recent

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40 The case concerned the 802.11 wireless standard, promulgated by the Institute of Electrical and Electronics Engineers (IEEE), and the H.264 video codec standard, promulgated by the International Telecommunications Union (ITU).

The court found that, out of the 24 SEPs for the 802.11 standard, only 13 were indeed essential.

41 Microsoft Corp. v. Motorola, Inc., No. C10-1823, 2013 WL 2111217 (W.D. Wash. Apr. 25, 2013).

42 DoJ-FTC (2007), Chapter 2.

43 http://ec.europa.eu/competition/publications/cpb/2014/008_en.pdf.

44 Case No. COMP/M.6381 Google/Motorola Mobility of 13 February 2012. Public decision available at: http://ec.europa.eu/competition/mergers/cases/decisions/m6381_20120213_20310_2277480_EN.pdf.

45 In its decision (para. 148), the Commission also recognises to a certain extent that Google's market power will be counterbalanced by the technology companies with which it negotiates SEPs licensing agreements:

Motorola decision[46] the Commission found that the company was dominant in the licensing of an SEP essential to the GPRS standard. The assessment was based on two main factors: "the indispensability of the GPRS standard on which Motorola's Cudak GPRS SEP reads for manufacturers of standard-compliant products, and, second, the industry lock-in to that standard." The rationale underpinning the assessment is explained, for instance, in DoJ-FTC (2007) stating that, when a patent is incorporated in a standard, the holder can "exploit its position if it is costly for users of the standard to switch to a different technology after the standard is set."[47] In other words, the cost of switching to the best alternative must be greater than the benefits from switching. The assessment of dominance is therefore strictly connected to the risk of hold-up, which is discussed below.

3.4 The hold-up problem

36. The hold-up problem arises in a vertical relationship between an upstream party and a downstream party. If the parties have to sink investments that are specific to this relationship, there is a risk that one of the parties will hold up the other that has sunk relationship-specific investments. The other party, internalising this risk in its decision-making, may choose a sub-optimal level of investment. In the application of this economic concept to patents and standards, the investment is a standards-specific investment (Farrell *et al*., 2007). In brief, before a standard has been agreed on (i.e., *ex ante*), there are multiple patents competing to be included in the standard. However, *ex post* the chosen technology may not be replaceable with an alternative and switching to another standard would involve substantial costs. In consequence, the patent holder may have "the power to extract higher royalties or other licensing terms that reflect the absence of competitive alternatives" (DoJ-FTC, 2007).

37. Given this general framework, important factors for the assessment of switching costs and, relatedly, the risk of hold-up include the following:

- *Alternatives to the standard in question*: in some cases, there are different standards that perform the same function. For instance, there are different formats for videos, such as MPEG or GIF. Therefore, a user may have the choice of other technologies, even though there may be porting costs from one format to another.

- *Investment in technology*: a large barrier to switching arises from the investment in technology required to implement a new standard. An implementer wishing to switch standard must invest in new patents and new technology. In addition, it will divest the assets that are no longer needed. The greater the difference between the cost of new infrastructure and the value that the implementer manages to recoup from its existing infrastructure, the more costly it is to switch.

- *Network effects*: a well-known source of switching costs is due to network effects. Implementers may be locked-in if the ecosystem of other technologies and products has already been developed around the specific standard. These effects may be particularly severe in the case of network

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"Without calling into question the potential difference between the market power conferred by SEPs versus that conferred by non-SEPs, the Commission is of the view that in practice, although not necessarily a complete constraint on Google's incentives to significantly impede effective competition, Google will have to take into account the large complex patent portfolios (which often lack transparency) held by its competitors and the probabilities of success of any counter-suits by these competitors in its commercial considerations, together with the ability to design around any invoked non-SEPs and the cost of litigation."

46 http://ec.europa.eu/competition/antitrust/cases/dec_docs/39985/39985_928_16.pdf.

47 DoJ-FTC (2007), Chapter 2.

standards, as "coordination problems can make it especially hard to shift away" from an established standard to an alternative (Farrell *et al*., 2007).[48]

38. In addition to the risk of higher royalties to implementers, there are other ways in which hold-up could harm competition and innovation. For instance, as argued by Shapiro (2001), the higher royalties may be passed on to consumers leading to higher prices and lower adoption of the products in question. These effects would be exacerbated by the large number of patents that are often required to implement a standard, as discussed in Section 3.5 below. Another effect that may arguably follow would be the risk of lower innovation, if some companies "refrain from introducing certain products for fear of hold-up." (Shapiro, 2001).

39. However, some authors lament the lack of empirical studies investigating whether there are visible effects of hold-up on consumer prices or innovation. In a recent paper, Gupta (2013) claims that "some of the implications of the "patent holdup" theory are empirically testable; however, the theory has not been empirically tested yet." He also refers to the testimony of economic experts in the Microsoft v. Motorola trial in the US.[49] Microsoft was the complainant in the trial concerning the royalties for SEPs held by Motorola. The author claims that, on cross examination, the experts on Microsoft's side were unable to identify "patent license or empirical evidence that they believed reflected "patent holdup" driven terms."

3.5 Royalty stacking

40. As mentioned in Section 2 above, complex technologies rely on numerous patents. These patents may be owned by different parties and their royalties may be set independently. In consequence, a downstream manufacturer may negotiate a number of separate licensing agreements and the total royalties due on patents may result in a substantial amount. This risk is known as "royalty stacking" (Lemley and Shapiro, 2007).

41. Given that licensing agreements tend to be confidential, it is not very straightforward to assess how important royalty stacking is in practice. One approach is to assess the share of royalties on the value of end products. For instance, Armstrong *et al*. (2014) estimates patent royalties in excess of $120 "on a hypothetical $400 smartphone". This amounts to 30% of the handset's price and is almost equal to the cost of the device's components, according to the information collected by the authors. However, the figure does not account for reduced payments due, for example, to cross-licensing agreements that would compensate for royalty demands in certain cases. The authors also mention that their estimates are based on headline rates, which are publicly available, and not the actual rates that result from negotiation between the parties. For these reasons, the $120 figure may overestimate the amounts paid in reality.

42. Earlier studies, which focus on other devices or technologies, report wide ranges of estimates. Bekkers *et al*. (2011) quote data on royalty fees for GSM, the second-generation standard adopted in Europe. According to their sources, "royalty fees make up 29% of the costs of GSM handsets". Stasik (2010), focusing on the LTE 4G technology, found that the total demands for royalties on SEPs amounted to 14.8% of the expected handset price. However, the estimate did not include all the patents declared essential for the standard and did not cover all the standards required to make a handset.

43. In general, as pointed out by Geradin *et al*. (2008), it is not clear what conclusions can be drawn from evidence on royalties as a share of product prices, if this information is not put into context. For instance, if an implementer purely relies on others' innovations and does not add any technology, 30% may

48 Compatibility issues are explored, for instance, in Katz and Shapiro (1994).

49 Microsoft Corp. v. Motorola Inc., No. 2:10-cv-01823-JLR (W.D. Wash. April 25, 2013).

not be a substantial figure and arguably may even be too low. Geradin *et al*. (2008) suggest that the market addresses royalty stacking through mechanisms such as cross-licensing and patent pools. As explained by Rockett (2010), "allowing complementary patents to be traded as a "package" for a single price rather than traded separately could yield gains."[50]

44. As noted above, many SSOs require members, in addition to disclosing their SEPs, to commit to licensing those SEPs on royalty free or (more commonly) FRAND terms. However, SSOs generally do not define what FRAND means, nor do they arbitrate disputes. The interpretation of FRAND is therefore left to the parties involved, and in case they cannot agree, the courts. The next section discusses some of the practical interpretational issues with FRAND commitments in the SEP context.

Key questions for consideration

- What has been the role of your competition authority(ies) in the standard-setting domain (e.g., no role, guidance, advocacy, enforcement, etc.)?
- Under what circumstances does the holder of a SEP (whether essential in fact, or not) have market power? Should there be a presumption that they do, or should it be a case-by-case assessment?
- Does your jurisdiction have case experience involving hold-up or royalty stacking issues associated with SEPs? What evidence was considered, and how were these issues dealt with?

4. FRAND commitments

45. In earlier sessions on patents and standards, the Competition Committee has debated the mitigating actions that could be taken to address potential anti-competitive practices arising from standard setting. In what follows, we focus on FRAND commitments. As outlined in ECSIP Consortium (2014), FRAND terms encompass a variety of dimensions in addition to the mostly debated issues, such as the amount of the royalty and the availability of injunctions. Other important aspects include the transferability of the FRAND commitment, licensing under reciprocity conditions and bundling SEP and non-SEP licences.

46. Investigations by competition authorities have so far mostly focused on "the potentially abusive role of SEPs enforcement" (Caffarra *et al*., 2014), in particular the actual or threatened use of injunctions by holders of SEPs (addressed in Section 5 below). Competition authorities have generally not been involved in disputes over FRAND terms, deferring such matters to competent courts or other bodies.[51] That

50 In practice, patents are made available to implementers in a variety of ways which often coexist. For instance, Armstrong *et al*. (2014) report that patent holder ZTE licenses its LTE patents both individually and as a member of the Via Licensing LTE pool.

51 See, for example, European Commission Frequently Asked Questions (29 April 2014) on 'Antitrust decisions on standard essential patents (SEPs) - Motorola Mobility and Samsung Electronics', available at: http://europa.eu/rapid/press-release_MEMO-14-322_en.htm ("Does the Commission outline what a reasonable royalty rate is? No. The Commission believes that courts and arbitrators are well-placed to set FRAND rates in cases of disputes."). See also Remarks of FTC Chairwoman Edith Ramirez at the 8th Annual Global Antitrust Enforcement Symposium (Sept 10, 2013), 'Standard-Essential Patents and Licensing: An Antitrust Enforcement Perspective Address' ("…it is important to recognise that a contractual dispute over royalty terms, whether the rate or the base used, does not in itself raise antitrust concerns. Absent the threat of an injunction, a dispute between a SEP owner and a putative licensee over royalty rates will merely drive the parties to court to seek a neutral third-party determination of a FRAND

said, recent cases by competition authorities in India[52] and People's Republic of China[53] have examined issues relating to excessive or discriminatory pricing of SEPs, or have imposed conditions to address such concerns.

47. This section provides an overview of the relevant literature on FRAND, including perspectives on how to assess whether the royalties demanded on a SEP are indeed "reasonable" and "non-discriminatory". It also summarises the approach followed by US courts in setting FRAND rates in two recent cases.

4.1 The meaning of reasonable

4.1.1 Ex ante negotiations

48. Any interpretation of FRAND must recognise the context in which the FRAND commitment is made. FRAND licensing commitments are usually made voluntarily by patent holders in the standard-setting context to ensure that the standard can incorporate the best technologies available, while avoiding the potential of "hold-up".[54] The FRAND commitment is therefore a blunt tool designed to replace the more costly and complex process of requiring SSOs to discuss and agree on licensing terms while the standard is being set.[55] It allows standard-setting participants, usually engineers, to focus instead on the technological merits of various solutions, knowing that any royalties charged on essential patents after the standard is set will (at least) not be unreasonable or discriminatory.

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rate, precisely what the Commission required in its Google/MMI order in the event that private negotiations fail.").

52 The Competition Commission of India has launched two investigations into Ericcson's royalty setting practices in respect of its 2G-, 3G- and 4G-related SEPs for GSM standard compliant mobile communication devices. In particular it is examining whether Ericcson has violated its FRAND commitments and abused its dominance by charging excessive, unfair and discriminatory royalties. See http://www.cci.gov.in/May2011/OrderOfCommission/261/762013.pdf; and http://www.cci.gov.in/May2011/OrderOfCommission/261/502013.pdf.

53 For example in approving Microsoft's acquisition of Nokia, China's Ministry of Commerce (MOFCOM) imposed conditions on how Microsoft and Nokia license certain SEPs (and in the case of Microsoft certain conditions were imposed on its licensing of non-essential patents as well), see http://www.jonesday.com/antitrust-alert--chinas-mofcom-conditionally-clears-microsoftnokia-and-merckaz-05-22-2014/. Also, China's National Development and Reform Commission (NDRC) recently reached a settlement with InterDigital Communications (IDC) addressing its concerns that IDC abused its dominant position by seeking discriminatorily high royalties on certain essential patents, see http://www.law360.com/articles/534395/global-approaches-to-standard-essential-patents and http://www.managingip.com/Article/3362388/China-patents-Excessive-pricing-and-standard-essential-patents.html.

54 We focus on standard-setting activities occurring within SSOs, but similar SEP licensing commitments may be made for standards developed outside SSOs. Examples are the commitments by Philips and Sony on the *de facto* CD standard they developed. See 'Commission settles allegations of abuse and clears patent pools in the CD market', 3 COMPETITION POL'Y NEWSLETTER, (Autumn 2003) at http://ec.europa.eu/competition/publications/cpn/2003_3_56.pdf. For a discussion on whether FRAND commitments should be interpreted differently depending on whether they are made in an SSO context versus a non-SSO context, see Soboleva and Wu (2013).

55 However, some have proposed that the benefits of doing so might outweigh the costs. Section 6 below describes *ex ante* licensing and related proposals, such as requiring SEP holders to make upfront disclosures of their most restrictive licensing terms so that SSOs can consider this information in deciding whether to incorporate the technology into the standard.

49. A FRAND royalty must therefore be low enough that it avoids hold-up; otherwise, the FRAND commitment has not served its primary objective. With the benefit of hindsight, the SSO would have explored alternative technologies or else abandoned efforts on the standard at an earlier stage because no economical solution was available. However, the royalty must also be high enough that it provides adequate compensation to the IP holder to reward them for voluntarily contributing their valuable IP to the standard in the first place; otherwise, it risks undermining incentives to innovate and contribute to standard-setting activities, and will lessen the value of standards in the long run.[56]

50. Balancing these considerations ideally requires finding an equilibrium price that would be reasonable from the point of view of both sides of the "contract" (i.e., the FRAND commitment made by the IP holder, and the SSO's acceptance of the patented technology into the standard) at the time the contract was entered into. For these reasons, "reasonableness" is often evaluated by simulating what would have been the outcome of a hypothetical *ex ante* negotiation between the patent holder and licensee,[57] where it is assumed that a willing licensor and a willing licensee try "reasonably and voluntarily"[58] to reach an agreement on the royalty. The outcome of that *ex ante* negotiation would naturally depend on the value of the patent to the licensee. This can be divided into two issues: 1) the value of the patent to the standard (i.e., relative to alternatives that could have been written into the standard); and, 2) the value of the standard to the licensee's products practicing the standard.

4.1.2 Value of the patent to the standard

51. In order to be more specific on the expected results of the *ex ante* negotiation, one needs to consider the point of view of each of the parties in the hypothetical negotiation. In particular, when a manufacturer (i.e., a potential licensee) is deciding which technology it will incorporate in its product, it will assess – among other factors – the expected royalties for the different alternatives. Therefore, the maximum royalty that a willing licensee is prepared to pay will be constrained by the available alternatives. Specifically, an implementer would be willing to pay the incremental profit of the patented technology over the next best alternative (FTC, 2011; Sidak, 2013).[59] [60]

52. The timing of the hypothetical negotiation is also important because it affects the bargaining positions of the parties and the valuation of the patent. For instance, when the manufacturer is designing a product it can choose among alternative technologies. After this phase, as it approaches the production phase, it will need to make investments that are specific to the chosen technology. Switching to alternatives at a later stage results in higher costs, given these investments. In light of these considerations, the

56 This is not to say that royalties are the only incentives that SEP holders have to participate in standard-setting activities. Indeed, some SSOs require that SEP holders commit to licensing their patents on "royalty free" terms, and SEP holders voluntarily do so. SEP holders may be compensated in other ways from having their technology incorporated into standards (e.g., through greater sales of their downstream products or complementary products that they own).

57 Assessing the meaning of "reasonable" builds on the available experience and literature on patent damages cases. Most of the economic literature on the subject is based on the approach to calculating reasonable royalties adopted in the US.

58 FTC (2011), Chapter 6, Section III.

59 If substitute technologies are not available, a product designer may not implement a feature if the additional revenue due to this feature is not high enough relative to the royalty demand.

60 See also Lemley and Shapiro (2007) (noting that the negotiated rate depends on the payoff that each party would obtain if the negotiations break down, i.e. each party's threat point in the licensing negotiations.).

hypothetical negotiation is assumed to have taken place before investments are made, "at the time the decision to use the infringing technology was made."[61]

53. The same framework is also used in the literature on FRAND royalties. However, there are important differences with respect to the available alternative technologies and the timing of the negotiation.

54. As described in Section 2 above, technologies compete for the inclusion in a standard. This means that, before the standard was adopted, presumably there were competing alternative technologies for a given SEP.[62] However, *ex post*, once the standard has been agreed on, these SEPs necessarily have to be implemented. For this reason, it has been suggested that the relevant timing of the hypothetical negotiation is prior to the agreement on the standard (and the declaration of essentiality). This ensures that the royalty reflects only the inherent technological value of the patent and not the potential hold-up value the SEP derives from being included in the standard.

55. If there were alternatives to the SEP, then the reasonable royalty should be set in relation to the incremental profit with respect to these alternatives. For example, if there were alternative specifications for the standard that would have relied on different technologies (some perhaps not even covered by patents) without significantly degrading the quality of the standard, the royalties charged for the SEP should be relatively low. If alternatives were technologically inferior or would have required significant costs to adopt, the value of the SEP is relatively large and should reasonably command higher royalties. In the extreme, there may be circumstances in which no credible competing technologies were available *ex ante*, in which case market power has not increased due to the inclusion of the technology in the standard (Mariniello, 2011).

56. There may be practical issues in calculating the incremental value of an SEP relative to alternatives. For example, should one only consider alternatives that were actually assessed by the SSO (i.e., were 'on the table' in some sense) or can one consider the universe of technologies available at the time?[63] How does one reliably measure the incremental value of the standard incorporating the SEP to an alternative formulation incorporating different technologies? Is the validity and essentiality of the SEP assumed for purposes of the *ex ante* negotiation? The answers to these questions may vary depending on the particular context of the dispute and the information available.

4.1.3 Value of the standard to the licensees' products

57. Another factor influencing the outcome of the hypothetical negotiation is the value of the standard to the licensees' products. This is in recognition of the fact that the standard may be used in different applications, and therefore licensees may reasonably value the standards differently (e.g., Wi-Fi functionality may be of different importance to a manufacturer of gaming consoles than to a manufacturer of mobile phones or tablets).

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61 FTC (2011), Chapter 7, Section III.

62 Note that this does not imply that the SEP was not, in fact, essential. It simply means that there may have been other formulations of the standard, relying on different technologies, which would have accomplished the same goals (e.g., wireless telephony). An SEP may be essential to a particular formulation of a standard, but not others.

63 This could be a particular salient question in the context of proprietary standards that become *de facto* standards. In those cases, alternatives may not have been considered by the firm(s) involved, or those considerations may not have been well documented as they might be in an open SSO context.

58. Royalty payments follow a variety of structures, such as percentage royalties, lump sums, and ongoing royalties combined with lump sums (Caffarra *et al*., 2014). For instance, in the Microsoft Corp. v. Motorola Inc. case, Motorola requested a percentage royalty rate of 2.25% of the price of the product incorporating its patents.[64] Another approach is followed, for example, by the Via Licensing pool, covering a Wi-Fi standard. This patent pool charges a per-unit fee, which varies depending on the number of units sold (Armstrong *et al*., 2014).

59. In patent cases, courts have often chosen to set a percentage royalty rate (FTC, 2011). Therefore the base on which the percentage royalty should be calculated becomes an important element to assess. While it is clear that the rate and the base are to be determined jointly to be meaningful, there is intense debate on the relevant base for patent value in licensing negotiations or damages awards (Geradin and Layne-Farrar, 2010).[65] In the case of "simple" products, which are built around a single patent, the royalty base is uncontroversial and corresponds to the product.[66] However, a product may include a number of features and many of these may well be unrelated to the patent or SEP in question. Under these circumstances, it is not clear if the relevant base should be the component (sometimes referred to as the "smallest saleable patent practicing unit"), or the overall product. In the ICT industry, where products potentially include hundreds of thousands of patents, this process is a particularly complicated matter. Ultimately the choice of royalty base may be a practical one that depends on whether the product in question can be broken down into discrete components and whether useful data is available at that level of granularity.

60. As explained in Geradin and Layne-Farrar (2010), there are two approaches for identifying the scope of the royalty base: apportionment and the entire market value rule. According to the apportionment principle, when a patent covers only a portion of a product, the total value of that product should be apportioned between the patent and the rest of the product's components. In essence, this approach aims at ensuring that the patent holder is compensated for the value that can be derived from its patent and not from other parties' inventions. The entire market value rule builds on the recognition that many complex products incorporate complementary innovations. In applying this principle, courts have considered whether the patent in question is the "basis for customer demand" and a broad royalty base should be used.

61. The entire market value rule has been criticised when applied to cases of reasonable royalty damages[67]. Lemley (2009), among others, argues that "since there is always at least some value to the defendant's product not attributable to the patent, any application of the entire market value rule in a reasonable royalty setting necessarily overcompensates the patent owner by giving it value not in fact attributable to the patent." In 2011, the FTC recommended eliminating the entire market value rule[68] and

64 Microsoft Corp. v. Motorola, Inc., No. C10-1823, 2013 WL 2111217 (W.D. Wash. Apr. 25, 2013).

65 At least some of this debate is attributed to the practical concern that when a larger royalty base is used, a court or jury may be biased towards overstating the impact of the technology because it is harder to conceptualise the impact of very small components of complex products. In other words, it may be harder to accept that something represents only 0.02-0.025% of the value of an entire product, but relatively easier to accept that it represents 20-25% of the value of a much smaller component of that product, even if those formulations are arithmetically equivalent.

66 As explained in FTC (2011), Chapter 6, Section V, this was the case in *Georgia-Pacific*.

67 The entire market value rule originated in the context of lost profits damages. In a lost profit calculation, the patent holder claims that its profits have fallen as a result of the infringement. This could be due, for instance, to "diverting sales from the patentee's product, eroding the patentee's sales price, and causing the patentee to lose sales of related, non-patented products" (FTC (2011), Chapter 5, Section II).

68 FTC (2011), Chapter 7, Section V ("Courts should eliminate the entire market value rule and the question of whether the patented feature was the "basis for customer demand" from the determination of the appropriate base in a reasonable royalty damages calculation. It is irrelevant and it risks injecting significant confusion that threatens to produce inaccurate awards.").

the US Federal Circuit's jurisprudence "has established that damages are based on (at most) the smallest saleable patent-practising unit" (Armstrong *et al*., 2014). Similarly, Sidak (2013) notes that "[e]conomists and courts have largely rejected the entire market value rule as a rigorous method for calculating reasonable-royalty damages in cases of infringement of implementation patents".

4.2 The meaning of non-discriminatory

62. There has been considerably less debate on the meaning of "non-discriminatory" in the context of FRAND commitments. This is partly because, unlike "fair" or "reasonable", "non-discriminatory" suggests a comparison between *observables* – namely, the actual terms and conditions offered to one licensee compared to the actual terms and conditions offered to another licensee.[69] However, the non-discriminatory requirement raises a number of practical questions:

- Must the SEP holder offer the *same terms to all licensees*, or is it permitted to discriminate against licensees as long as they are not "similarly situated"?
- How should "similarly situated" be defined?
- In practice, how does a licensee discover that its licensing terms are discriminatory if it cannot observe the terms offered to other licensees (similarly situated or not)?

63. The literature reveals potential differences in interpretation on the first two questions; the third does not appear to have attracted much attention so will be left as an open question in what follows[70].

4.2.1 Does "non-discriminatory" require the same terms for all licensees?

64. The strictest interpretation of "non-discriminatory" would not allow the SEP holder to discriminate whatsoever, forcing them to offer the same terms to all licensees. However, this does not appear to be the correct interpretation because it could lead to several undesirable results.

65. First, this interpretation could produce an internal conflict with the "reasonable" requirement of a FRAND commitment if reasonableness is tied to the value of the patent to the licensee (as it usually is) and if that valuation differs significantly among potential licensees (e.g., because they are incorporating the standard in different end use applications). This would leave an SEP holder in the uncomfortable position of having to choose which part of its FRAND commitment to violate. Second, it could prevent the SEP holder from offering economically efficient discounts to high output licensees that would make both parties better off while also promoting greater use of the standard (undermining the goal of standard setting).[71] Third, some have noted that there are circumstances where uniform pricing can itself constitute price discrimination.[72]

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69 While "fair" and "reasonable" may rely partly on such comparisons, they rely more fundamentally on comparisons between the actual terms offered to the licensee versus the terms that would have emerged from a hypothetical *ex ante* negotiation with the licensee (i.e., comparisons against an *unobserved* counterfactual).

70 Although the question raises other relevant issues, including whether licensees *should* be able to observe the terms negotiated with other similarly situated licensees (or could that transparency potentially lead to competition issues in and of itself). It appears this issue has arisen in a recent investigation launched by the Competition Commission of India, http://www.cci.gov.in/May2011/OrderOfCommission/261/762013.pdf ("As per the Informant, Ericsson publicly claimed that it takes its FRAND commitments very seriously and offers a broadly uniform rate to all similarly placed potential licensees. However, Ericsson refused to share the commercial terms and royalty payments on the grounds of Non-Disclosure Agreements ("NDAs"), strongly suggestive of the fact that different royalty rates/commercial terms were being offered to the potential licensees belonging to the same category.").

71 Gilbert (2011) ("The power of the non-discrimination commitment depends on a workable definition of non-discrimination that does not sacrifice economic efficiency…Actual licensing programs for patents that

66. Therefore, most tend to agree that licensing terms can and should be allowed to vary within FRAND, and that "non-discriminatory" only requires similar treatment to "similarly situated" licensees (Gilbert, 2011; Sidak, 2013; Carlton and Shampine, 2013).[73] Interestingly, ITU (2014) reports that some SEP holders have interpreted this to mean that they can refuse to license certain types of companies altogether (e.g., all companies operating at a certain level of the supply chain). However, ITU (2014) also notes that others disagree, arguing that such an interpretation would undermine the core purpose of FRAND commitments, which is to guarantee that a standard will be available to licensees. Further, this interpretation would appear to conflict with statements made by the US district court in *Innovatio*.[74]

4.2.2 How should "similarly situated" be defined?

67. Carlton and Shampine (2013) provide two options for defining "similarly situated". The first defines two firms to be similarly situated "if *ex ante* they expect to obtain the same incremental value from the patented technology compared to the next best alternative available to be incorporated into the standard." The authors note that this would address "strategic behaviour problems" that occur when firms producing identical products with identical technologies are treated differently, while at the same time enabling firms operating in different industries that value the technology differently to pay different royalties. However, the authors note that this option may be "difficult and costly to implement". Therefore, as an alternative, they propose defining firms to be similarly situated if they incorporate the patent in the same "common component". While this alternative definition would be easier to apply, in theory it would permit less of the efficiency enhancing forms of discrimination noted above (because firm's valuations for the technology may differ even if they practice the patent in the same component). Notably, under both definitions of "similarly situated", the focus is on the *licensees* and how their valuations and/or uses for the SEP differ.

68. Sidak (2013), in contrast, examines "similarly situated" from the perspective of the *SEP holder*:

> *"An SEP holder's opportunity costs of licensing to two different licensees may not be equal. If so, it is not price discrimination for the SEP holder to charge different royalty rates to the different licensees. In considering whether royalties are nondiscriminatory, one must assess whether the licensees are similarly situated in terms of the licensor's opportunity costs of licensing its patent portfolio to the licensees."*

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are subject to FRAND commitments include a wide range of fixed and variable royalty terms…these licensing programs are generally held to be non-discriminatory because they allow potential licensees to choose from the same *schedule* of royalty payments." [emphasis added]).

72 Sidak (2013) ("…uniform pricing is actually price discrimination if the cost of providing the good varies from purchaser to purchaser." [footnote omitted]).

73 We are using the terminology "similarly situated" for simplicity, even though it may be cast in somewhat different or broader terms in different jurisdictions. For example, see Germany's submission to OECD (2009) (summarising a Federal Court of Justice decision, "the patent holder may not discriminate against a company wishing to conclude a licence agreement by charging this company higher licence fees than others would have to pay *without any objective justification.*" [emphasis added]).

74 In re Innovatio IP Ventures, LLC Patent Litig., No. 11 C 9308, 2013 WL 5593609 (N.D. Ill. Oct. 3, 2013) (p.74) available at: http://sunsteinlaw.com/wp/wp-content/uploads/2013/11/Innovatio_Opinion.pdf ("Considering the profit of the chip manufacturer on the chip, rather than the profit margins of the Manufacturers on the accused products, is appropriate because a RAND licensor such as Innovatio cannot discriminate between licensees on the basis of their position in the market. Thus, the RAND rate that the court determines here should be the same RAND rate that Innovatio could charge to chip manufacturers on its patent portfolio.").

> *"For example, if the licensee will use the technology in question to produce a horizontal substitute for a good that the licensor produces, the licensor will risk losing sales to the competing, licensed product. These lost sales are an opportunity cost of licensing the patent in suit. Consequently, the licensor may require a higher FRAND royalty to satisfy its individual-rationality constraint, and therefore the final royalty may be higher than if the licensee intended to use the licensed technology to produce a non-competing good or a vertical complement to the licensor's products."*

69. Importantly, under Sidak's definition, the SEP holder may discriminate against downstream competitors. While rooted in the traditional cost-based justification for price discrimination, Sidak's definition appears to be inconsistent with the approach taken in a number of cases.

70. For example, in *Microsoft/Motorola*[75] the US district court noted that several of the *Georgia-Pacific* factors (see section 4.3.1 below) needed to be adjusted in light of FRAND. In particular:

> *"Factor 5 examines the commercial relationship between the licensor and licensee, such as whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter. Similar to factor 4, this factor does not apply in the RAND context. This is because having committed to license on RAND terms, the patentee no longer may discriminate against its competitors in terms of licensing agreements." [emphasis added]*

71. Similarly in OECD (2010), Korea reports a case in which it found an infringement based on discrimination against a rival in the context of a RAND commitment.[76]

72. The examples above illustrate that while "non-discriminatory" may be conceptually easier to grasp than "fair" or "reasonable" in the context of a FRAND commitment, its interpretation raises a number of issues in practice. An overly restrictive interpretation may limit discriminatory terms to the detriment of economic efficiency and promoting use of standards; while an overly permissive interpretation may provide scope for strategic behaviour such as exclusionary practices against rivals.

4.3 Setting rates in practice

73. This section briefly summarises how FRAND royalties have been determined in practice in the context of recent SEP licensing disputes. It focuses on the methodology established in two separate judgements in 2013 by US district courts: *Microsoft/Motorola*[77] and *Innovatio*[78].

74. Both of those cases adopt as a starting point the framework established in *Georgia-Pacific*[79] for the determination of reasonable royalty damages for patent infringement. Borrowing from the damages

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75 Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 WL2111217 (W.D. Wash. Apr. 25, 2013). See, in particular paras. 99-102.

76 See contribution of Korea to OECD (2010) ("Qualcomm…discriminately imposed high royalties for its patented technology on the companies which bought modem chips from its rival, even though it pledged RAND license in the course of the standard-setting process. By charging discriminatory royalties for its patented technology, it was able to maintain a 99% market share, effectively shutting out its rival. In July 2009, the KFTC issued surcharges of 273.2 billion won (230M USD) and corrective order on Qualcomm for its anticompetitive act including discriminatory royalty practice. In this case, that Qualcomm pledged to license its patented technology on RAND terms in the standardisation process constituted important grounds for proving illegality of its conduct.").

77 Microsoft Corp. v. Motorola, Inc., No. C10-1823, 2013 WL 2111217 (W.D. Wash. Apr. 25, 2013).

78 In re Innovatio IP Ventures, LLC Patent Litig., MDL No. 2303, 2013 WL 5593609 (N.D. Ill. Oct. 3, 2013).

case law is considered apt for at least two reasons. First, courts have considerable experience considering "reasonableness" in this setting because, under US patent law, in the case of infringement, a court will award the claimant damages adequate to compensate for the infringement, but in no event less than a "reasonable royalty" for the use made of the invention by the infringer.[80] Second, given patent infringement litigation is a fall back option in negotiations between a licensor and a licensee, it is intuitive that the established damages framework would influence actual reasonable *ex ante* bargaining outcomes. These rationales have been noted by numerous commentators.[81] At the same time, as described below, the courts have recognised that certain adjustments need to be made in light of the fact that a standard essential patent subject to a FRAND licensing commitment is not the same as any ordinary patent, and that the purpose of standards and of FRAND commitments must therefore be taken into account in determining FRAND royalties.

4.3.1 Microsoft/Motorola

75. In *Microsoft/Motorola*, the court held a bench trial with the aim of determining a RAND licensing rate and range for certain of Motorola's SEPs relating to the IEEE 802.11 standard (commonly known as the Wi-Fi standard) and the ITU H.264 video compression standard. Thought to be the first US court to set FRAND royalty rates for SEPs, the court adopted a modified version of the fifteen factors identified in *Georgia-Pacific* to determine what would have been the outcome of a hypothetical bilateral negotiation between Microsoft and Motorola prior to the adoption of the standard(s) (and in the context of Motorola's RAND commitment).

76. Before discussing the specific modifications to the *Georgia-Pacific* factors the court set out a number of "economic guideposts" or principles for assessing RAND royalty terms. In particular, the court found that a RAND royalty should (in summary):

- **Promote use of the standard** ("…be set at a level consistent with the SSOs goal of promoting widespread adoption of their standards", para 70)
- **Mitigate risk of hold-up** ("…recognise and seek to mitigate the risk of patent hold-up that RAND commitments are intended to avoid", para 71)
- **Mitigate risk of royalty stacking** ("…address the risk of royalty stacking by considering the aggregate royalties that would apply if other SEP holders made royalty demands of the implementer", para. 72)

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79 Georgia-Pacific Corp. v. United States Plywood Corp., 318 F. Supp. 1116, 1120 (S.D.N.Y 1970), modified and aff'd, 446 F.2d 295 (2d Cir. 1971).

80 See 35 U.S.C. 284.

81 For example see, 1) Layne-Farrar *et al*. (2007) ("The fifteen factors in Georgia Pacific that guide reasonable royalty determinations for patent infringement cases are the most obvious starting point for FRAND, and they appear to be readily applicable to reasonable royalties within SSOs. That said, the factors leave the specific method of royalty determination an open question."); 2) FTC (2011) Chapter 7, Section III ("When a patentee and implementer of standardised technology bargain for a licensing rate, they do so within a framework defined by patent remedies law. That law sets the implementer's liability if negotiations break down and the parties enter patent litigation, and therefore heavily influences the negotiated amount."); 3) Michel (2011) ("The damages that a court would award a successful patentee in patent litigation will influence the parties' RAND negotiations by establishing the implementer's potential liability"); and, 4) Lemley and Shapiro (2013) ("…the point of the hypothetical negotiation rule in patent damages is to determine what hypothetical reasonable parties might have done, had they had all the facts, including knowledge of non-infringing alternatives…The FRAND royalty concept is no different in this respect.").

- **Incentivise innovators to participate in the standard-setting process** ("…be set with the understanding that SSOs include technology intended to create valuable standards…To induce the creation of valuable standards, the RAND commitment must guarantee that holders of valuable intellectual property will receive reasonable royalties on that property.", para 73)
- **Be based on the value of the patent relative to alternatives that could have been written into the standard** ("…be interpreted to limit a patent holder to a reasonable royalty on the economic value of its patented technology itself, apart from the value associated with incorporation of the patented technology into the standard.", para 74)

77. The court then described how the *Georgia-Pacific* factors should be adjusted (and in some cases omitted or merged) to account for the RAND setting. The *Innovatio* court provides a useful summary of this analysis, reproduced in Box 2 below.

Box 2. Summary of *Microsoft/Motorola* modified *Georgia-Pacific* factors

G-P Factor 1: The royalties received by the patentee for the licensing of the patent-in-suit in other circumstances comparable to RAND-licensing circumstances.

G-P Factor 2: The rates paid by the licensee for the use of other patents comparable to the patent-in-suit.

G-P Factor 3: The nature and scope of the license.

G-P Factor 6: The effect of the patented invention in promoting sales of other products of the licensee and the licensor, taking into account only the value of the patented technology and not the value associated with incorporating the patented technology into the standard.

G-P Factor 8: The established profitability of the product made under the patent, its commercial success, and its current popularity, taking into account only the value of the patented technology and not the value associated with incorporating the patented technology into the standard.

G-P Factor 9: The utility and advantages of the patent property over alternatives that could have been written into the standard instead of the patented technology in the period before the standard was adopted.

G-P Factors 10-11: The contribution of the patent to the technical capabilities of the standard and also the contribution of those relevant technical capabilities to the licensee and the licensee's products, taking into account only the value of the patented technology and not the value associated with incorporating the patented technology into the standard.

G-P Factor 12: The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions that are also covered by RAND committed patents.

G-P Factor 13: The portion of the realisable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, significant features or improvements added by the infringer, or the value of the patent's incorporation into the standard.

G-P Factor 14: The opinion testimony of qualified experts.

G-P Factor 15: The amount that a licensor and a licensee would have agreed upon (at the time the infringement began) if both were considering the RAND commitment and its purposes, and had been reasonably and voluntarily trying to reach an agreement.

Source: Innovatio, pp. 9-10

78. Lastly, the court proceeded with a detailed analysis (summarised in over 160 pages in its decision) based on economic and technical evidence and testimony and evaluations of various "comparable" licences proffered by the parties. As a practical matter, as noted later by the *Innovatio* court (pp. 10-11), the court's analysis can be divided into three steps:

- **STEP 1:** Consider the importance of the patent portfolio to the standard, considering both the proportion of all patents essential to the standard that are in the portfolio, and also the technical contribution of the patent portfolio as a whole to the standard.
- **STEP 2:** Consider the importance of the patent portfolio as a whole to the alleged infringer's accused products. (e.g., Microsoft's Xbox)
- **STEP 3:** Examine other licences for comparable patents to determine a RAND rate to license the patent portfolio, using its conclusions about the importance of the portfolio to the standard and to the alleged infringer's products to determine whether a given licence or set of licences is comparable.

79. Two points are worth noting. First, the *Microsoft/Motorola* court did not assume that the patents were actually "essential" to implement the standard. Instead, where there was minimal evidence of essentiality the court noted that "the implementer in a hypothetical negotiation would view Motorola's patents with scepticism", and therefore when "parties to a hypothetical negotiation would sit down at the bargaining table and examine these patents for their importance [to the standard]…their value would be diminished by the lack of better evidence regarding their true relevance." (para 342)

80. Second, and related to the above, the court found that several of Motorola's patents provided only minimal contribution to their respective standards either in terms of their technical contribution or due to the availability of alternatives (step 1) and/or were not important to the overall functionality of Microsoft's products (step 2). For these reasons, the reasonable royalties found by the court for these patents were significantly less than what Motorola had initially argued for.[82]

4.3.2 Innovatio

81. *Innovatio* was another case that involved SEPs relating to the 802.11 standard, decided several months after *Microsoft/Motorola*. The court explicitly adopted a similar approach as *Microsoft/Motorola*, subject to a number of adjustments in light of the facts of the case.

82. First, the court had earlier found that all of the patents in question were in fact essential to the standard. Thus, it did not discount the RAND rate in light of uncertainty regarding essentiality. In fact, the court appeared to express some criticism of the *Microsoft/Motorola* approach noting that "[the *Microsoft/Motorola*] discounting assumes that an implementer would choose not to license a non-essential patent because it could practice the standard without that patent. In an infringement context, the alleged infringer has already allegedly chosen to implement the non-essential patent. In that context, the licensing rate should be increased for patents of doubtful essentiality, on the ground that the infringement damages for such a patent would not be limited to a RAND rate, and that the patent owner could therefore seek typical patent damages for that patent." (p. 12, note 6).[83]

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82 For example, see Foss Patents (April 26, 2013), 'Court rules Google will get Motorola's $12.5B price back from Microsoft if it waits almost 7,000 years' available at: http://www.fosspatents.com/2013/04/court-rules-google-will-get-motorolas.html.

83 See also Sidak (2013), which notes that such adjustments should not be made as it will discourage a negotiated outcome ("If a court were to interpret the hypothetical negotiation as producing the same

83. Second, the court adopted what was described as a "Top Down" approach by starting with the smallest saleable patent practicing unit, the Wi-Fi chip, and using this as the relevant royalty base. This had the effect of merging steps 1 and 2 above "[b]ecause the purpose of a Wi-Fi chip is, by definition, to provide 802.11 functionality", and thus, "determining the importance of Innovatio's patents to the 802.11 standard also determines the importance of those patents to the Wi-Fi chip."(p. 13). In summary, the calculation proceeded as follows (pp. 73-74):

- Start with the average price of a Wi-Fi chip;
- Based on that average price, calculate the average profit that a chip-maker earns on the sale of each chip (thereby isolating the portion of the income from the sale of the chip available to the chip-maker to pay royalties on intellectual property);
- Multiply the available profit on a chip by a fraction calculated as the number of Innovatio' s 802.11 standard-essential patents, divided by the total number of 802.11 standard-essential patents. If necessary, make adjustments to account for the value of lnnovatio's patents to the 802.11 standard.

84. The court noted a number of advantages of this approach (pp. 74-77). First, by relying on the chip-maker's margin as the maximum potential royalty it accounts for the principle of non-discrimination (because under RAND the licensor would need to charge the same royalty to the chip maker as the downstream manufacturer) as well as royalty stacking (because if that royalty were too high the chip-maker would exit). Second, it apportions to the value of Innovatio's patented features without relying on information about other licences that may not exist or may not be comparable (and takes account not only of the numerical pro rata of Innovatio's patents to all 802.11 standard-essential patents but also of their value). Third, it provides some quantitative and analytical rigor to the RAND analysis.

85. However, the court noted that such an approach may not always be appropriate, particularly where there is evidence of widespread infringement, such that the chip-makers prices and profits might not serve as an appropriate benchmark from which to calculate a RAND royalty (pp. 75-76). However, this was not considered an issue in light of the facts of the case.

86. While these decisions are not without criticism[84], a number of commentators have suggested that they may provide a useful "roadmap" for future FRAND determinations.[85] Indeed, the *Innovatio* court itself acknowledged that "[a]lthough the Top Down approach is not perfect, no approach for calculating a RAND rate is in light of the inherent uncertainty in calculating a reasonable royalty".[86]

(probability-adjusted) royalty level as a real-world, non-hypothetical negotiation, then the court would create a free option for the infringer: Infringe the patent and, if eventually found liable, pay the same royalty as if you had negotiated a license before litigation commenced.").

84 For example, see Sidak (2013).

85 For example, see 'Apple cites Judge Robart's Microsoft-Motorola decision as supplemental FRAND authority in Fed Circuit, ITC cases' available at: http://www.essentialpatentblog.com/2013/05/apple-cites-judge-robarts-microsoft-motorola-decision-as-supplemental-frand-authority-in-fed-circuit-itc-cases; 'Landmark Motorola FRAND Ruling May Serve As Roadmap' (April 26, 2014) available at http://www.law360.com/articles/436295/landmark-motorola-frand-ruling-may-serve-as-roadmap; and, Carrier, M. (2013), 'A US Court Issues Second Ruling Determining RAND Rate for Standard Essential Patent (Innovatio)' (November 20, 2013) available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2357802.

86 *Innovatio* at p. 73, citing Unisplay, S.A. v. Am. Elec. Sign Co., Inc., 69 F.3d 512, 517 (Fed. Cir. 1995) (calculating a reasonable royalty "necessarily involves an element of approximation and uncertainty").

Key questions for consideration

- Is there any guidance on the interpretation of FRAND commitments for SEPs in your jurisdiction? Is there guidance on setting FRAND royalty rates? Any relevant cases?
- Is the approach to FRAND rate determination employed by the US courts in *Microsoft/Motorola* and *Innovatio* appropriate? Can it be improved?
- Are there circumstances where a competition authority can usefully intervene in rate setting disputes (e.g., by participating in court proceedings or by applying antitrust enforcement tools) or are such disputes better left for courts and parties to resolve on their own?

5. The availability of injunctions for SEP holders

5.1 Introduction

87. As noted above, one of the remedies available to patent holders to enforce their IP rights is to seek damages from infringers, typically based on some measure of reasonable royalties or lost profits. However, in most jurisdictions, patent holders may also seek injunctions to stop firms from continuing to infringe their patents.[87]

88. The legal test for an injunction varies by jurisdiction.[88] In the US, the courts apply a four factor test set out by the Supreme Court in *eBay/MercExchange:*

> *"According to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief. A plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction."*[89]

89. In other jurisdictions such as Germany, Netherlands, France and Japan, the courts have less discretion; injunctions are granted if the patent infringement is proven, subject to limited exceptions or defences.[90]

90. Regardless, a question arises about whether injunctive relief should be viewed differently in the case of SEPs subject to FRAND commitments ("FRAND-encumbered SEPs"). In particular, because an SEP holder has voluntarily committed to license its patent to standard implementers on FRAND terms, some argue that an injunction should not be available to them as a matter of law (i.e., the SEP holder should be limited to royalty remedies), or should be available only in relatively limited circumstances.

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87 In the US, when infringement relates to imported products, "exclusion orders" may also be available. An exclusion order has the effect of banning the importation of the infringing products into the country, and therefore operates in a similar manner as an injunction. Exclusion orders are granted by the US International Trade Commission (ITC), subject to a Presidential veto. See: http://www.usitc.gov/intellectual_property/.

88 For an overview of differences in injunction standards see Jones Day (2013) and Cotter, T. (2013).

89 eBay, Inc. v. MercExchange, L.L.C, 547 U.S. 388 (2006). Decision available at: http://www.supremecourt.gov/opinions/05pdf/05-130.pdf .

90 See Jones Day (2013) and Cotter (2013).

91. There is also a question about whether and how antitrust law should apply to the seeking of injunctions in respect of FRAND-encumbered SEPs. Because by definition every adopter of a standard infringes the standard's SEPs, and because the consequences of an injunction are potentially severe (e.g., the infringer's production being halted and products pulled from shelves), the availability of an injunction may critically influence licensing negotiations. Indeed, a credible injunction threat may lead to the types of market power/hold-up issues that FRAND commitments are designed to mitigate.[91] For this reason, as explained below, some competition agencies have taken the position that seeking an injunction in respect of FRAND-encumbered SEPs can amount to an abuse of dominance or other competition law violation.

92. Others argue that the threat of an injunction is an important tool to incentivise standard implementers to come to the bargaining table and negotiate licence terms in good faith. Proponents of this view worry that barring injunctions on FRAND-encumbered SEPs, or subjecting them to more stringent requirements (or potential antitrust scrutiny) will tip the bargaining scales too far in favour of licensees and under-compensate SEP holders for their innovations. For example, it could potentially allow standard implementers to demand less than reasonable terms or drag out negotiations indefinitely because the only remedy available to the SEP holder would be a reasonable royalty granted by a court.

93. In recognition of these risks, courts and competition authorities appear to agree that injunctions on FRAND-encumbered SEPs should not be barred in all cases. An important evaluative factor that has emerged is whether or not the standard implementer is a "willing licensee" (i.e., willing and able to agree to FRAND terms). Competition authorities and courts have provided some guidance on when a licensee may be considered a willing licensee.

94. Finally some, including Vesterdorf (2014) and Jacob (2013), argue that antitrust enforcement is redundant because courts, when deciding whether to grant an injunction, are capable of taking into account the types of issues that antitrust authorities are worried about (to the extent that they have discretion to consider public interest criteria, antitrust-based defences, or permit the competition authority to intervene in the proceedings, etc.). Some have gone so far as to argue that enforcement action by antitrust authorities in this area, whether redundant or not, may also be a violation of fundamental constitutional rights because it restricts the ability of parties to access the courts.[92]

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91 See Complaint of US FTC, July 24, 2013, In the Matter of MOTOROLA MOBILITY LLC, and GOOGLE INC., Docket No. C-4410, available at: http://www.ftc.gov/sites/default/files/documents/cases/2013/07/130724googlemotorolacmpt.pdf ("A licensing negotiation that occurs under threat of an injunction or exclusion order, however, is weighted toward the patentee in a fashion inconsistent with the FRAND commitment. In the presence of an injunctive threat, the negotiation between a patentee and the implementer is linked to the implementer's potential lost revenues from the sales of the enjoined products, rather than to the market value of the patent as compared to alternatives. This change in the stakes raises the maximum royalty rate the potential licensee is willing to pay, tending to push that rate upwards and out of the FRAND range.").

92 For example, see 1) Vesterdorf (2014) ("Starting competition law infringement proceedings against an undertaking which has brought a case before a national judge, simply for doing so, seems hardly compatible with the duty to respect the fundamental principle of right of access to courts and non-interference in that regard by administrative bodies."); 2) Jacob (2013) (Arguing among other things that EU antitrust enforcement against an SEP holder solely for seeking an injunction may violate the European Convention of Human Rights and the principle of sincere co-operation in the Treaty on European Union); and, 3) Dillickrath and Emanuelson (2013) (Raising the question of whether enforcement by US antitrust authorities in this domain may violate the First Amendment right to petition the government, as well as the *Noerr-Pennington* doctrine).

5.2 How have courts dealt with injunctions in respect of FRAND-encumbered SEPs?

95. One view is that a FRAND commitment, as a contract matter[93], implicitly restricts an SEP holders' right to seek an injunction. For instance, Judge Posner, in a case involving Apple and Motorola, stated:

> *"To begin with Motorola's injunctive claim, I don't see how, given FRAND, I would be justified in enjoining Apple from infringing the '898 [patent] unless Apple refuses to pay a royalty that meets the FRAND requirement. By committing to license its patents on FRAND terms, Motorola committed to license the '898 [patent] to anyone willing to pay a FRAND royalty and thus implicitly acknowledged that a royalty is adequate compensation for a license to use that patent."*[94]

96. Others, including Sidak (2013) and US FTC Commissioner Joshua D. Wright, have taken the view that waiving or limiting injunction rights is an important detail, and would therefore be explicitly mentioned in SSO IPR policies as a condition of making a FRAND commitment if that was the intention – and yet it is not.[95] As noted in Section 6 below, some have suggested that SSOs should add this type of explicit commitment to their IPR policies.

97. However, even if injunctions do not violate the FRAND commitment as a contract matter, there may be public interest arguments why they should be denied by courts in certain circumstances. The US DOJ and the US Patent and Trademark Office issued a joint policy statement making this point:

> *"In some circumstances, the remedy of an injunction or exclusion order may be inconsistent with the public interest…Such an order may harm competition and consumers by degrading one of the tools SDOs employ to mitigate the threat of such opportunistic actions by the holders of F/RAND-encumbered patents that are essential to their standards."*[96] [97]

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93 This paper has not addressed the contract law issues associated with FRAND commitments, such as whether the commitment is in fact a contract, and if so, involving whom, and under what laws, etc. For a summary of contract law perspectives on FRAND commitments see Cotter (2013).

94 Apple, Inc. v. Motorola, Inc, No. 1:11-cv-08540 2012 BL 157789 (N.D. III. June 22, 2012).

95 For example, see Sidak (2013) ("[This] interpretation is not persuasive because it would treat many words in the FRAND commitment in an SSO's contractual documentation as inconsequential verbiage. If the FRAND commitment truly consisted only of the SEP holder's forbearance from enjoining an infringer, the SSO could have expressed the nub of that idea much more simply…"); and, Remarks of Joshua D. Wright, Commissioner, US FTC, 'SSOs, FRAND, and Antitrust: Lessons from the Economics of Incomplete Contracts', September 12, 2013 available at: http://www.ftc.gov/sites/default/files/documents/public_statements/ssos-frand-and-antitrust-lessons-economics-incomplete-contracts/130912cpip.pdf ("…it is difficult to imagine why such an interpretation would hold in general in light of the fact that no SSO appears to uniformly disallow injunctions. To the contrary, some appear to expressly consider and reject such rules." [footnote omitted]).

96 See US Department of Justice and US Patent and Trademark Office Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments (Jan 8, 2013), available at: http://www.uspto.gov/about/offices/ogc/Final_DOJ-PTO_Policy_Statement_on_FRAND_SEPs_1-8-13.pdf.

97 Notably, in August 2013, this joint policy statement was cited with approval by the US Trade Representative, acting on behalf of the President, in vetoing a decision by the ITC to issue an exclusion order against Apple. See: http://www.ustr.gov/sites/default/files/08032013%20Letter_1.PDF.

98. The joint policy statement also provides examples of circumstances where an injunction may, however, be an appropriate remedy; for instance, where the putative licensee "refuses to pay what has been determined to be a F/RAND royalty", "refuses to engage in a negotiation to determine F/RAND terms", or "is not subject to the jurisdiction of a court that could award damages". As discussed below, a number of these circumstances are contemplated in recent settlements or decisions of the US FTC and European Commission.

99. In other jurisdictions, the courts may not have the discretion to consider public interest criteria, but may still allow a form of "FRAND defence" based on applicable antitrust law. For example, the German Federal Supreme Court in *Orange Book Standard* established that a FRAND defence is available to the defendant if "(i) the plaintiff has a dominant market position; (ii) the defendant has offered a license on "acceptable" contract terms to plaintiff; and (iii) the defendant behaved from the point of its offer as if the plaintiff had accepted the offer."[98] Regarding the second requirement and third requirements, the defendant (i.e., the prospective licensee) must apparently make an offer that reflects the "terms and conditions that are customarily used in the industry for licensing such technology" and "and must pay the applicable royalties either directly to the plaintiff or to an escrow account held by a German court."[99] Cotter (2013) also provides examples of courts in Netherlands and Japan denying injunctions in respect of FRAND-encumbered SEPs based on an "abuse of rights" defence.[100]

5.3 How have antitrust authorities dealt with injunctions in respect of FRAND-encumbered SEPs?

100. Regardless of how injunctions in respect of FRAND-encumbered SEPs are treated by the courts in private litigation, there is a question of whether and how the conduct should be addressed by competition authorities using antitrust enforcement tools. The competition authorities that have been most visible in this area have been the US FTC and the European Commission.[101] To date, the US FTC has only pursued the conduct as an "unfair method of competition" under Section 5 of the FTC Act; whereas the European Commission has examined the conduct as an abuse of dominance under Article 102 of the Treaty on the Functioning of the European Union. Below is a summary of recent cases.

5.3.1 Robert Bosch GmbH / SPX Service Solutions (US FTC)

101. In November 2012, the US FTC issued a complaint in respect of Bosch's proposed acquisition of SPX.[102] The complaint alleged that the effect of the merger may be to substantially lessen competition and

98 Jones Day (2013), summarising Orange Book Standard, German Federal Supreme Court, May 6, 2009, doc. no. KZR 39/06.

99 *Ibid.*

100 Cotter (2013). See also Cotter, T., 'Abuse of Right as a Rationale for Denying Injunctive Relief (and Damages?)', COMPARATIVEPATENTREMEDIES.COM, Aug. 26, 2013, available at: http://comparativepatentremedies.blogspot.com/2013/08/abuse-of-right-as-rationale-for-denying.html.

101 However, other agencies have examined these issues. For example, in February 2014, the Korea Fair Trade Commission determined that Samsung's injunction claims against Apple did not constitute an abuse of dominance or unfair practice because Apple failed to engage in good faith negotiations, see http://www.ftc.gov/system/files/attachments/key-speeches-presentations/standard-essential_patents_the_intl_landscape.pdf, citing KFTC Press Release (Feb. 26, 2014) available in Korean only. Also China's antitrust authorities have imposed conditions relating to the use of injunctions in at least two cases, Microsoft/Nokia (http://www.jonesday.com/antitrust-alert--chinas-mofcom-conditionally-clears-microsoftnokia-and-merckaz-05-22-2014/) and InterDigital (http://globenewswire.com/news-release/2014/05/22/638493/10082874/en/China-s-NDRC-Accepts-InterDigital-s-Commitments-and-Suspends-Its-Investigation.html).

102 US FTC File No. 121-0081. FTC case materials available at: http://www.ftc.gov/enforcement/cases-proceedings/1210081/bosch-robert-bosch-gmbh.

to tend to create a monopoly in the market for air conditioning recovery, recycling, and recharging (ACRRR) systems used for the repair of motor vehicle air conditioning (MVAC) systems in the United States.[103] Separately, the complaint alleged that, before the merger, SPX had reneged on its FRAND commitment to license its SEPs relating to ACRRRs by seeking injunctions against willing licensees of those SEPs. The FTC found that this conduct constituted "an unfair method of competition" in violation of Section 5 of the FTC Act.

102. Under a settlement announced in April 2013, Bosch agreed to divest its automotive air conditioner repair equipment business. It also agreed to abandon the claims for injunctive relief relating to the SEPs it acquired from SPX, and to make those SEPs available to implementers of the relevant standards on royalty free terms. Under the settlement, Bosch is permitted to seek injunctive relief in respect of the SPX SEPs "if and only if" 1) a court determines that the SEP is being used for a purpose other than to comply with the relevant standards; or, 2) a third party states in writing that it will not license the SEP, or refuses to comply with terms determined through a process agreed upon by both parties or through a court.[104]

103. In a statement accompanying the complaint, the FTC stated that "[b]y threatening to exclude standard-compliant products from the marketplace, a SEP holder can demand and realise royalty payments that reflect the investments firms make to develop and implement the standard, rather than the economic value of the technology itself. This can harm incentives to develop standard-compliant products. The threat of an injunction can also lead to excessive royalties that can be passed along to consumers in the form of higher prices."[105] It further warned that "[p]atent holders that seek injunctive relief against willing licensees of their FRAND-encumbered SEPs should understand that in appropriate cases the Commission can and will challenge this conduct as an unfair method of competition under Section 5 of the FTC Act."[106]

104. At the same time, the FTC acknowledged that it had no reason to believe, in this case, that the conduct represented monopolisation under the Sherman Act. It noted that "[v]iolations of Section 5 that are not also violations of the antitrust laws do not support valid federal antitrust claims for treble damages", and "[t]here is also no private right of action under Section 5".[107] These statements were expanded on in the Google case described below.

105. FTC Commissioner Maureen K. Ohlhausen dissented in this case, noting that "[m]ere breaches of FRAND commitments, including potentially the seeking of injunctions if proscribed by SSO rules, are better addressed by the relevant SSOs or by the affected parties via contract and/or patent claims resolved by the courts or through arbitration."[108] Addressing Commissioner Ohlhausen's criticisms, the FTC's statement notes that "the fact that both the federal courts and the ITC have the authority to deny injunctive relief where the SEP holder has broken its FRAND commitment does not mean that this conduct is not itself a violation of Section 5 or within our reach."[109]

5.3.2 Google (US FTC)

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103 While the case does not relate specifically to the ICT sector, it is worth examining as it provides useful context on the US FTC's policy approach in this area.

104 http://www.ftc.gov/sites/default/files/documents/cases/2013/04/130424robertboschdo.pdf.

105 http://www.ftc.gov/sites/default/files/documents/cases/2013/04/121126boschcommissionstatement.pdf.

106 *Ibid*.

107 *Ibid*.

108 http://www.ftc.gov/sites/default/files/documents/cases/2012/11/121126boschohlhausenstatement.pdf.

109 http://www.ftc.gov/sites/default/files/documents/cases/2013/04/121126boschcommissionstatement.pdf.

106. In July 2013, the FTC issued its final complaint against Google (and its predecessor Motorola Mobility Inc., MMI, from whom it had acquired a substantial patent portfolio in 2012) alleging that Google had engaged in "unfair methods of competition" by seeking injunctions against willing licensees of its FRAND- encumbered SEPs relating to smartphones, tablet computers, and video game systems.[110]

107. The complaint states that "Google's conduct will harm consumers by either excluding products from the market entirely as a result of an injunction, or by leading to higher prices because manufacturers using Google's SEPs would be forced, by the threat of an injunction, to pay higher royalty rates which would be passed on to consumers. This conduct will deter innovation by increasing the costs of manufacturing to a standard and undermining the integrity and value of the standard-setting process."[111]

108. In its settlement with the FTC, Google is generally prohibited from seeking injunctions against a willing licensee, either in federal court or at the ITC. As in Bosch, Google retains the right to seek injunctions in certain limited circumstances, such as where the licensee 1) is outside the jurisdiction of the US District Courts; 2) has stated in writing or sworn testimony that it will not agree to a license; 3) refuses to comply with terms determined by binding arbitration or a final ruling of a court; or, 4) does not respond to Google's offer to enter binding arbitration.[112]

109. As in Bosch, the FTC noted in its statement that Google's conduct did not also fall under the *Sherman Act*. Expanding on earlier statements made in Bosch, the statement notes that "a stand-alone Section 5 unfair methods of competition claim allows the Commission to protect consumers and the standard-setting process while minimising the often burdensome combination of class actions and treble damages associated with private antitrust enforcement. In a society that all of us recognise is overly litigious, the judicious use of Section 5 is a sensible and practical way for the Commission to bring problematic conduct to a halt."[113]

110. Commissioner Ohlhausen dissented, noting among other things that the FTC's enforcement action against the seeking of injunctions may violate the First Amendment 'right to petition' and the related *Noerr-Pennington* doctrine.[114] In addressing Ohlhausen's criticisms, the FTC statement notes "we have reason to believe that MMI willingly gave up its right to seek injunctive relief when it made the FRAND commitments at issue in this case. We do not believe that imposing Section 5 liability where a SEP holder violates its FRAND commitments offends the First Amendment because doing so in such circumstances "simply requires those making promises to keep them.""[115]

5.3.3 Motorola (EC)

111. In April 2014, the European Commission announced that it had adopted a decision finding that Motorola's seeking and enforcement of an injunction against Apple before a German court on the basis of

110 US FTC File No. 121-0120. FTC case materials available at: http://www.ftc.gov/enforcement/cases-proceedings/1210120/motorola-mobility-llc-google-inc-matter.

111 http://www.ftc.gov/sites/default/files/documents/cases/2013/07/130724googlemotorolacmpt.pdf.

112 http://www.ftc.gov/sites/default/files/documents/cases/2013/07/130724googlemotorolado.pdf.

113 http://www.ftc.gov/sites/default/files/documents/cases/2013/01/130103googlemotorolastmtofcomm.pdf.

114 http://www.ftc.gov/sites/default/files/documents/cases/2013/01/130103googlemotorolaohlhausenstmt.pdf.

115 http://www.ftc.gov/sites/default/files/documents/cases/2013/01/130103googlemotorolastmtofcomm.pdf. (citing "Powertech Technology, Inc. v. Tessera, Inc., 2012 U.S. Dist. LEXIS 70630, *17-18 (N.D. Cal. May 21, 2012) (holding that when the patent holder had contracted away its rights to bring claims before the United States International Trade Commission, a challenge to a breach of that commitment was not barred by Noerr)" and "Cohen v. Cowles Media Co., 501 U.S. 663, 670-71 (1991).").

a FRAND-encumbered SEP for smartphones constituted an abuse of a dominant position "in view of the particular circumstances in which the injunction was used."[116] In particular, the decision found that "Apple was not unwilling to enter into a licence agreement on FRAND terms and conditions for the use of Motorola's telecommunication SEPs in Germany."[117] Key to this determination regarding Apple's 'willingness' was the fact that Apple had agreed to take a licence and be bound by a determination of the FRAND royalties by the relevant German court.

112. The Commission noted that its decision "clarifies that it is anti-competitive to use injunctions in relation to SEPs in the following circumstances: when in a standardisation context, a SEP holder has committed to license the SEP on FRAND terms and the licensee is willing to take a licence on such terms. In these circumstances, the seeking of injunctions can distort licensing negotiations and lead to licensing terms with a negative impact on consumer choice and prices."[118] The Commission further noted that the decision "provides a "safe harbour" for standard implementers who are willing to take a licence on FRAND terms. If they want to be safe from injunctions based on SEPs by the patent holder, they can demonstrate that they are a willing licensee by agreeing that a court or a mutually agreed arbitrator adjudicates the FRAND terms".[119]

113. Beyond the question of willingness, the Commission's decision also acknowledges that an injunction in respect of FRAND-encumbered SEPs may be appropriate where the potential licensee: 1) is in financial distress and unable to pay its debts; or, 2) is located in jurisdictions that do not provide for adequate means of enforcement of damages.[120] Neither circumstance was found to be applicable in the instant case.

114. Regarding remedies, Motorola's conduct had already ended in May 2012 when Motorola declared the relevant injunction proceedings in the German court to be moot. Nevertheless, the Commission considered that it had a legitimate interest to adopt a decision finding infringement in light of several factors including the multitude of on-going disputes over FRAND-encumbered SEPs between industry players; the fact that national courts dealing with this issue had arrived at substantively different outcomes; and, the fact that the likely anti-competitive effects of Motorola's conduct persist.[121] Notably, however, the Commission decided not to impose a fine on Motorola "in view of the fact that there is no case-law by the European Union Courts dealing with the legality under Article 102 TFEU of SEP-based injunctions and that national courts have so far reached diverging conclusions on this question."[122]

5.3.4 Samsung (EC)

115. In December 2012, the European Commission sent a Statement of Objections to Samsung, informing Samsung of its preliminary view that Samsung's seeking of injunctions against Apple in various

116 http://europa.eu/rapid/press-release_IP-14-489_en.htm.

117 European Commission Motorola Decision, para 433 http://ec.europa.eu/competition/antitrust/cases/dec_docs/39985/39985_928_16.pdf.

118 http://europa.eu/rapid/press-release_MEMO-14-322_en.htm.

119 *Ibid*.

120 European Commission Motorola Decision, para 427, http://ec.europa.eu/competition/antitrust/cases/dec_docs/39985/39985_928_16.pdf.

121 European Motorola Decision, paras 553-556, http://ec.europa.eu/competition/antitrust/cases/dec_docs/39985/39985_928_16.pdf.

122 http://europa.eu/rapid/press-release_IP-14-489_en.htm.

Member States on the basis of its FRAND-encumbered mobile phone SEPs amounted to an abuse of a dominant position.[123]

116. On the same day that it issued its decision in the Motorola matter (above), the Commission announced that it had accepted binding commitments from Samsung, resolving its competition concerns.[124] In particular, Samsung agreed that it would not seek injunctions in Europe in respect of its FRAND-encumbered smartphone and tablet SEPs against licensees who sign up to a "specified licensing framework".[125] In particular, the license framework provides for: 1) a negotiation period of up to 12 months; and 2) if no agreement is reached, a third party determination of FRAND terms by a court if either party chooses, or by an arbitrator if both parties agree.[126]

117. In its announcement of the commitments, the Commission noted that "Samsung's commitments implement in this case the "safe harbour" concept established in the Motorola decision in practical terms. They provide for a "safe harbour" available to all potential licensees of the relevant Samsung SEPs. Potential licensees are protected against injunctions sought by Samsung on the basis of such SEPs if they submit to the licensing framework provided for by the commitments."[127]

118. In light of the commitments, the Commission did not have to reach a conclusion on whether EU antitrust rules had actually been infringed.

Key questions for consideration

- Can patent holders seek injunctions to enforce their IP rights in your jurisdiction? If so, what is the legal test? Do the courts consider equity factors, public interest arguments, or defences under antitrust law? Does the test differ in the case of FRAND-encumbered SEPs, or are certain factors given more weight? Are there any relevant cases?
- Can competition authorities participate in injunction proceedings before the courts (e.g., by providing amicus briefs)? Are there any relevant cases?
- Can competition authorities apply antitrust law in cases where firms seek injunctions in respect of FRAND-encumbered SEPs? What provisions might apply (abuse of dominance, unfair methods of competition, etc.)? What remedies/sanctions might apply? Are there any relevant cases?
- How does antitrust enforcement in this area interact with private litigation in the courts? Have parties raised concerns that antitrust enforcement violates their right to access the courts? If so, how have these concerns been addressed/responded to? Are there any relevant cases?
- Have competition authorities or courts in your jurisdiction provided guidance on when a prospective licensee may or may not be considered a "willing licensee"? If so, please describe.

123 http://europa.eu/rapid/press-release_IP-12-1448_en.htm.

124 http://europa.eu/rapid/press-release_IP-14-490_en.htm?locale=en.

125 *Ibid*.

126 *Ibid*.

127 http://europa.eu/rapid/press-release_MEMO-14-322_en.htm.

6. Alternatives to FRAND commitments

119. The sections above have summarised some of the challenges associated with interpreting FRAND commitments. We could therefore consider whether there are better or more workable ways of avoiding hold-up issues in the context of SEPs such as:

- Supplementing FRAND commitments with an explicit commitment to resolve disputes through binding arbitration, if necessary;
- Replacing FRAND commitments with royalty free or non-assertion-type commitments; and
- Replacing upfront commitments with actual *ex ante* licensing negotiations.

6.1 Binding arbitration

120. Lemley and Shapiro (2013) and a number of current and former agency officials in the US and EU, have suggested that SSOs could improve their IPR policies by supplementing the FRAND commitment with a commitment to resolve licensing disputes, if necessary, by way of binding arbitration or some other low cost alternative to litigation, prior to seeking injunctive relief.[128] This, it is hoped, would deal with some of the issues that can arise from injunction threats, while also providing a faster and lower cost method of settling FRAND licensing disputes with willing licensees.

121. Lemley and Shapiro (2013) suggest that binding arbitration could take the form of final offer (also known as "baseball style") arbitration. In case a licensee and SEP holder could not agree on terms, they would submit a final royalty offer to an arbitrator, along with supporting evidence and argument, and the arbitrator would pick the one that she considered most reasonable. The authors argue that "using baseball-style arbitration logically drives the parties towards making reasonable proposals, because the party that asks for too much (or offers too little) risks losing the case altogether." The authors also suggest that the SSO's policy could stipulate that the outcome of any arbitration decision would be disclosed to other willing licensees, in order to facilitate the non-discrimination component of FRAND, and eliminate the need for redundant disputes in cases where a rate has already been set for another similarly situated licensee.

122. Larouche *et al*. (2014) take issue with this proposal, however, arguing both against the underlying premise that FRAND is not working well, and against the view that binding arbitration would be an improvement from the *status quo*. They argue that the approach advanced by Lemley and Shapiro (2013) would lead to fewer negotiated outcomes (resulting in increased costs and delays as parties opt for arbitration-driven outcomes), and would generally undercompensate patent holders.

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128 See Remarks of Joseph F. Wayland, Acting Assistant Attorney General Antitrust Division, US DOJ (Sept 21, 2012), 'Antitrust Policy in the Information Age: Protecting Innovation and Competition', available at www.justice.gov/atr/public/speeches/287215.pdf ("The division has recommended that standards bodies consider…Placing some limitations on the right to exclude a willing and able licensees (sic) by, for example, requiring a commitment that a RAND-encumbered patent declared essential to a standard may be used to exclude only after litigation/arbitration of disputed issues is concluded"); and Kühn *et al*. (2013) ("A F/RAND commitment should include a process that is faster and lower cost for determining a F/RAND rate, or adjudicating disputes over F/RAND, than litigation…The types of solutions we have in mind, without meaning to suggest that any one is the right solution in any particular instance, include arbitration and alternative dispute resolution within the SSO.").

6.2 Royalty free or non-assertion commitments

123. Some standard-setting bodies have IPR policies that require a stricter commitment to license SEPs on a "royalty free" (i.e., free of charge) basis.[129] Such a commitment does not necessarily preclude the SEP holder from seeking reasonable non-price terms and conditions from standards implementers, and therefore is sometimes referred to as a RAND-RF or RAND-zero commitment.[130] Another approach, although less common, is for the SSO to seek "non-assertion" commitments. Non-assertion commitments preclude the SEP holder from asserting their patents against any implementer using their technology in the context of the standard.[131]

124. The benefit of royalty free or non-assertion commitments is that they avoid the ambiguity of FRAND and therefore the potential for costly disputes and threats that lead to hold-up. They also ensure that technologies essential for standards are available to implementers at the lowest possible cost, encouraging widespread adoption of the standard. The cost of this form of IPR policy, however, is that it may significantly under-reward holders of valuable SEPs and therefore discourage innovation and/or participation in standard-setting activities.[132] [133]

6.3 Ex Ante licensing negotiation

125. Another alternative to FRAND commitments is to promote discussions on royalty terms before the standard is set. This would enable SSOs to consider price as a factor, along with technological merit, when discussing whether to include a particular SEP in a standard, or whether to design around it (assuming there are competing alternatives) or, in the extreme, abandon the standard-setting process altogether. The *ex ante* negotiation could be achieved by way of full-fledged collective bargaining between SEP holders and the SSO members that are also prospective licensees[134]; or, in a less extreme way, by requiring the prospective SEP holder to disclose to the SSO the most restrictive terms that it would include in a FRAND licence.[135]

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129 A notable example is the World Wide Web Consortium (W3C). See http://www.w3.org/Consortium/Patent/. For a brief discussion of why royalty free policies are well suited to Web standards, see Bekkers and Updegrove (2012).

130 ITU (2014).

131 *Ibid*.

132 See US Department of Justice and US Patent and Trademark Office Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments (Jan 8, 2013), available at: http://www.uspto.gov/about/offices/ogc/Final_DOJ-PTO_Policy_Statement_on_FRAND_SEPs_1-8-13.pdf ("…the United States continues to encourage systems that support voluntary F/RAND licensing—both domestically and abroad—rather than the imposition of one-size-fits-all mandates for royalty-free or below-market licensing, which would undermine the effectiveness of the standardisation process and incentives for innovation.")

133 In recognition of this risk, Rysman and Simcoe (2011) propose a hybrid of RAND and non-assertion, whereby vendors would commit not to assert their patent after some pre-specified time, but would be free to collect royalties as they wish up until that point.

134 See OECD (2010). See also, Contreras (2013) (proposing a methodology for how a joint *ex ante* negotiation could work in practice).

135 For example, see Lemley (2007) (Recommending that patentees specify the content of their RAND licenses *ex ante*, and that competition agencies provide SSOs the latitude to do so)

126. Critics argue that these approaches would be costly, impractical[136], could lead to antitrust issues[137], and could lead to a form of "reverse hold-up" where IP holders are inadequately compensated for their R&D investment (discouraging innovation and participation in standard-setting activities).[138] Competition authorities in both the US[139] and EU[140], however, have made statements suggesting a more lenient enforcement policy in light of the benefits that *ex ante* negotiations can deliver. The US DOJ in particular has issued business review letters on two separate occasions stating that it did not intend to take enforcement action in respect of IPR policies mandating or allowing upfront disclosures of most restrictive licensing terms.[141]

Key questions for consideration

- Is there evidence that FRAND licensing commitments are, or are not, working well as a means of avoiding hold-up issues? Are there any refinements or supplementary conditions that should be added to FRAND to improve its use, such as an explicit commitment to resolve disputes through binding arbitration, if necessary? Have competition authorities in your jurisdiction included such commitments in settlements/remedies to address antitrust concerns?
- Should there be greater use of Royalty Free or Non-Assert IPR policies within SSOs?
- How should competition law apply to *ex ante* licensing negotiations within SSOs? Should such activities be promoted, or at least not actively discouraged, by competition policy?
- Are there any other useful proposals that would improve on existing IPR policies within SSOs? If your competition agency has engaged with SSOs, patent offices, or industry players on potential reforms, please describe your experience.

136 Lemley and Shapiro (2013) ("Actual *ex ante* negotiations are often difficult or infeasible, in part because not all of the parties with an interest in deploying a standard belong to the SSO."). See also DoJ-FTC (2007) noting panellists concerns that *ex ante* negotiation could lead to "administrative costs and delays" in the standard-setting process and would change the way firms participate in SSOs by requiring them to send lawyers and business and marketing personnel to meetings in addition to technical staff.

137 For a summary of such concerns, see DOJ-FTC (2007) and Sidak (2009).

138 Gilbert (2011) ("Joint negotiation raises concerns that members of a SSO may engage in a different type of holdup. In particular, joint negotiation may create opportunities for potential licensees to exercise buyer market power and suppress royalty terms *ex ante*, but after rights holders have made irreversible research and development investments necessary to create and patent technologies that are essential to a standard" [footnotes omitted]).

139 See DoJ-FTC (2007). While not taking a position on whether SSOs should promote or engage in joint negotiations, the US agencies take the position that "[b]ecause of the strong potential for procompetitive benefits, the Agencies will evaluate joint *ex ante* activity to establish licensing terms under the rule of reason [rather than the rule of *per se*]".

140 See 'EU Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements' ("…should a standard-setting organisation's IPR policy choose to provide for IPR holders to individually disclose their most restrictive licensing terms, including the maximum royalty rates they would charge, prior to the adoption of the standard, this will normally not lead to a restriction of competition within the meaning of Article 101(1). Such unilateral *ex ante* disclosures of most restrictive licensing terms would be one way to enable the standard-setting organisation to take an informed decision based on the disadvantages and advantages of different alternative technologies, not only from a technical perspective but also from a pricing perspective" [footnote omitted]).

141 See letters from Thomas Barnett, Assistant Attorney General, US DOJ to VITA and its standards development subcommittee, VITA Standards Organization (VSO), 30 October 2006, available at http://www.justice.gov/atr/public/busreview/219380.htm, and to IEEE and its standards association, IEEE-SA, 30 April 2007, available at http://www.justice.gov/atr/public/busreview/222978.htm.

7. Concluding remarks

127. This paper analyses issues that may arise from standard-essential patents, FRAND licensing commitments and the use of injunctions. While many of the underlying concepts in this paper (e.g., "hold-up", the meaning of "reasonable", the availability of injunctive relief) are not new, their application in the competition law context in the ICT sector is relatively recent. Indeed, a majority of the cases and articles cited in this paper are less than 2 - 3 years old. Thinking on these issues will no doubt evolve as case experience grows, as more jurisdictions wrestle with these issues, and as the patent and standard-setting process itself evolves.

128. A number of points have emerged from this paper:

- Standards are important in the ICT sector given the complementary and cumulative nature of innovation and the need for products to be interoperable.

- Standards seek to incorporate the best technologies available, which are sometimes covered by patents. Although competing technologies may exist when a standard is being developed, after a standard is set, holders of SEPs may acquire market power because it is costly to switch to alternatives. This can lead to a problem known as hold-up.

- SSOs try to mitigate the risk of hold-up by requiring members to disclose/declare their SEPs up front and commit to licensing those SEPs on royalty free or FRAND terms in the event that they are incorporated into the standard. This avoids the need to discuss or negotiate licensing terms during the standard-setting process (i.e., *ex ante*), which may be viewed as complex or impractical for various reasons.

- Ambiguity over what constitutes FRAND terms can sometimes lead to disputes between SEP holders and prospective licensees. While there is currently no generally accepted methodology for determining FRAND rates, certain principles have emerged in recent court decisions and in the academic literature. There is also a question about whether antitrust law can/should apply to FRAND disputes, with some agencies deferring such matters to the courts, while others have taken a more active role.

- While injunctions are normally a legitimate remedy for patent infringement, there is a question of whether such remedies should be available in respect of FRAND-encumbered SEPs when an implementer of a standard is able and willing to accept a licence on FRAND terms. Courts in different jurisdictions have different injunction and contract law standards and have approached this issue in different ways.

- Some competition authorities have found that the seeking and/or enforcement of injunctions in respect of FRAND-encumbered SEPs, against willing licensees, has amounted to an abuse of dominance or other antitrust violation, and have imposed/accepted remedies to address such concerns. However, some commentators have expressed the view that antitrust enforcement action in this area violates the fundamental right of parties to access the courts.

- Challenges associated with FRAND commitments have led some to question whether there are better or more workable ways of avoiding hold-up issues in the context of SEPs. Various proposals have been advanced, but each has its own drawbacks and so far none has been implemented widely.

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