

technologies which merit inclusion in the pool. The pool covers over 120 “Essential Patents” and many more “Related Patents”.

110 Although many jurisdictions recognize that patent pools can have pro-competitive effects, there are also concerns that they might have negative effects. For example, patent pooling agreements could include concerted pricing practices or contain grant back provisions, to the effect that licensees would have to grant licenses to the pool on patents derived from the pools patents.

(b) Standards

(i) The Need for Standards

111 Interoperability is the key to the interplay of different technological components, in particular in, but not limited to, the field of information and communication technologies (ICT). More and more products need to be compatible and to interoperate, and this is often achieved by so-called technical standards, which are technical specifications allowing the replacement of one part of a given product with another part, or the assembly of such parts. Standards reduce transaction costs by providing uniform technical platforms and economies of scale for all the companies involved in a particular technical field. Standards create predictability, interoperability and competition between implementations, without imposing homogeneity. In sum, standards are considered vital to wide adoption of new technologies in the market place, in particular in the field of electronics and telecommunication.

112 A vast majority of products currently on the market were developed in compliance with one or more standards. Beyond ensuring interoperability, standards can also contain information about the quality, safety, reliability or a product’s effects on the environment.

113 Generally speaking, there are two categories of technical standards: *de facto* standards and *de jure* (or “formal”) standards. A *de facto* standard exists when a particular technology is widely implemented and deployed in the market. *De jure* standards are set up by standard setting organizations, which are often under some governmental influence. The standard setting organizations may be international (for example, the International Organization for Standardization (ISO)), regional (for example, the European Telecommunications Standards Institute (ETSI) and the African Organization for Standardization (ARSO)), or national (for example, the American National Standards Institute (ANSI)). These organizations are independent and coordinate and facilitate a voluntary standard-setting process through the involvement of technology suppliers. In certain cases, companies form a consortium to establish technical standards in a particular field, mainly in the telecommunication and computer technologies. The Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C) are major international standard setting organization for the Internet and the world-wide-web.

114 Implementation of standards is, in general, voluntary and market-driven, save exceptional cases such as public safety and health.

(ii) The Relationship between Patents and Standards

115 Patents and standards serve common objectives, insofar as they both encourage investment in innovation as well as the diffusion of technology. Filing a patent application allows technology producers to disclose their achievements openly and early. Patent

protection works as an incentive for companies to contribute their technologies to standardization and allows licensing to implementers. In the framework of a standardization procedure, technical specifications, frequently incorporating patented technology, can be disclosed early for the benefit of industry and of the public. In the absence of such a possibility, technology producers may well opt for keeping their developments secret or for disclosing just the minimum required by the standardization procedure.

116 At the same time, inherent tensions exist between patents and standards, which become apparent when the implementation of a standard calls for the use of technology covered by one or more patents. Indeed, on the one hand, the objective of a standard setting organization (SSO), which in many cases consists of companies interested in the development of the technology in question, is to establish standardized technology that can be used as widely as possible in the market. On the other hand, patent owners in the relevant area may have an interest in the adoption, in the standard, of their own patented technology in order to benefit, at a later stage, from royalties.

117 In order to balance these competing interests, many SSOs have established patent policies that encourage the parties involved in the standard-setting process to disclose, to other members of the SSO, the existence of any relevant patents (and, sometimes, also patent applications) on technologies essential for the implementation of the technical standard under consideration, so that this fact can be taken into account during the standard setting process. In addition, SSOs typically require the patentee to agree to license the patented technology on reasonable and non-discriminatory (RAND) terms. If the patentee does not agree with such condition, the standard under consideration may not be adopted, and the SSO may decide to further review the standard. Some SSOs, for example W3C, have adopted a royalty free (RF) licensing policy, according to which patent holders are required to enter into reciprocal RF licenses. In other words, the patent holder makes his technology available royalty free provided that the licensee makes his patented technology, which is necessary to implement the standard, on the same RF condition. Even when they are royalty free, SSOs' IPR policies typically provide for other reasonable and non discriminatory conditions, such as field of use, reciprocity or restrictions on sublicensing.

(iii) Main Issues under Discussion

118 In recent years, the relationship between patent rights and standards has been increasingly debated. This is due, *inter alia*, to factors such as the greater attention given by companies to patents as important intangible assets, the rising number of standards that involve patented technologies (this being the case at least in certain specific technologies, such as ICTs) and issues relating to the perceived consequences of patents on the development and implementation of standards for consumers, competitors and society in general.

119 From a policy standpoint, the most essential objective appears to be, while keeping in mind the encouragement of innovation, to strike a balance between the interest of patent holders in exploiting their patents, the producers who want to license and produce the goods covered by the standard at a reasonable price, and the public which seeks the widest possible choice among interoperable products. Some of the main concerns that have been put forward as possibly threatening this balance are: firstly, the possibility that a patent owner may conceal (or at least not adequately disclose) existing or pending essential patent rights during the process of adopting a standard, and disclose the rights only after such adoption (also called patent ambush), thus potentially allowing the patent holder to block the implementation

of the standard.³⁹ Secondly, some competition issues are at the heart of the debate, such as the situation where the patent holder requires a level of royalties that makes it very difficult to produce the standard or leads to a significant impact on the price of the standardized technology;⁴⁰ perhaps to a lesser extent, there is the issue that possible price agreements during the standardization process have the potential for excluding third parties from that process. The patent policies adopted by many SSOs aim precisely at minimizing the risk of such conflicts and at assuring the smooth and wide dissemination of standardized technologies.

120 With the growing importance of standards, several avenues are being pursued to prevent conflicts from arising: one is to improve the self-regulatory mechanisms of SSOs, i.e., their patent policies, including considering patent searches, further encouraging early disclosure of essential patents and patent applications, and finding solutions to the issue of cumulative royalties by introducing criteria and mechanisms such as RAND or FRAND (fair, reasonable and non-discriminatory) criteria in respect of licenses granted by patent holders. A second avenue which is being looked into involves the application of legal mechanisms either internal or external to the patent system. The latter relates, in particular, to competition law that allows addressing certain aspects of the problem, such as abuse of a dominant position in fixing license fees or the violation of a SSO patent policy. However, where a company does not participate in a standard-setting process, or where no dominant position is abused, competition law may not offer a satisfactory solution. The former legislative approach addresses the issues from within the patent system, and may cover options such as limited exceptions, compulsory licensing or limitations on the enforcement of the patent rights. The advantage of those solutions is that they are universal, and also apply to non-members of a standard-setting process. Opponents to a legislative approach argue, however, that interfering too much in the standard-setting process via legislative measures would stifle this mainly industry-driven process and prevent the adoption of the optimal technologies in a standard.

(iv) Open Standards

121 Among technology standards, there is particular interest for “open standards”. While there is no universally accepted definition of that term, all open standards have the following common characteristics: (i) the specification is publicly available without cost or for a reasonable fee to any interested party; (ii) any IP rights necessary to implement the standard are available to all implementers on RAND terms, either with or without payment of a reasonable royalty or fee; and (iii) the specification should be in sufficient detail to enable a complete understanding of its scope and purpose and to enable competing implementations by multiple vendors. Some define open standards as publicly available technical specifications that have been established in a voluntary, consensus-driven, transparent and open process, others appear to add to this definition the requirement that an open standard has to be available royalty-free. The defenders of the first definition favor patent policies on a RAND basis, which they believe to maximize flexibility through a commitment to license combined with the right of patent holders to receive reasonable and adequate compensation for their sharing of their technology, and trust in the co-existence of this model and a royalty-free

³⁹ For example, a San Diego federal court ruled in August 2007 that Qualcomm had engaged in standards abuse and aggravated litigation misconduct for deliberately concealing two patents as a committee developed the H.264 video standard. Qualcomm declared it would appeal the decision.

⁴⁰ In January 2008, the U.S. Federal Trade Commission has settled a complaint against Negotiated Data Solutions, a company that owns patents to a widely used Ethernet standard, saying the patent owner was attempting to collect huge license fees despite a prior commitment to the contrary (see <http://www.ftc.gov/os/caselist/0510094/index.shtm>).

model. They also question how, in a royalty-free environment, investments in research and development could be maintained in the long run and how a broad participation in standard-setting processes could be maintained. On the other hand, the advocates of the latter approach are convinced that society as a whole would benefit from the open and royalty-free access to standards, as it is the case, for example, in the Internet context, which had been established precisely in order to allow the free publication and retrieval of information from the web. According to them, this model would best ensure interoperability, greater innovation and consumer welfare. In addition, they argue that, even where a royalty-free policy is adopted, the benefit of standardization may outweigh the loss of royalty income in certain technologies, simply through greater quantities of a certain product being sold.

122 In this context, the notion of “open source” is often mentioned, but it should not be confused with open standards. While open standards are technical specifications developed in transparent and open processes and are available for implementation on reasonable and non discriminatory terms, but not necessarily royalty free, “open source” rather refers to a software distribution model based on an IPR, mainly copyright. Generally speaking, open-source software refers to software for which the source code (underlying programming code) is made freely available for use, reading the code, changing it or developing further versions of the software, including adding amendments to it (see sub-Chapter (c)(i) below for further details regarding open source). While open source software has been used to implement some ICT standards, other standards are implemented through proprietary software or, as is increasingly the case, through the use of mixed platforms that combine both open source and proprietary software. When governments and other users are in the process of selecting a specific technology to meet their needs for interoperability and/or free use of that technology, in addition to the open or proprietary nature of any software involved, factors such as overall costs, the maturity of the technology, and the support offered, should be taken into account.

(c) Collaborative Research Projects

123 In a more and more complex world, research has not only become more international, but it has become dependent on a broad range of different - and often newly emerging - technologies, on increased cooperation between various research teams and on sufficient funding to face the exponential rise of costs over the past years. Business strategies today therefore need to be supporting global competitiveness, innovation and rapid market responsiveness. These factors have contributed, since the early 1980s, to the development of various initiatives in different areas of technology (e.g. computer sciences; mobile communication technologies; biotechnologies or, perhaps more importantly, public health) to address research in a more collective way at different levels, with the objective of establishing excellence in research projects and networks able to attract researchers and investments from many countries and industries, raise sufficient funding for such R&D and to turn the fruits of that research into concrete and useful products for society.

124 In this context, the argument is made by the advocates of the patent system that it offers an adequate incentive structure to foster innovation, as it uses the private sector with its financial and expert resources to achieve public policy objectives, has built an enormous source of technical knowledge that is freely available for further research and can be used for various other purposes. It is further argued that the patent system, where it is considered not to be appropriate for certain countries or situations, contains a number of flexibilities that can be used, in particular, research exemptions and compulsory licenses. Others have voiced disagreement with this approach, as the patent system may stand in the way of the