US $1,00 per product, whichever is higher. Besides, the DVD joint Patent Licence requires licensees to grant each of the licensing companies of DVD6C, as well as their licensees, a non-exclusive licence on fair, reasonable and non-discriminatory terms to use any of their patents that are deemed essential for the manufacture, use or sale of DVD Products. This grant-back is restricted only to those DVD products actually licensed to the licensee.

B. Discussed Patent Pools' Examples

I. The Debated Case of Software: The "Open Innovation Network" Initiative

1. Targeting Collective Free "Open Source" Access to Software Patents

Leaving aside for the moment the most targeted branches of the telecommunication industries,[129] we should now say a few words about the issue of patent pools that include software technology, which surely represents a much-debated subject when it comes to IP protection.[130] Confronted with this new prospective scenario, an argument of Bruce Perens, the well-known leader of the Free Software and Open Source community, in favour of Linux having a patent pool is that it would in fact be "a means of defence".[131] Indeed, the basic idea behind the platform "OpenPatents.org", which was consequently constituted, is to change the rules of the patent game and to help solve the problems of mutual blocking of software patents to the benefit of the participants.[132] The resulting Open Patent License can in effect be defined as a cooperative community convening around a reciprocal non-aggression pact, whose features can be further specified as follows: the participating parties may consent to be mutually non-confrontational with respect to: (1) only a specific set of patents; (2) all their software patents; or (3) all their patents. Besides, the concluded agreement would require that companies wishing to obtain the full advantag-

129 For an overview on patent pools for the telecommunication sectors, see: Aoki R. *et al.*, "Coalition Formation for a Consortium Standard through a Standard Body and a Patent Pool: Theory and Evidence from MPEG2, DVD and 3G", Institute of Innovation Research Working Paper, 2005.

130 For a study on the merits of IP protection for software, see i.a.: Lehmann M., "Protecting Software? The Benefit of Exclusive Rights in Intellectual Property" In: Publikationen des Europäischen Patentamts (EPA), 2006, p. 1 *et seq.* For a wider perspective, including a comprehensive examination of the EC Council Directive on the Legal Protection of Computer Programs, see also: Lehmann M. and Tapper C., "A Handbook of European Software Law", Oxford University Press, 1993.

131 For the official website, see: http://www.openpatents.org

132 For an investigation on the debated merits of software patents, see i.a.: Hilty R. and Geiger C., "Patenting Software? A Judicial and Socio-Economic Analysis", In: IIC, 2005, vol. 6, p. 615 *et seq.*

es of the pooled contributions with respect to software patents do not attempt to make an end-run around the license by using forms of IP other than patents that would restrict the re-implementations of works. These would include intellectual property rights, for instance, such as "look and feel" copyrights and restrictions on reverse engineering.

a. From Linux-Based Cooperative Research Paradigms

Pursuing the same popular widespread philosophy of ensuring free "open source" access to software patents - while opposing antithetical "proprietary" approaches[133] - and in order to promote the continued growth of Linux and related software, IBM, Novell, Philips, Red Hat and Sony announced the establishment of a new collaborative undertaking in November 2005, which they symbolically called "Open Invention Network" (OIN),[134] based in New York City and headed by Mr. Rosenthal, formerly vice president of IBM's Intellectual Property and Licensing Group.

Interestingly, IBM, which has now emerged as an icon-star for staying on top of the open innovation bandwagon, was not always a quite "open" company, but used to be a rather traditional and secretive firm, based on a close corporate model and mostly known for producing hardware components.[135] Indeed, its opponents argue that IBM finally became open in markets, like software, where they had fallen behind,[136] profiting from a devoted army of programmers around the world developing open source software at essentially no cost, by relying on their work for incorporating a functional and competitively cheap operating system in IBM computers and, eventually, charging customers for providing support and auxiliary services. On the other hand, in hardware markets, where IBM always had the lead, they were and still are extremely close. Anyway, as far as software is concerned, it is hereby maintained that IBM should at least be given some credit for having seized the potential of a new, more open, business approach and, consequently, invested its managing resources to make it workable. Apparently, the time was then ripe for a change.

133 As notoriously represented, *i.a.*, by the software giant Microsoft.

134 For the official Open Innovation Network (OIN)'s website, see: http://www.openinventionnetwork.com

135 For a critical analysis of IBM's behavior, where it is argued that IBM's embrace of open source software comes not from a new-found ideology, but from its history of pragmatism, see: Campbell-Kelly M., *et al.*, "Pragmatism Not Ideology: IBM's Love Affair with Open Source Software", Working Paper Series, January 2008, available through the Social Science Research network at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1081613

136 Referring to a statement of Kenneth Morse, head of the Massachusetts Institute of Technology (MIT)'s Entrepreneurship Centre, as reported by The Economist in: "The Move Towards Open Innovation is Beginning to Transform Entire Industries", The Economist, Special Report, Oct. 11, 2007, also available at: http://www.economist.com/specialreports/displaystory.cfm?story_id=9928227

b. To Institutionalised Consortia, as Advocated by IBM at the Madrid OECD Conference on the Research Use of Patented Inventions in May 2006

In consideration of the experiences that have been gathered in the meantime, particular attention to the heated issue of software patents was called up anew by Mr. Klett, IP counsel at IBM Research Centre in Zurich, in the course of an OECD Conference on Research Use of Patented Inventions held in May 2006 in Madrid,[137] where "alternative cooperative approaches", as opposed to traditional exclusionary patent practices, were closely scrutinized. Indeed, after stressing the importance of patents to IBM, he actually acknowledged that a more open research paradigm, based on mutual collaboration, is proving to be a viable option and gradually gaining ground, as shown by the increasing popularity and consequent visibility acquired by the open source software community in the latest years.

Nevertheless, informal sharing activities, based on an exchange of communications and relevant information among researchers, might be quite frustrating,[138] shall opposing patent rights be asserted. Even though infringement in early collaborative phases of implementation may still be quite difficult to detect and therefore litigation may eventually be avoided, still the problem encountered is that simple research exemptions cannot always be relied on, as they are not fully harmonized throughout the countries. Accordingly, the solution advocated here rather consists of building solid consortia, more "institutionalised" in their character and far-reaching in their scope, ideally tracking all essential patent holders for the targeted technology at an early stage, while involving them through multiparty cooperation agreements and setting the terms of liabilities of their reciprocal exchange. Such common framework would serve as "stabilizing glue" for binding contributors of innovations together and guiding them during the steps of their collaboration.

Following such paradigm, the "Open Innovation Network" was organized around the acquisition of software patents, mostly related to web services, in order to license them free of charge to others who, in their turn, would agree not to assert their own patents against the community, built around the use of "open source" applications.[139] In practice, IBM's IP policy did not comprise abolishing patent protection,

137 OECD, "Conference on Research Use of Patented Inventions", Madrid, 18-19 May 2006; For all related documents, including summary reports and presentations, refer to: https://www.oecd.org/document/46/0,3343,en_2649_34797_36060462_1_1_1_1,00.html

138 According to Mr. Klett's reported statement, "patents can be frustrating [because] they tell researchers how to do something, but prevent them from doing it", in: OECD, *supra*, fn. 137, p. 13-14, available at: https://www.oecd.org/dataoecd/21/38/37868230.pdf

139 Linux is an open-source operating system that has been created communally by developers around the world. The dispersed nature of Linux, however, means there is no single entity to collect patents and make them generally available. The term "open source" refers to software whose source code - i.e. the human readable code as opposes to the only computer readable binary "object code" - is published and made available to the public under a license that permits users to study, change, and improve the software, and to redistribute it in modified or

but "softening" it by supporting a framework providing a friendlier environment for open collaboration and exchange. On the same line, also IBM's other "Soft IP" initiative should be briefly mentioned here,[140] attempting to promote a smoother patent paradigm based on which the owner is not to be provided with a title to issue an injunction to an infringer, but simply with the right to collect license royalties.

Originally, the term "Open Innovation"[141] was coined by Henry Chesbrough, business professor at the University of California at Berkeley, back in 2003.[142] The central idea behind the fancy name is that in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own corporate R&D lab, but should instead also buy or license processes or inventions (i.e. patents) from others, thus taking part in a constructive dialogue including universities, suppliers and outside inventors.[143] In this perspective, "open innovation" supporters used to describe an environment in which ideas could flow in and out of organizations, depending on where they could be most efficiently handled. The underlying belief endorsed was expressed in the statement that: "If you sit on an idea, you are likely to have it stolen, duplicated or rendered obsolete long before you develop the competences and capabilities needed to unlock its true value"[144]. It is far better, so it was argued, to have external partners to accelerate your innovation processes in return for royalties. Accordingly, internal inventions not being used in a firm's business should be taken outside the company (i.e. through licensing, joint ventures, spin-offs). In contrast, "closed innovation" refers to processes that limit the use of internal knowledge within a company's own internal R&D department and make little or no use of external knowledge.[145]

In the past, in fact, most undertakings operated through the paradigm of "closed innovation". Traditionally, companies tended either to keep their discoveries under

unmodified form. It is often developed in a public, collaborative manner. For more detailed information, see: http://opensource.org; For a thorough analysis on the open source model and ethics, see i.a.: Hope J., "Biobazaar: The Open Source Revolution and Biotechnology", Harvard University Press, 2008; Raymond E., "The Cathedral and the Bazaar", O'Reilly Media, 1999.

140 Sage J., "Soft IP", Presentation at EPO Conference, Brussels, July 5, 2007, available at: http://www.ipjur.com/data/070705Jonathan_Sage.pdf

141 For a thorough study on the concept of "Open Innovation", see i.a.: Hilty R., "Open Innovation in einer Welt mit geistigem Eigentum", In: Picot A. et al., "Innovationsführerschaft durch Open Innovation, Chancen für die Telekommunikations-, IT- und Medienindustrie", Berlin, Springer, 2009, p. 171 *et seq*.

142 Chesbrough H., "Open Innovation", Harvard Business School Press, Boston, 2003.

143 Chesbrough H., "Open Platform Innovation: Creating Value from Internal and External Innovation," Intel Technology Journal, August 2003, vol. 7, 3, p. 5 *et seq*.

144 This was a statement of Andrew Gaule, a leading expert on open innovation, as reported in: Tyrrell P., "The Value of Knowledge: European Firms and the Intellectual Property Challenge", Economist Intelligence Unit White Paper, January 2007, p. 13, also available at: http://graphics.eiu.com/files/ad_pdfs/eiu_EuropeIPR_wp.pdf

145 Chesbrough H., "Open Innovation: A New Paradigm for Understanding Industrial Innovation," in Henry Chesbrough, Wim Vanhaverbeke, and Joel West ed., "Open Innovation: Researching a New Paradigm", Oxford University Press, 2006, p. 1 *et seq*.

trade secret, at least as long as it takes to come up with the next innovation, or to patent them, in order to stay ahead of the competition and to have their own exclusivity secured, thus not being open to assimilate information from outside their own R&D labs. In more recent years, on the contrary, major advances in technology and society have facilitated the diffusion of information and, to a certain extent, the "globalisation" of knowledge. Break-through innovations in the domain of electronic communications, including the Internet, have certainly speeded up this process:[146] nowadays information can be transferred so easily that it seems impossible to prevent.[147] Hence, the "open innovation" model proceeds from a very pragmatic proposition: since firms cannot stop this phenomenon, they should learn to take advantage of it instead.[148]

2. Drawing up a Balance of "Open Innovation" as Alternative Business Models

According to a survey conducted by IBM in 2006 based on interviews with 765 CEOs and business leaders, collaboration can pay off: a financial analysis explains why companies are more eager to create partnerships with other organizations than ever before: firms with higher revenue growth reported using external sources to a significantly higher degree than the slower ones. The most significant sources of innovative ideas came, in the first place, from employees (40%), business partners (37%), customers (34%), consultants (21%), competitors (20%). On the other hand, traditional sources of corporate innovation, such as internal sale and service units and the company's own R&D departments, respectively, accounted for just 17% and 16% of the overall efforts.[149]

Nevertheless, the benefits of the "open innovation" model shall be put into right perspective and, somehow, downsized: in fact, critics have raised the legitimate ob-

146 Dodgson M., *et al.*, "The Role of Technology in the Shift towards Open Innovation: the Case of Procter & Gamble", R&D Management, 2006, vol. 36(3), p. 333 *et seq.*

147 Christensen J., *et al.*, "The Industrial Dynamics of Open Innovation - Evidence from the Transformation of Consumer Electronics", Research Policy, 2005, vol. 34, p. 1533 *et seq.*

148 In his recent book dealing with Open Business Models, Prof. Chesbrough explains how to make money in an Open Innovation landscape: he proposes a diagnostic instrument for assessing a company's current business model, and gives suggestions on how to overcome common barriers to pursue a more open business paradigm, also offering examples of companies that have developed such models - including Procter & Gamble, IBM, and Air Products. For the reference, see: Chesbrough H., "Open Business Models: How to Thrive in the New Innovation Landscape", Boston: Harvard Business School Press, 2006.

149 IBM, "The Global CEO Study 2006", available at: http://www-935.ibm.com/services/au/bcs/html/bcs_ceostudy2006.html, as from Press release: "The Move Towards Open Innovation is Beginning to Transform Entire Industries", The Economist, Special Report, Oct. 11, 2007, also available at: http://www.economist.com/specialreports/displaystory.cfm?story_id=9928227

jection that firms have always been "open" to some degree in order to stay receptive to new market trends.[150] Arguably, the convenience of endorsing a wider "opening" solution with other undertakings greatly varies depending on the line of business adopted. In the specific, capital-intensive industries, such as the pharmaceutical sector, in which consistent time to develop products is required, which thereafter can be sold for years - i.e. are characterized by a long technology-life cycle - would probably benefit less from the open innovation pattern. Ultimately, some scepticism and caution has been called to mind, because the costs of choosing an "open innovation" approach, in management distractions or lost intellectual property rights, has apparently not been nearly as well studied as its putative benefits.[151]

Generally - in industries marked by fast-paced technologies with a shorter product-life cycle, such as for software applications, where traditional patent protections are often inadequate for keeping pace with innovations - where it may prove workable, the open innovation strategy needs some basic conditions to prosper, which I would summarize as follows:

- Coordination - the benefits of an open innovation approach, based on a diversified multitude of contributions coming from internal and external sources, may only be actually achievable if all relevant inputs are properly orchestrated. This may suggest the need for a smart central leadership in order to avoid inconvenient gaps or overlapping endeavours.
- Power of attraction - the chances for success of an open innovation strategy may depend not only on what a firm does, but also, and sometimes even more importantly, on how it is perceived in the market. Big corporations, such as IBM, promoting an open innovation approach, shall be valued mostly for disposing of competent experts to attract knowledgeable outsiders with brilliant ideas. What is needed is a valuable reputation to catalyse crucial contributions that would make the undertaken project workable. This pre-condition may indeed be difficult to fulfil by small, no-name companies, without the right back up for an open innovation enterprise.
- Power of involvement - Still in some way related to the power of attraction requirement, but eventually subsequent to it, is the capacity of a visionary company to cultivate a "network" as a means to bound users, and possible contributors, building a common framework around them, where they may be able to share experiences and expectations. In this way, products and services could be truly customized around customer's needs and evolve accordingly. The open innovation model takes this process even a step further, as here customers are often al-

150 For a comprehensive overview on the "Open Innovation" trend, with a focus on the widespread practices of firms relying on research and development that may lie outside their own boundaries, see i.a.: Chesbrough W. et al., "Open Innovation: Researching a New Paradigm", Oxford University Press, 2006.

151 Dahlander L., Gann D., "How Open is Innovation?", Paper for the DRUID Summer Conference 2007 on Appropriability, Proximity, Routines and Innovation", Copenhagen, June 18 - 20, 2007, available at: http://www2.druid.dk/conferences/viewpaper.php?id=1478&cf=9

so contributors. In this respect, we may well talk of "user-driven innovation", because here the users are not only the end-goal - where innovation is directed - but also its starting point - where innovation is inspired.

Drawing up a general balance, we may observe that, letting aside more or less well-grounded reported criticisms about the effective merits of "open innovation" patterns, these days, alternative collaborative strategies, as coming forth in software environments, are leading to the creation of new open communities, typically organized through cooperative paradigms, which are consequently going to co-exist along with more traditional and exclusionary means of IP protection.[152] As is becoming particularly apparent in software development,[153] new proactive, cooperative IP approaches are increasingly gaining ground and popularity also within other industrial sectors[154] as "alternative business models", aside from more conventional exclusive patent practices, i.e. "proprietary" paradigms.[155] This demonstrates that a centrally planned approach may also be leading to a more open, even arguably anarchic, new model of innovation. These evolving patterns of IP management, based on open collaboration within a common sharing framework, are being consistently nurtured by passionate and dedicated communities of users and innovators and present a big true potential, certainly promising to leave their mark on a new era of technological developments.[156]

152 Burt R. *et al.*, "Intellectual Property Strategy in the 21 Century - Balancing Open & Proprietary Innovation", European Patent Conference (EUPACO) Presentation, Brussels, January 24, 2007, available at: http://www.ipjur.com/data/070124RogerBurt-IBM.pdf

153 For a comprehensive study on the wider debate of IP protection for software, covering the whole spectrum of IP rights, see i.a.: Lehmann M. et al., "Rechtsschutz und Verwertung von Computerprogrammen", ed. O. Schmidt, 1993.

154 Chesbrough H., Crowther A.K., "Beyond High Tech: Early Adopters of Open Innovation in Other Industries", R&D Management, 2006, vol. 36, 3, p. 229 *et seq.*

155 Mr Janez Potočnik, European Commissioner for Science and Research recently affirmed, on the High Level Conference on the European Research Area "The Future of Science & Technology in Europe", Lisbon (Portugal), October 8, 2007: "[...] Increasingly, businesses thrive in an environment of 'open innovation', where connections with each other and with public research institutions are vital to explore ideas and develop products more effectively than would be the case alone. [...]", as reported in: http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/07/609&format=PDF&aged=0&language=EN&guiLanguage=en

156 For favorable views on the open innovation model, see, *i.a.*: Chesbrough H., "Open Business Models: How to Thrive in the New Innovation Landscape", Harvard Business School Press, 2006; Pisano G., "Profiting from Innovation and the Intellectual Property Revolution", Research Policy, 2006, vol. 35(8), p. 1122 *et seq.*

II. The Celebrated "MPEG LA" Case

1. From the First Steps to a Rising Star

"MPEG LA" stands for "The Moving Picture Experts Group Licensing Administrator" and probably represents one of the most current and significant examples of a patent pool,[157] from both an international and economic perspective.

It all started in the late 1980's when a panel of engineers came together to establish an industry-based standard for digital video compression, which is basically a process where digital videos are compressed in size, enabling high transfer rates. It covers the video compression tools that make it possible to squeeze full-length films onto DVDs, stream video over the Internet, and send high-resolution television over cable lines. For these reasons MPEG is among the most used digital standard formats for movies and video-clips on the Internet today.

The panel of experts recognized that the biggest problem in implementing the standard was that many different patent owners were involved, which resulted in a typical "patent thicket" situation,[158] nowadays a notorious problem throughout the legal doctrine analysing patent pools. The solution has been to establish an independent company that would manage the pool of patents allowing "one-stop shopping", i.e. a centrally organized platform where all relevant licenses can be acquired as a unique package,[159] for patent holders and licensees. In 1996 the MPEG LA was born.[160]

Even if in recent years patent pools have become popular in the consumer electronics sphere, the MPEG-2 was the first one of its kind to take on such a significant dimension in the international and economic scene. In contrast to the so-called "mega-pools", sharing all patents within a specific industry, the MPEG-2 pool was primarily based on one central technology and consequently limited to underlying essential patents, aside from various adjustment mechanisms for adding newly emerged patents, according to pre-determined criteria, and fixing royalty rates, thereby conferring on it a certain degree of flexibility.

The initial members of the patent pool included: Columbia University, Fujitsu, General Instrument, Matsushita, Mitsubishi, Lucent, Philips, Scientific-Atlanta and

157 Baltes C., "Patent Pools - An Effective Instrument for the High Technology Co-operation?", Spring 2003, available at: http://www.jur.lu.se/internet/english/essay/masterth.nsf/0/6C1CE2960E92A1BCC1256D2C003F6BEC/$File/xsmall.pdf?OpenElement, p. 27 *et seq.*

158 Shapiro C., University of California at Berkeley, "Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standards-Setting", March 2001, available at: http://www.haas.berkeley.edu/~shapiro/thicket.pdf, p. 17 *et seq.*

159 For an analysis of the notion, see i.a.: OECD, "Science, Technology and Industry Outlook 2006", OECD Publ., 2006, p. 157 and Takenaka T. et al., "Patent Law A Handbook of Contemporary Research", Edward Elgar Publishing, 2008, p. 714 *et seq.*

160 Andersen S., "Inside MPEG LA, the Prototypical Patent Pool Recovering Lawyer Revolutionizes IP Management Model", Corporate Legal Times, vol. 12, no. 130, September 2002.