

Standardized Terms and Conditions For Open Patenting

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ABSTRACT

After providing a legal characterization of the open patenting phenomenon and discussing many of the empirical and theoretical experiences that relate to both Open Innovation and defensive patenting, this paper suggests standardized terms and conditions that a patent license should contain in order to foster both the free movement of patented knowledge and its business applications.

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INTRODUCTION

In the wake of the great interest that Open Innovation is currently brewing,¹ this paper builds on the legal definition of

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the Open Patenting phenomenon that we proposed in a previous work, *From Open Source Software to Open Patenting: What's New in the Realm of Openness?*,² to spell out the clauses that a standard license should contain in order to foster Open Innovation. To do this, we analyze some of the main experiences that fall under our label of Open Patenting and two very recent theoretical licensing schemes that advocate a defensive use of patent portfolios.³

A few years ago, by analyzing various open licensing schemes that patentees adopted (and still adopt) across different scientific sectors,⁴ we gleaned that Open Patenting, although born to counter many philosophical, economic, and technical problems concerning innovation, is essentially a legal phenomenon.⁵ It establishes *standardized contractual terms*

III are attributable to Mariateresa Maggolino, while Parts I, II.B and II.C are attributable to Maria Lillà Montagnani.

1. See, e.g., HENRY CHESBROUGH, OPEN INNOVATION: THE NEW IMPERATIVE FOR CREATING AND PROFITING FROM TECHNOLOGY 43 (2003); *Open Innovator's Toolkit*, WHITEHOUSE.GOV, <http://www.whitehouse.gov/open/toolkit> (last visited Feb. 7, 2013) (providing guidelines and tools to encourage Open Innovation using government data).

2. Mariateresa Maggolino & M. Lillà Montagnani, *From Open Source Software to Open Patenting: What's New in the Realm of Openness?*, 42 INT'L REV. INTEL. PROP. & COMPETITION L. 804, 829–30 (2011).

3. These schemes—named Defensive Patent Model (DPL) and Modified Defensive Patent Model (MDPL)—have been proposed and discussed in the following papers, respectively: Jason Schultz & Jennifer M. Urban, *Protecting Open Innovation: The Defensive Patent License as a New Approach to Patent Threats, Transaction Costs, and Tactical Disarmament*, 26 HARV. J.L. & TECH. 1, 37–41 (2012); see generally David L. Hayes & C. Eric Schulman, A Response to a Proposal for a Defensive Patent License (DPL) (Feb. 4, 2013) (unpublished manuscript), available at <http://ssrn.com/abstract=2054314>.

4. These include the different licensing schemes we refer to as the Open Source Software (OSS) Licenses, which were adopted for the development of open source software, and the Creative Commons (CC) Licenses, which were adopted for the circulation of copyright content. Among the wide literature on the topic see the recent empirical work: Jay P. Kesan, *The Fallacy of OSS Discrimination by FRAND Licensing: An Empirical Analysis* 7–12 (Univ. of Ill. Coll. of Law Ill. Pub. Law, Paper No. 10-14, 2011), available at <http://ssrn.com/abstract=1767083> (illustrating the eight most popular OSS licenses). See generally Niva Elkin-Koren, *Exploring Creative Commons: A Skeptical View of a Worthy Pursuit*, in THE FUTURE OF THE PUBLIC DOMAIN: IDENTIFYING THE COMMONS IN INFORMATION LAW 325 (Lucie Guibault & P. Bernt Hugenholtz eds., 2006) (regarding the CC phenomenon and, more generally, the proliferation of open licenses).

5. See generally Maggolino & Montagnani, *supra* note 2 (describing the evolution of open source software licensing schemes in the context of their purposes and philosophical underpinnings).

and conditions for managing patents to, on the one hand, prevent free riding and, on the other hand, facilitate access to, transfer of, and use of patented knowledge.⁶ More recently, an interesting academic debate resulted in the publication of two licensing schemes that support the use of patent licenses as tools both to defend Open Innovation against misappropriation and to promote, among the inner circle of licensors and licensees, freedom to operate and innovate and a greater ability to navigate the patent thicket.⁷ Therefore, although the old and new practical experiences analyzed here (discussed in Part II.A) and the theoretical models elaborated by academia (discussed in Part II.B) endorse quite different visions of what *openness* is and should be (discussed in Part II.C), after analyzing the advantages and disadvantages of these licensing schemes as well as their similarities and differences, we propose a model for Open Patenting licenses (discussed in Part II.D). In particular, our Open Patenting license model provides a high degree of standardization without forgetting that many patentees need to tailor their open licenses to their individual business wants and needs.

I. DEFINING OPEN PATENTING AS THE PRACTICE OF LICENSING PATENTS UNDER STANDARDIZED TERMS AND CONDITIONS

The many and varied experiences that are labeled “Open Innovation” diverge significantly with regard to what they “open”; indeed, it takes only a few cases to show how the realm of Open Innovation is articulated in a multiplicity of ways. For instance, whereas the FightAIDS@Home project “opens” computer capacity to efficiently supply spare hardware to whoever is interested in researching and experimenting on the HIV virus,⁸ the Innovation Portal is the tool whereby Procter &

6. *Id.* at 823.

7. See *supra* note 3 regarding the DPL and the MDPL, and our analysis of these licenses, *infra* Part II.B.

8. See Alex L. Perryman, *Fight Aids @ Home*, SCRIPPS RES. INST., <http://fightaidsathome.scripps.edu/> (last updated Dec. 3, 2012). Another example of Open Hardware is the *Open Source Hardware Association*—see OSHWA, <http://www.oshwa.org/> (last visited May 14, 2013)—that brings together inventors and designers who want to make their devices publicly available so that anyone can study, modify, distribute, make, and sell them and their improvements. Likewise, the *Ohanda initiative*—see *Open Source Hardware and Design Alliance*, OH&A, <http://www.ohanda.org/> (last visited Apr. 24, 2013)—pools together, under the “Ohanda” label, inventors and

Gamble “opens” its doors to whoever is interested in submitting a patented innovation that matches the specific innovative needs that the company is expressly interested in having satisfied.⁹ Likewise, whereas some projects—such as PLoS,¹⁰ ArXiv,¹¹ SourceForge,¹² HapMap,¹³ and BLAST¹⁴—“open” scientific journals, repositories, and databases that store and aggregate tools and data to guarantee free and easy access to basic knowledge,¹⁵ Open Source Software¹⁶ (OSS) and Creative

designers who want to release their innovations by allowing third parties to: (1) use the invented device; (2) access it and study its functionality; (3) redistribute it; and (4) modify it, improve it, and release the improvements to the public. In order to use the “Ohanda” label on modified or derivative hardware, third parties must register with Ohanda and release the improvements under the Ohanda licensing conditions.

9. See *Inova Suite*, PROCTER & GAMBLE, <https://pgconnectdevelop.inovasuite.com/pg/> (last visited Jan. 28, 2013). For a list of the innovation needs that Procter & Gamble wants to see satisfied, see *Innovation Needs*, PROCTER & GAMBLE, http://www.pg.com/connect_develop/pg_innovation/innovation_portal.shtml (last visited Jan. 28, 2013). Indeed, one of the first definitions of Open Innovation—a definition associated with the literature about knowledge management—pivoted around the idea that companies must look beyond their walls for new products and processes. See CHESBROUGH, *supra* note 1.

10. See PUB. LIBR. SCI., <http://www.plos.org/> (last visited Jan. 28, 2013).

11. See ARXIV, <http://arxiv.org/> (last visited Jan. 28, 2013).

12. See SOURCEFORGE, <http://sourceforge.net/> (last visited Jan. 28, 2013).

13. See *About the HapMap*, INT’L HAPMAP PROJECT, <http://www.hapmap.org/thehapmap.html.en> (last visited Jan. 28, 2013).

14. See *BLAST: Basic Local Alignment Search Tool*, NAT’L CTR. FOR BIOTECHNOLOGY INFO., <http://blast.ncbi.nlm.nih.gov/Blast.cgi> (last visited Jan. 28, 2013).

15. For a discussion of the connection between “open science” and databases—that is to say, of the relationship between openness and well-organized, exhaustive, and freely accessible storages of basic (upstream) information—see generally STEPHEN M. MAURER, *NEW INSTITUTIONS FOR DOING SCIENCE: FROM DATABASES TO OPEN SOURCE BIOLOGY* (2003), available at http://www.epip.eu/papers/20031124/200411_conference/papers/maurer_paper.pdf. This paper was presented to the European Policy for Intellectual Property Conference on Copyright and database protection, patents and research tools, and other challenges to the intellectual property system on November 24–25, 2003. *Id.*

16. See *What is GNU?*, GNU OPERATING SYSTEMS, <http://www.gnu.org/home.en.html> (last updated Jan. 19, 2013). OSS has many applications in the domains of bioinformatics, genomics, and synthetic biology; for example, BioPerl and BioJava make their work available under variants of the GNU General Public License (GPL). See *Licensing BioPerl*, BIOPERL, http://www.bioperl.org/wiki/Licensing_BioPerl (last visited Feb. 23, 2013) (dual license under Perl Artistic License and GNU GPL); *BioJava:License*, BIOJAVA, <http://biojava.org/wiki/BioJava:License> (last visited Feb. 23, 2013)

Commons¹⁷ (CC) licenses “open” the copyrights covering the innovation and creativity in question (whether that be computer source code that is protected by copyright, or a copyrighted creative work) in order to allow the aggregation, sharing, and ongoing modification of the protected innovation itself.

Against this backdrop, and on the basis of the Open Patenting experiences we analyzed in our previous work,¹⁸ we defined Open Patenting as the legal phenomenon or the legal practice that—in the wake of Open Source Software and Creative Commons—“opens” patents by *licensing* them via a *standardized* contractual scheme that is different from the traditional proprietary one.¹⁹ In particular, we discovered that the preference for *licenses* rests upon a few facts: first and foremost, since intellectual property rights (IPRs) are both exclusive and inclusive rights,²⁰ licenses are the quintessential tools both for supporting technology transfer and for opening up the innovative processes that underpin (and result from) patents.²¹ Moreover, in the United States, patent licenses may

(Lesser GPL version 2.1). Compare these to *Biopython License Agreement*, BIOPYTHON, <http://www.biopython.org/DIST/LICENSE> (last visited Feb. 23, 2013) (granting permission to “use, copy, modify, and distribute [the] software and its documentation with or without modifications and for any purpose and without fee,” without requiring that modifications be distributed under the same license), which is arguably more liberal than copyleft licenses. For a full description of the licenses employed for biology software, see Stephen M. Maurer, *Open Source Drug Discovery: Finding a Niche (or Maybe Several)*, 76 UMKC L. REV. 405, 405 (2007). See also Mélanie Dulong de Rosnay, *Check Your Data Freedom: A Taxonomy to Assess Life Science Database Openness* (Harvard Law Sch. Berkman Ctr. for Internet & Soc’y, Working Paper No. 2008-5, 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1531387.

17. See *About*, CREATIVE COMMONS, <http://creativecommons.org> (last visited Jan. 25, 2013). See generally Niva Elkin-Koren, *What Contracts Can’t Do: The Limits of Private Ordering in Facilitating a Creative Commons*, 74 FORDHAM L. REV. 375, 378 (2005) (underlining how the strategic choice, carried out through the adoption of Creative Commons licenses, of relying on property rights in its effort to subvert the meaning of copyright may have the opposite effect of strengthening the proprietary regime in creative works); Michel Carroll, *Creative Commons and the New Intermediaries*, 45 MICH. ST. L. REV. 45 (2006) (contemplating the re-intermediating roles of Creative Commons licenses).

18. See Maggiolino & Montagnani, *supra* note 2, at 822.

19. See *id.* at 829.

20. See GUSTAVO GHIDINI, INNOVATION, COMPETITION AND CONSUMER WELFARE IN INTELLECTUAL PROPERTY LAW 1–30 (2010).

21. See Roya Ghafele & Robert D. O’Brien, *Open Innovation for Sustainability: Lessons from the GreenXchange Experience* (Munich Personal

be easier to enforce than pledges, not only because they do not need to rely on judicial doctrines such as promissory estoppel or implied license to be binding, but also because licenses are not under the sole control of the patentee.²² Likewise, we noted that the focus on *standardization* arises from a simple economic observation: standardized licenses serve to reduce the concerns and costs associated with both the process of developing follow-on innovations and the process of trading patents²³ by reducing transaction costs.²⁴ Thanks to this standardized approach, it is easier and safer for companies not only to conduct research on existing patents and their possible improvements, but also to acquire licenses for patents that match their business needs and sell licenses for patents that are not necessary for the development of their businesses.²⁵

RePEc Archive, Working Paper No. 4044, 2012), *available at* http://mpira.ub.uni-muenchen.de/40440/1/MPRA_paper_40440.pdf.

22. See Schultz & Urban, *supra* note 3, at 32. See generally OPEN SOURCE DEVELOPMENT LABS, UNDERSTANDING PATENT PLEDGES: AN OVERVIEW OF LEGAL CONSIDERATIONS (2006), *available at* http://www.patentcommons.org/publications/OSDL_Whitepaper_Final_final_4-12-06.pdf (describing the doctrines of implied license, equitable estoppel, and laches as applied to patent disputes). Cf. 35 U.S.C. § 154 (2006) (describing the exclusive rights of patent owners under United States law).

23. See MARIATERESA MAGGIOLINO, INTELLECTUAL PROPERTY AND ANTITRUST: A COMPARATIVE ECONOMIC ANALYSIS OF US AND EU LAW 36–37 (2011) (“Especially in industries characterized by cumulative knowledge and/or overlapping cross-market knowledge, it is likely that patents and copyrights on prior innovation can decrease R&D incentives and block future innovation.” (citations omitted)). However, the IPR holder’s right to control follow-on innovations is likely to be stronger when the IPR in question is a copyright, because of the right to create derivative works, than when it is a patent. Indeed, copyrights encompass the right to authorize derivative works, or, rather, the right to authorize commercial exploitation of derivative works. See Julie E. Cohen, *Copyright, Commodification, and Culture: Locating the Public Domain*, in THE FUTURE OF THE PUBLIC DOMAIN: IDENTIFYING THE COMMONS IN INFORMATION LAW 121 (Lucie Guibault & P. Bernt Hugenholtz eds., 2006) (defining copyright as “the right to control the preparation and exploitation of copies and derivative works”).

24. See Maggiolino & Montagnani, *supra* note 2, at 822–23; see also, e.g., Reiko Aoki & Aaron Schiff, *Promoting Access to Intellectual Property: Patent Pools, Copyright Collectives, and Clearinghouses*, 38 R&D MGMT. 189, 197 (2008) (comparing the economic features of IP access systems).

25. See, e.g., Maggiolino & Montagnani, *supra* note 2, at 824–25 (describing the goals and benefits of the GreenXchange project and license). Licensed as such, patents would be used by those who value them most, which would be consistent with a strategy to optimize social welfare.

Finally, since all of the examples we have analyzed share the quality of being internet-based, it must be acknowledged that the Open Patenting phenomenon has occurred in the *online environment*. There, higher degrees of disclosure and easier searches facilitate alignment between supply and demand for existing patents; hasten the spread of knowledge, speeding up innovative processes (including those concerning cumulative innovation); and reduce the transaction costs associated with the organization and management of traditional patent joint ventures, cross-licenses, and pools.²⁶

Therefore, in our view, Open Patenting is different from other Open Innovation systems that emphasize the aggregation, sharing, and modification of scientific knowledge and innovations but do not contemplate patented inventions or standardized contractual clauses. For example, it is different from the so-called Public Patent Foundation,²⁷ which seeks to protect the public domain by challenging improperly granted patents (i.e., by asking the U.S. Patent Office to revoke an issued patent on the grounds that its underlying idea is not novel).²⁸ Yet Open Patenting is also different from the current initiatives aimed at funding research about tropical diseases, such as Tropical Disease Initiative (Tdi) and Drugs for Neglected Disease Initiative (DNDi).²⁹ The former is a web-based community of scientists that does not patent its inventions; rather, it allows those inventions to fall into the public domain, because it wants to induce a broad and generalized reduction in patent royalties.³⁰ Likewise, the DNDi

26. See generally, e.g., Gary Dushnitsky & Thomas Klueter, *Is There an eBay for Ideas? Insights from Online Knowledge Marketplaces*, 8 EUR. MGMT. REV. 17 (2011) (examining online knowledge marketplaces that foster disclosure of innovations and reduce information search costs).

27. See *About PUBPAT*, PUB. PAT. FOUND., <http://www.pubpat.org/About.htm> (last visited Jan. 26, 2013).

28. See *Protecting the Public Domain*, PUB. PAT. FOUND., <http://www.pubpat.org/Protecting.htm> (last visited Feb. 8, 2013).

29. See TROPICAL DISEASE INITIATIVE, <http://tropicaldisease.org> (last visited Jan. 26, 2013); Leticia Ortí et al., *A Kernel for Open Source Drug Discovery in Tropical Diseases*, 3 PLOS: NEGLECTED TROPICAL DISEASES, Apr. 2009, at 1, 1–2, 8–9.

30. See Ortí et al., *supra* note 29, at 1–2, 8–9. This strategy suggests that TDi does not worry about parasitic patenting; it does not impose any sort of viral clause upon researchers who will use its results, thereby allowing third parties to patent follow-on innovations that embody its results without requiring those third parties to share the follow-on innovations. The TDi

is a collaborative, patients' needs-driven, non-profit drug research and development organization, which does not accept projects in which IPRs present an insurmountable barrier to follow-on research. On the other hand, Open Patenting is also different from other Open Innovation projects that, while addressing patented innovations, do not standardize the terms and conditions of the license(s) attached to the collected patents. For instance, PatentCommons,³¹ born with the intention of responding to the software patent threat,³² and supported by the Linux foundation,³³ works as a "facilitator" of patent trade by offering an online library of 500 software patents whose sixteen owners make those patents available to third parties on individualized terms and conditions that are publicly available online.³⁴ Since each of the collected patents has different licensing terms and conditions, PatentCommons still does not offer a comprehensive and easy-to-manage contractual scheme.³⁵

The diagram that follows summarizes what, in our view, falls *outside* the label of "Open Patenting," so as to identify the boundaries of the Open Patenting phenomenon and move the analysis a step further toward ascertaining what features should be met in order to fall under that label.

pursues this strategy because it regards the risk of free riding as low, and it wants to involve as many researchers as possible.

31. See *The Patent Commons Project*, LINUX FOUND., <http://www.patentcommons.org/> (last visited Jan. 26, 2013).

32. See *id.*; see also Oliver Alexy & Markus G. Reitzig, *Gaining It By Giving It Away: Capturing Value in "Mixed" Appropriability Regimes* (Feb. 24, 2010) (unpublished manuscript), available at <http://ssrn.com/abstract=1430328>.

33. See *The Patent Commons Project*, *supra* note 31.

34. *Id.* In practice, by using the repository set up by PatentCommons, potential licensees can learn what patents are available under what conditions, without engaging in cumbersome one-on-one negotiations.

35. This is also true of Eco-Patent Commons, which is a repository of patent pledges that is specifically devoted to promoting sustainability. See *Eco Patent Commons FAQ*, WBCD.ORG, <http://www.wbcd.org/work-program/capacity-building/eco-patent-commons/ecopatentcommonsqa.aspx> (last visited Jan. 26, 2013).

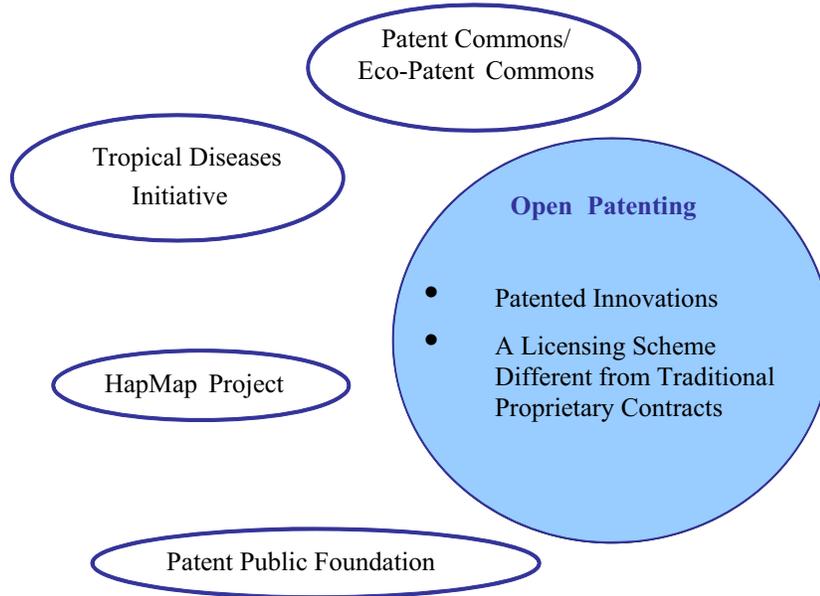


Diagram. The Boundaries of the Open Patenting Phenomenon

II. STANDARDIZED TERMS AND CONDITIONS FOR OPEN PATENTING

So far we have set the boundaries of the Open Patenting phenomenon as we conceive it by excluding what we see as *not* belonging to it. Having set these “negative” limits, we proceed to spell out the standard clauses that would transform a conventional patent license into an “Open Patenting license.” In order to do this, we analyze both the evidence from several real experiences with Open Patenting (Part II.A) and the theoretical models of defensive patent licenses that were proposed within the aforementioned academic debate (Part II.B)—i.e., what terms and conditions characterize the standard patent licenses that have been employed in practice and theorized about in literature. Then, we discuss why and to what extent these examples meet or depart one from each other, so as to introduce the reasons for our proposal and explain how it diverges from the past examples.

A. EMPIRICAL EVIDENCE

One way of organizing the main Open Patenting experiences that fall within our definition of Open Patenting is to put them in a three-dimensional space with axes measuring

how they “spread patented knowledge,” how they “pool it together,” and how “they perform these two functions via the establishment of an online structure.”³⁶

One basic example of a legal tool that is employed to spread patented knowledge is the “Yahoo! DomainKeys Patent License Agreement v1.2.”³⁷ The Agreement was developed by Yahoo! and has been made available on a searchable website. This allows third parties to freely use some of its patents on hardware and software pursuant to standardized terms and conditions. In particular, the Agreement states, “By attempting to exercise any rights granted under this Agreement, Licensee [i.e., those who will use Yahoo! patented hardware and software] agrees to be bound by all the terms and conditions set forth below, and subject to those terms and conditions, Licensee may use the intellectual property described below.”³⁸ What is peculiar about this public offer to license is that: (1) third parties accept the terms by doing nothing more than using Yahoo!’s protected materials;³⁹ (2) the standardized terms and conditions hold for the sole patents that Yahoo! has chosen to release and not for the many patents that the many firms operating in the same industry (or scientific sector) have opted to bestow; and (3) these protected materials are available to anyone willing to use them (even independent researchers), and not only to those that have previously decided to get involved in a specific open project under the granting of their own patents.

36. Multiple phenomena can fall under the label of “patent pool.” Some examples include when a mutual exchange of patent rights takes place on a bilateral or multilateral base, or when two or more patent owners form a separate entity and assign or license specified patent rights to the entity. See HERBERT HOVENKAMP, MARK A. JANIS & MARK LEMLEY, *IP AND ANTITRUST: AN ANALYSIS OF ANTITRUST PRINCIPLE*, at § 34.2 (Aspen 2004).

37. *Yahoo! DomainKeys Patent License Agreement v1.2*, SOURCEFORGE.NET, <http://domainkeys.sourceforge.net/license/patentlicense1-2.html> (last visited Apr. 24, 2013).

38. *Id.*

39. *Id.* (stating article 3.2 works as a disclosure and attribution clause that establishes how users provide consent “to the terms and conditions of this Agreement and in order to obtain a license to make, use, sell, offer for sale, and/or import Implementations, [a user] must include, attach or preserve the following prominently displayed statement in the source code and object code of any such Implementations: “This code incorporates intellectual property owned by Yahoo! and licensed pursuant to the Yahoo! DomainKeys Patent License Agreement.”).

A similar license, developed within the field of biology is the “BioBrick™ Public Agreement,”⁴⁰ a free-to-use legal tool allowing individuals, companies, and institutions to make their standardized biological parts free for third parties to use.⁴¹ Here, however, the license—which is publicly available on a centralized website—is to be used together with a repository of the licensable materials (whether patented or not) which is also publicly accessible.⁴² In particular, the BioBrick Public Agreement encompasses two mirror agreements: (1) the “Contributor Agreement”⁴³ and (2) the “User Agreement.”⁴⁴ Patent owners are those who subscribe to the former by clicking the “Agree and Submit” button; in contrast, users—i.e., those who are interested in using the licensable materials—subscribe to the latter by clicking the “Agree” button.

Pursuant to the Contributor Agreement, patent owners: (1) permit users that receive their materials to use those materials (e.g., patent owners would allow users to utilize DNA strings encompassing both patented and not patentable elements); and (2) the users irrevocably agree not to assert (or threaten to assert) their patents (or other property rights) protecting those materials.⁴⁵ Moreover, under the Contributor Agreement, contributors agree that the submitted materials may be modified to include a BioBrick identification tag and the biobricks.org/bpa URL.⁴⁶ Conversely, per the User Agreement, users: (1) acquire the right to use the granted materials; (2) users understand that no fees will be charged for providing access to, or use of, the materials, but that additional fees may be charged for other activities (these activities include, but are not limited to manufacturing and shipping of the materials and consulting services on how to use the materials);⁴⁷ and (3) users also acknowledge attribution to the patentee.⁴⁸ Nothing in these contracts prevent contributors and users from voluntarily

40. *The BioBrick Public Agreement*, BIOBRICKS.ORG, <https://biobricks.org/bpa/> (last visited Feb. 1, 2013).

41. *Id.*

42. *Id.*

43. *See Contributors*, BIOBRICKS.ORG, <https://biobricks.org/bpa/contributors/> (last visited Feb. 1, 2013).

44. *See The BioBrick User Agreement*, BIOBRICKS.ORG, <https://biobricks.org/bpa/users/agreement/> (last visited Feb. 1, 2013).

45. *Contributors*, *supra* note 43.

46. *Id.*

47. *The BioBrick User Agreement*, *supra* note 44.

48. *Id.*

entering into separate agreements including third parties. These agreements are valid as long as the agreements made separately or with third parties regard materials other than those contributed and received and do not diminish or derogate the BioBrick Public Agreement.⁴⁹

Accordingly, once a contributor signs the Contributor Agreement, she enters into a contract with anyone who has signed, or will later sign, the User Agreement.⁵⁰ The end result is that the contributor makes an irrevocable promise not to assert any existing or future intellectual property rights concerning the contributed material from all the users.⁵¹ In return, users agree to comply with the requirements imposed on them by the User Agreement.⁵² The BioBrick Public Agreement realizes a mechanism of irrevocable offer that is similar to the one implemented by Yahoo!. The only difference between the two agreements is the addition of a real platform (more than just a website where the license is available) and the request of making an express acceptance of the license.⁵³

Along the same line of thought, there are legal tools that have been adopted to open up knowledge, or improve patented knowledge. The most common example is the GreenXchange (GX) project.⁵⁴ The GX project was launched in 2009 by Science Commons to promote sustainability by creating a platform for the exchange of know-how and patents.⁵⁵ At present, GX project's legal infrastructure is comprised of two different sets of tools: 1) the specific tools which distinguish the GX project; and 2) the general tools that, though tested within the GX

49. *Id.*; see also *Contributors*, *supra* note 43; *The BioBrick Public Agreement*, *supra* note 40.

50. *The BioBrick User Agreement*, *supra* note 44; see also *Contributors*, *supra* note 43.

51. *Contributors*, *supra* note 43.

52. *The BioBrick User Agreement*, *supra* note 44.

53. *Id.*; see also *Yahoo! DomainKeys Patent License Agreement v.1.2*, *supra* note 37.

54. See *Get Started*, GREENXCHANGE, <http://greenxchange.cc/> (last visited Feb. 1, 2013); see also Ghafele & O'Brien, *supra* note 21 (discussing the GX phenomenon).

55. Kaitlin Thaney, *GreenXchange – a Project of Creative Commons, Nike and Best Buy*, CREATIVE COMMONS (Feb. 10, 2009) <http://creativecommons.org/weblog/entry/12734> (funding provided by Nike, Best Buy, Yahoo!, Mountain Equipment, Co-Op, IDEO, nGenera, 2Degrees, Salesforce.com, University of Washington, Outdoor Industry Alliance, and coordinated by Creative Commons).

community, have been created by CC in order to facilitate the use and trade of any kind of patent.⁵⁶

As to the former, GX supplies three different kinds of standardized pledges, namely: 1) the “standard option,” currently adopted by two firms, where GX users obtain a royalty-free license for commercial uses; 2) the “standard plus option,” employed by five firms, where GX users pay for using the patent under specific restrictions; and 3) the “research non-exempt option,” utilized by 456 firms.⁵⁷ Here, GX users are allowed to research, improve and adapt the licensed patents, and then to patent the improvements for non-commercial uses. Thus, while the standard and standard plus pledges provide a path to commercialize the GX patents, the research non-exempt option seeks to tackle the blocking effect that some patents may produce to the detriment of follow-on innovation.⁵⁸

As to the general legal tools developed by CC and tested within the GX community, they fulfill an analogous objective: to facilitate research and patent trade by providing full disclosure of the available information and supply of standardized licensing terms and conditions. Indeed, CC is elaborating three different tools: (1) the “Research Non-Assertion Pledge,”⁵⁹ (2) the “Model Patent License,”⁶⁰ and (3) the “License Data Record.”⁶¹ The first two are contractual

56. See *Patent Tools Public Discussion*, CREATIVE COMMONS, http://wiki.creativecommons.org/Patent_Tools_Public_Discussion (last updated Oct. 19, 2010).

57. GREENXCHANGE, <http://www.greenxchange.cc/> (last visited Apr. 18, 2013).

58. The need for a research and experimentation exemption is particularly urgent in the U.S. system. In contrast with foreign patent law regimes, no statutory provision provides such shield from infringement. See Janice M. Mueller, *The Evanescent Experimental Use Exemption from United States Patent Infringement Liability: Implications for University and Nonprofit Research and Development*, 56 BAYLOR L. REV. 917, 927–56 (2004) (discussing and analyzing the United States case law on the issue).

59. *Research Non-Assertion Pledge*, CREATIVE COMMONS, http://wiki.creativecommons.org/Research_Non-Assertion_Pledge (last updated Oct. 19, 2010).

60. *Model Patent License*, CREATIVE COMMONS, http://wiki.creativecommons.org/Model_Patent_License (last modified Oct. 19, 2010).

61. *Id.* (“Together, the License Data Record and the Model Patent License Agreement will be [sic] become your public license offer. When such an offer is made available on your Web site, or through clearinghouses like GX, anyone eligible to accept the offer may accept it through a registration and acceptance process. As part of that process, the Licensee will supply the Licensee-specific information needed to complete the License Data Record. This process, and

schemes: they are suitable for patent holders who, respectively, are interested in promoting basic research and making a public offer to license their patents on standardized terms. Indeed, by the Research Non-Assertion Pledge, patentees make a revocable promise not to assert one or more of their patents against any nonprofit institution engaging in a non-commercial research use of them, but for the case when such an institution would bring a legal infringement action against the patentees.⁶² In contrast, the Model Patent License allows patents that are being held for defensive purposes available for other uses pursuant to reasonable and non-discriminatory terms. Some terms, for instance, include provisions that if not otherwise specified, are free of charge and without unnecessary field limitations.⁶³ Therefore, if such a standard model license is available on a website, or through a clearinghouse like GX, patent holders who adhere to it make the binding public offer for one or more of their patents to morph into an effective licensing contract once the user of the website or clearinghouse accepts it. The License Data Record, instead, is a repository of the main data regarding the patentees and licensees involved in a specific project, like GX, which not only enables the integration of those metadata with the major search engines, software systems, and content creation systems, but also supplies to the public a standardized description of the available patents and of the clauses attached to them.⁶⁴ Therefore, a patent holder who is interested in being involved in the GX projects (or in other Internet-based Open Patenting initiatives) fills in the License Data Record available on the web, specifying whether she wants to change some terms and conditions of the default Model Patent License, such as the clauses concerning fees and royalties, fields of use limitations, have made right limitations, and so on.⁶⁵ Those interested in applying for a patent under these terms have only to accept the offer using the website to obtain a non-exclusive and non-

the transaction record, then completes the license agreement.”).

62. *Research Non-Assertion Pledge*, *supra* note 59.

63. *Model Patent License*, *supra* note 60.

64. *Id.*

65. *Id.*

transferable⁶⁶ license to make, use, sell, offer for sale, and import products, services, and processes embodying the patent.

In addition to being better articulated than those developed by Yahoo! and BioBrick, the legal tools provided by GX and CC realize the same mechanism of spreading patented knowledge by (almost) irrevocable offers addressing everybody who is interested in using the released patents. Thus far, in the three experiences analyzed, licensees are not required to offer any intellectual property rights in exchange for the ones that they obtain by accepting the public offer.

Though built on many of the mechanisms provided by the above-analyzed legal tools, the BiOS⁶⁷ initiative goes further by adding to its standard license a “pooling feature.” The “pooling feature” imposes on licensees an obligation to give licensors “something back” in exchange for the patents that they have previously granted.⁶⁸

The initiative was set up by CAMBIA, an independent, non-profit Australian research institute.⁶⁹ BiOS establishes a legal framework that enables access to some biotechnological technologies and facilitating their development. Related to this purpose, BiOS makes available a world-wide, non-exclusive, royalty-free, non-assertion license both to make and use the granted technology and to license back its improvements either for commercial or non-commercial uses.⁷⁰ For instance, BiOS offers two BiOS-compatible agreements regarding “health

66. *Id.* (“Licensee may not assign any of its rights under this Agreement, delegate any of its obligations under this Agreement, or otherwise transfer this Agreement, without the prior written consent of Licensor, and any attempted assignment, transfer, or delegation shall be voidable by Licensor. Any change of control of Licensee shall be deemed an attempted transfer of this Agreement. Licensor may assign this Agreement in connection with a sale, merger, or transfer of the assets to which this Agreement relates, provided that the assignee assumes all rights and obligations under this Agreement.”).

67. See *The CAMBIA BiOS Initiative: Biological Innovation for Open Society*, CAMBIA, 2–3, <http://www.cambia.org.au/daisy/bios/10/version/live/part/4/data> (last updated Jan. 1, 2004) [hereinafter *The CAMBIA BiOS Initiative*].

68. See Andrés Guadamuz Gonzáles, *Open Science: Open Source Licenses in Scientific Research*, 7 N.C. J.L. & TECH. 321, 339–45 (2006).

69. CAMBIA, <http://www.cambia.org.au/daisy/cambia/home.html> (last visited Feb. 26, 2013); see also Gonzáles, *supra* note 68 (describing the work of CAMBIA).

70. *The CAMBIA BiOS Initiative*, *supra* note 67.

technologies” and “plant molecular enabling technologies.”⁷¹ The former allows patentees to give permission to use their technology without requiring royalties or imposing other conditions that could disfavor the production of goods and services involving the technology in question.⁷² The latter requires users to agree to not appropriate the fundamental core of the technology and to license back its improvements to whoever contributed to their development.⁷³ In other words, as a confirmation of the BiOS’s pooling feature, BiOS-compatible standard contracts establish a system of cross-licensing where what is licensed is not only the base technology, but also its improvements which—to be precise—must be shared with anyone that supports their development. As a result, we can consider BiOS as a means to create a kind of “fenced commons” for all the improvements of the technologies granted under the BiOS-compatible agreements.

Subsequently, the sharing and pooling activities are conducted through a website where a repository of patents is available under BiOS-compatible agreements.⁷⁴ The patents are then supplied through a correlated website where the licensing agreements are made available.⁷⁵ Therefore, anyone who is interested in getting one of these technologies may first search the repository and then contact the BiOS Initiative Administrator in order to negotiate her entry within the pool. Of course, this is dependent upon whether the individual is given entry according to the standardized terms and conditions of the BiOS-agreements. Indeed, entry will entail the signature of a specific “BiOS-compatible agreement” according to the kind of “IP and technologies”⁷⁶ the prospective licensee is interested

71. *Id.*

72. *Id.*

73. *Id.*

74. *BiOS*, CAMBIA, <http://www.cambia.org/daisy/bios/home.html> (last visited Feb. 26, 2013).

75. *Id.*

76. See *The CAMBIA “Biological Open Source” (BiOS) License for Plant Enabling Technologies Version 1.5*, CAMBIA, at C, <http://www.cambia.org/daisy/bios/mta/agreement-patented.html> (last visited Apr. 24, 2013) (“LICENSOR owns or is the licensee of certain Enabling Technologies and associated patents, patent applications, knowhow, data, materials, and business, technical, economical and manufacturing information (the “IP & Technology”)); *CAMBIA DRAFT Health Technologies BiOS 2.0 Agreement*, CAMBIA, at C, <http://www.cambia.org/daisy/bios/mta/agreement-patented.html> (last visited Apr. 24, 2013); *CAMBIA DRAFT PMET BiOS 2.0 Agreement*,

in, a “BiOS Mutual Non-Assertion Agreement,”⁷⁷ and a “BiOS Technology Support and Material Transfer Agreement.”⁷⁸ The latter is purposely meant to regulate, among other things, the case when the website offers technological support to the licensee, who, if is a for-profit entity, will be charged. In this case, then all the features of the above legal tools are available, with the addition of the license back mechanisms for improvements.

A potentially more influential sharing and pooling feature is retrievable in the Open Invention Network (OIN).⁷⁹ OIN is a company which some OSS distributors and more traditional IT companies created in order to improve the applications for, and components of, the Linux operating system. Specifically, OIN can be considered a proper online pool that encompasses a large number of software patents licensed under standardized terms and conditions.⁸⁰ On the one hand, software patentees, besides granting to OIN “a royalty-free, worldwide, nonexclusive, non-transferable license” for making, having made, using, importing, and distributing their patent in relation to any Linux System;⁸¹ and committing themselves to a “not challenging clause,” that is, not asserting their patent against the Linux operating system, or certain Linux-related applications,⁸² they are also obligating themselves to a “*viral clause*” that establishes that OIN patents cannot be assigned or licensed unless the assignment or the license are made subject

CAMBIA, at C, <http://www.cambia.org/daisy/bios/mta/agreement-patented.html> (last visited Apr. 24, 2013).

77. See generally *BiOS Mutual Non-Assertion Agreement*, CAMBIA, <http://www.cambia.org/daisy/bios/mta/agreement-patented.html> (last visited Apr. 24, 2013).

78. See *id.*

79. See OPEN INVENTION NETWORK, <http://www.openinventionnetwork.com/> (last visited Jan. 27, 2013).

80. See *id.*

81. *License Agreement*, OPEN INVENTION NETWORK (May 1, 2012), http://www.openinventionnetwork.com/pat_license_agreement.php.

82. *Id.* This type of clause is also named “patent peace” or “retaliation” clause. It may further provide that the license will terminate if the licensee initiates “litigation (including a cross-claim or counterclaim in a lawsuit) alleging that any patent claim is infringed by making, using, selling, offering for sale, or importing the program or a part of it.” *GNU General Public License*, GNU (June 29, 2007), <http://www.gnu.org/licenses/gpl.html>. This clause is from the 3.0 version of GPL, released in June 2007, which obliges OSS developers not to question the validity of the original copyright on the OSS products. *Id.*

to the terms of the OIN license.⁸³ On the other hand, OIN grants to each patentee and other licensee a royalty-free, worldwide, nonexclusive, non-transferable license to make, have made, use, import, and distribute products or services involving OIN patents, including those patents that OIN has autonomously acquired or has received as donation.⁸⁴ As a whole, OIN works as a central administrator by creating a patent pool where patents, gathered in a repository, are both less expensive and easier to manage than proprietary ones.⁸⁵ In addition, by requiring licensees to maintain open the patented knowledge by licensing it to the same conditions they have received it, OIN creates a mechanism capable of adding to the traditional defensive function that pools have: that of spreading patented knowledge.

B. THEORETICAL MODELS

In the last few months Jason Schultz together with Jennifer M. Urban, and David L. Hayes together with C. Eric

83. *License Agreement*, *supra* note 81; *see also* François Lévêque & Yann Ménière, *Copyright Versus Patents: The Open Source Software Legal Battle*, 4 REV. ECON. RES. ON COPYRIGHT ISSUES 27, 42 (2007) (observing that published discoveries can loosen the novelty requirement for patenting but still can be captured in proprietary formats); Donna M. Gitter, *Resolving the Open Source Paradox in Biotechnology: A Proposal for a Revised Open Source Policy for Publicly Funded Genomic Databases*, 43 HOUS. L. REV. 1475, 1478 (2007) (highlighting that the project is vulnerable to parasitic patenting). Actually, some OSS licensing agreements provide the sole “attribution-only” clause, whereby third parties can freely deploy and use the OSS products as long as they attribute them to their originators. Greg R. Vetter, *Commercial Free and Open Source Software: Knowledge Production, Hybrid Appropriability, and Patents*, 77 FORDHAM L. REV. 2087, 2091 (2009). In fact, for these communities the shame for appropriating the “paternity” of someone else’s creation is a deterrent sufficient to prevent third parties from closing up the OSS products for private gains. *Id.* at 2095. Yet, when the *Berkeley Software Distribution (BSD)* license was released without the viral clause, Microsoft used parts of a *BSD*ed code in XP and some other product, and distributed them through the traditional “all rights reserved” licensing model, the only condition being that it acknowledged that it had used a *BSD*ed product. Even more interesting is the case of Apple, whose operating system relies on the Darwin Open Source project that does not impose any viral condition. JONATHAN LEVIN, *MAC OS X AND IOS INTERNALS: TO THE APPLE’S CORE* 3–16 (2013). The innovation added by Apple is in the users’ interface, where Apple does not have competitors.

84. *License Agreement*, *supra* note 81.

85. *See Open Invention Network’s Currently Owned Patents*, OPEN INVENTION NETWORK, http://www.openinventionnetwork.com/pat_owned.php (last visited Feb. 26, 2013).

Schulman, have elaborated two different kinds of standardized patent licenses to enhance Open Innovation, namely the Defensive Patent License (DPL) and the Modified Defensive Patent License (MDPL).⁸⁶

Both of them are worldwide, royalty-free, non-exclusive, not-sub-licensable licenses to make, have made,⁸⁷ use, sell, offer for sale, import, and distribute⁸⁸ products embodying the licensed patent, and also services in the case of the MDPL.⁸⁹

Moreover, they both envisage a website where licensing transactions should take place via the posting of announcements and under a centralized administrator⁹⁰ in charge of keeping track of participants and transactions.⁹¹ Therefore, once one DPL/MDPL user—i.e., one who decides to adhere to these licensing schemes—has posted on such websites offering announcements regarding the whole portfolio⁹² of her current and, in the sole case of DPL, future patents, other DPL/MDPL users accessing the site could accept one or more offers and, thus, become effective licensees of the patents under a bilateral license. Indeed, in both scenarios depicted by such models, the site works as a vehicle enabling the creation of a web of bilateral agreements that otherwise

86. See generally Hayes & Schulman, *supra* note 3.

87. Actually, the MDPL deals with the “have made right” with more care. Since MDPL regulates cases of “clone products or services” (i.e., those including “substantially identical functionality of all or a commercially substantial portion of a prior-released product”) as well as “foundry services or products” (i.e. those “manufactured by [a] [l]icensee for or on behalf of, a specific third party, using designs or specifications received in a substantially completed form from that third party, for resale or relicense to or on behalf of that third party . . .”), MDPL limits “have made rights” to the case where the design and specifications are furnished by the licensee in a substantially completed form to the manufacture who fully adheres to the design and specification so furnished and who transfers the products to the licensee on whose behalf those products were made. *Id.* at app. I.

88. The MDPL also includes the right to operate. *Id.* at app. I, art 2.1(a).

89. For the DPL, see Schultz & Urban, *supra* note 3, at app. I, art 2.1. For the MDPL, see Hayes & Schulman, *supra* note 3, at app. I, art 2.1(a).

90. While the DPL central administration provides services that are free of charge, Hayes and Schulman do not address this feature. Hayes & Schulman, *supra* note 3, at app. I, art 2.1(a).

91. With the difference that the MDPL encompasses an ameliorating version of the centralized administration by requiring that a website representative countersigns each DPL taking place between users.

92. Seemingly, the MDPL definition is further carved out according to the existing licensing that is in place at the time of the offering announcement, as long as they have been signed in *bona fide* agreement with, and not for the purpose of avoiding, the DPL grant.

would not be signed due to the lack of disclosure as to the respective inventions, the high transaction costs regarding the negotiation of agreements, and the duty to pay royalties for using the patented knowledge in question.

In regards to fostering Open Innovation, both the DPL and the MDPL are designed to create “innovation-friendly environments” protected from patent claims; indeed, both contain a “not-challenging clause,” whereby a licensee must forgo any offensive patent claims against other DPL users or risk revocation of that DPL license by the licensor.⁹³ Under the MDPL, the offender must be given thirty days via a written notice to withdraw her claim.⁹⁴ In particular, the protective nature of both the DPL and MDPL environments emerges significantly when looking at the rules presiding over the management of inbound and outbound relationships—i.e., the relationships that a DPL/MDPL user has, respectively, with other DPL/MDPL users or with non-DPL/MDPL users. Interestingly, whereas the former relationships are characterized by *reciprocity*, the latter are not subject to the *viral* clauses that are the central feature of the main Open Innovation schemes, such as OSS and CC.

The reciprocal commitment to mutually open up owned patents that characterizes DPL/MDPL’s inbound relationships derives from the above-mentioned web of *bilateral* agreements, which are generated by the offer of whole patent portfolios on one side and the acceptance and use of specific patents by the other.⁹⁵ In other words, the licensing mechanism supported by the DPL and MDPL is limited to those patentees who, by adhering to one of the two schemes, have chosen to inhabit the “protected environment.” Neither of the regimes imposes on their users the duty to license *out* their patents under the same conditions that they have already followed to license them *in*; rather, they allow “proprietary licensing” to coexist with “open licensing” as long as the former governs outbound relationships and the latter governs inbound ones⁹⁶ (i.e., at any time DPL

93. Hayes & Schulman, *supra* note 3, at 9.

94. *Id.*

95. See Schultz & Urban, *supra* note 3, at 39 (“The DPL operates by creating a set of viral, bilateral obligations . . .”).

96. See Hayes & Schulman, *supra* note 3, at 3 (“A DPL Participant can individually license non-DPL users . . .”); see also *id.* at app. I, art. 1.12

users can independently license and pursue royalties against any non-DPL user⁹⁷). Likewise, MDPL users who have signed exclusive licenses with non-MDPL users before adhering to the MDPL are not forced to interrupt them.⁹⁸ In sum, these schemes do not provide anything equivalent to a viral condition. Their efforts to spur Open Innovation appear to be focused on the creation of a “fenced environment” where Open Innovation is safely possible, rather than being focused on the spreading of patented knowledge among whoever could be interested in it.

What the DPL and MDPL do share is the nature of their licensing and the environments they create in terms of centralized administration, procedures, and protection; yet the two schemes diverge significantly as to the effects of the discontinuation notice whereby DPL/MDPL users revoke their involvement. Though both schemes make the revocation of DPLs and MDPLs effective after six-months notice, under the DPL regime the revocation concerns only future patents (i.e., those patents filed or acquired after the “discontinuation date”);⁹⁹ discontinuation under the MDPL releases the whole portfolio previously licensed thereunder.¹⁰⁰ Hence, the DPL is an irrevocable and perpetual license as to the patent portfolio *existing* at the moment of entry and born during the participation period, while for future patents it works as a revocable and temporary commitment.¹⁰¹ On the contrary, under the MDPL regime all licenses automatically terminate at the end of the notice period.¹⁰² In other words, after the notice period the participant who withdraws can return substantially

(allowing MDPL licensors to make licensing agreements outside of the MDPL, subject to some restrictions).

97. Schultz & Urban, *supra* note 3, at 40.

98. Hayes & Schulman, *supra* note 3, at app. I, art. 1.11.

99. The discontinuation date is six months after the date of the discontinuation announcement. Schultz & Urban, *supra* note 3, at 57.

100. For the differences between DPL and MDPL patent license revocation, see Hayes & Schulman, *supra* note 3, at 6 (explaining that allowing, in the MDPL, the withdrawal of both inbound and outbound licenses enables the withdrawn participant to automatically return to the “pre-participation licensing state,” while this is not permitted to the DPL user, as the license sticks to the granted patent for its whole lifetime—in other words, the MDPL would be a “non-sticky” version of the DPL).

101. See Schultz & Urban, *supra* note 3, at 57 (“[A] DPL user may always cease offering future patents under the DPL, but must honor existing commitments.”).

102. Hayes & Schulman, *supra* note 3, at 6.

to her pre-participation status, the only alteration being losing the right to seek past damages against other MDPL users.¹⁰³

According to the scholars that conceived the schemes, the above differences find a justification in the types of entities that they want to involve in such “fenced environments.”¹⁰⁴ Whereas the DPL runs the risk of only appealing to small and medium companies with the promise of being part of a decentralized, large proprietary defensive portfolio whose costs and benefits are distributed across its users, the MDPL seeks to engage big stakeholders by modifying some of the DPL’s clauses that would be too risky for them (such as the irrevocable and perpetual nature of the DPL grant). In particular, given the network effects that such environments are likely to generate, the MDPL aims at having large and established companies involved to achieve enough scale to “cover” the whole industry or economic sector.¹⁰⁵ The two schemes do not aim at fostering Open Innovation via the spreading of patented knowledge; rather, they support Open Innovation by assuming that the innovation-friendly environments that they create will grow thanks to their own economic profitability and the network effects that they will trigger.

C. MATCHING EMPIRICAL EVIDENCE WITH THEORETICAL EXERCISES

Drawing on the comparison between practical Open Patenting experiences and the theoretical models, it emerges that “Open Innovation” as such can be achieved in different ways: by *spreading* patented knowledge, as happens whenever a patentee offers, under some standardized terms and conditions, her patents to whoever might be interested in using them (as it materializes in some of the empirical experiences here considered);¹⁰⁶ or by *pooling* patented knowledge, as occurs whenever a patentee, within a standardized contractual

103. *Id.* (“[P]ast damages will no longer exist between both inbound and outbound between DPL members and the withdrawn PDL member for the period of mutual participation.”).

104. *See, e.g., id.* at 5 (describing how the DPL better benefits entities with few or no patents).

105. *Id.* at 6 (“This modification to make the DPL non-sticky may facilitate broader adoption . . . by making it more palatable to more companies. In addition, this modification makes the DPL substantially less risky . . .”).

106. *See* Empirical Evidence discussion *supra* Part II.A.

scheme, cross-licenses her patents in exchange for someone else's patents (as it is envisaged in the theoretical models).¹⁰⁷ Because of these different perspectives, the practical experiences and the theoretical models here discussed show several convergences and divergences in the terms and conditions that they provide as well as in the structures chosen to implement them.

As to the convergences, both the empirical experiences and the theoretical models operate as bazaars where patents are put up for trade. In this way they become open repositories that guarantee transparency and ease of access to the existing patented knowledge.¹⁰⁸ Moreover, they all adopt non-assertion commitments whereby patentees and licensees may work in a "safe environment," without being challenged for innovative activities that may infringe third parties' patents.¹⁰⁹ This results in the flourishing of innovative processes that allow users the freedom to operate and innovate.

However, one of the divergent features of these safe environments rests with the dissimilar way in which the opened patents (i.e., those patents covered by the non-assertion commitment) are granted to the other parties. The empirical evidence shows that, in practice, patentees grant *single patents* (current and future ones, at least where required) on a *stand-alone basis*,¹¹⁰ while in the theoretical models patentees must grant their *entire patent portfolios*, including, at least in the case of the DPL, future patents.¹¹¹

In the DPL and MDPL, such an onerous commitment is counterbalanced by a right of revocation that is broader than the one available in the Open Patenting projects described herein. Indeed, whereas DPL and MDPL can be withdrawn with six-months' notice,¹¹² more often the empirical projects

107. See DPL/MDPL discussion *supra* Part II.B.

108. Schultz & Urban, *supra* note 3, at 41 ("The DPL thus . . . reward[s] participation with the benefits of unfettered access to the patents of other DPL users and freedom to operate with respect to DPL technologies.")

109. See, e.g., Hayes & Schulman, *supra* note 3, at 18 (detailing right of MDPL Licensor to revoke license of licensee if she asserts offensive patent infringement claim); Schultz & Urban, *supra* note 3, at 40 (similar right under DPL); *Contributors*, *supra* note 43 ("[Contributors] make an irrevocable promise not to assert against [Users] any existing or future intellectual property rights concerning [Contributor's] contributed part.")

110. See, e.g., *supra* notes 28–31 and accompanying text.

111. See *supra* note 49 and accompanying text.

112. See *supra* notes 99–103 and accompanying text.

require irrevocable commitments.¹¹³ As a result, while in practice open patent licenses are likely to be perpetual (i.e., thought to last until the expiration of the patents in question), the DPL is perpetually binding only in connection to the patents already existing when the patentee adopted the license, while the MDPL is effectively never perpetual in relation to existing or future patents.

The reason for such different ways of formulating the trade-off between what is granted and the right to opt out via the revocation mechanisms lays in the additional purposes that both practical experiences and theoretical models seek to achieve. In principle, all schemes, either practical or theoretical, aim at creating a “safe environment,” shielding users against someone else’s assertion of infringement on his or her rights. However, DPL and MDPL also share the additional purpose of navigating the patent thicket regarding technologies requiring multiple patents, particularly with the MDPL aimed at involving *big players’* portfolios.¹¹⁴ On the other hand, each of the analyzed Open Patenting experiences presents different additional purposes, including merely “opening up” software and hardware patents (Yahoo!),¹¹⁵ pooling together and fostering the development of basic research tools (BiOS and BioBrick),¹¹⁶ promoting the development of open source projects (OIN),¹¹⁷ finding business application for paper patents (GX),¹¹⁸ and commercializing services and further activities surrounding the granted patents (GX and BioBrick).¹¹⁹ In contrast, the theoretical models allow commercialization of the granted patents only *outside* the safe environment (i.e., when a license for commercial exploitation of a patent conferred into the safe environment is signed between the patentee and a third party not belonging to that environment).¹²⁰

113. See, e.g., discussion *supra* Part II.A.

114. See *supra* note 105 and accompanying text.

115. Yahoo! *DomainKeys Patent License Agreement v1.2*, *supra* note 37.

116. *The BioBrick Public Agreement*, *supra* note 40 (this Agreement was “developed for sharing the uses of standardized genetically encoded functions”).

117. See *OINsm*, OPEN INVENTION NETWORK, <http://www.openinventionnetwork.com/> (last visited Apr. 24, 2013) (“Open source software development has been one of the greatest sources of innovation.”).

118. GREENXCHANGE, *supra* note 57.

119. See *id.*

120. See, e.g., Schultz & Urban, *supra* note 3, at 38 (licensing of a DPL

This diversity of purposes is evidence that while theoretical models apply to current or prospective patent portfolio holders that, *on the basis of reciprocity*, explicitly agree to enter into the safe environment, empirical experiences tend to involve any innovator who is interested in the project and shares its purpose—an innovator who, by the mere use of the patent conferred into the safe environment, becomes an implicit licensee. This innovator is then obliged, *on a viral basis*, to maintain the same licensing conditions for the products developed by using that license.

Interestingly, the above-mentioned divergence as to the ways an opened patent can be granted, coupled with the differences as to whom the practical and theoretical initiatives are addressed on the bases of either virality or reciprocity, contribute to differently designed safe environments. Both the DPL and MDPL create an online pool among all the patentees who agree to cross-license their patents with the same terms and conditions, as long as these terms and conditions are respected.¹²¹ Given the non-exclusive nature of the DPL and MDPL, this safe environment is assumed to coexist with the more familiar outside environment where patents are traditionally traded and licensed against fees. Therefore, the DPL and MDPL raise a fence around the safe environments that they create—leading to different rules not only diversely governing exploitation of patents inside and outside of this “fenced environment,” but also disparately affecting innovation which, in the case of the “fenced environment,” will be available only to those inside it. On the contrary, practice shows that the less structured Open Patenting experiences design a safe environment which, thanks to the viral clause, is intended to exponentially spread the more the granted patents are used by interested parties.¹²² In other words, these empirical experiences create an “unfenced environment” which works as a booster for innovation.

Now assuming that the Open Patenting experiences, as well as the theoretical licensing schemes here analyzed, are thought to spur Open Innovation by increasing the number of patents that patentees will be incentivized to open up, it is interesting to consider how these fenced and unfenced

patent is done on a “royalty-free basis”).

121. See *supra* notes 49–51 and accompanying text (discussing how the website for the DPL regime would operate).

122. See Empirical Evidence discussion, *supra* part II.A.

environments work in relation to this purpose. First, the DPL and MDPL will probably succeed only when the number of patentees that take part in these pools amount to the “right scale.” Indeed, if either framework lacks the numbers to reach such a scale, there are no incentives to participate in the projects because the network effects are not sufficient for the desired end of navigating the patent thicket. On the contrary, the practical experiences are not concerned by such right scale and network effects issues because, as long as they adopt a viral clause, they succeed even when only one single licensee adopts the open terms and conditions of the initial irrevocable offer that she has accepted. Therefore, while in the DPL and MDPL scenarios patentees’ willingness to open up their patents will rest on the number of patents that already reside within the “fenced environment,” in the “unfenced environments” created by the practical experiences here analyzed, the willingness to open will not even be at stake, because the viral clause will oblige future patentees to license their subsequent patents under open licenses.

Nonetheless, the success of Open Patenting licenses characterized by viral clauses should not be taken for granted, especially when the open project pursues an ambitious goal: involving firms holding crucial and very valuable patents. It is likely that these players would not be interested in making an irrevocable offer as to opening their patents without at least gaining their rivals’ intellectual property rights in exchange. It is in relation to this scenario that the MDPL model could work as an effective tool for supporting Open Innovation.

Finally, as to the divergent structures that these theoretical and practical models adopt, it is important to note that the former rely on a central administrator, who manages the website and the flow of inbound and outbound patents and keeps track of the many transactions that occur within the safe environment.¹²³ On the contrary, the management of Open

123. See *supra* note 51 and accompanying text. A similar experience, though too recent to be included in the analysis, is the consortium launched by World Intellectual Property Organization (WIPO), in collaboration with Bio Ventures for Global Health in the field of pharmaceutical products for neglected diseases, to which some major pharmaceutical companies have already granted some of their patents. See *Guiding Principles of WIPO Re:Search*, WIPO, http://www.wipo.int/research/en/about/guiding_principles.html (last visited Feb. 28, 2013). The aim of the initiative is that of encouraging and supporting research and development of products for

Patenting initiatives ranges from use of a hub-and-spoke administrator, as in the OIN project,¹²⁴ to the case of a mere facilitator as with the platform envisaged by BioBrick and BiOS projects,¹²⁵ and to the Model Patent License elaborated by CC as a tool not necessarily administrated by a third party but simply offered to whoever wants to utilize it (and adopted, indeed, by the GX project).¹²⁶

D. OUR PROPOSAL

Building on our primary definition of Open Patenting and on the analysis of empirical experiences and theoretical models, our proposal intends to design a licensing scheme capable of promoting Open Innovation. Such a scheme mirrors the MPL, as it attempts to provide a simple legal tool, but additionally aims at guaranteeing a higher degree of flexibility to satisfy needs and features specific to as many industrial niches and sectors as possible. While the tool is meant to address all patentees regardless of the size and value of their portfolios and the industrial sectors where they operate, and though it is likely to be employed by governments for public-funded initiatives, private-public partnerships, small and medium enterprise firms, and niche sectors, we hope that its customization will also incentivize “big players” to open up their patents.

We propose that patentees interested in spreading their patented knowledge employ an irrevocable,¹²⁷ worldwide,¹²⁸

neglected diseases by establishing a platform through which public and private sector entities can share their IPRs. *Id.* It has three major components: (1) a database providing details on the IPRs available for licensing as well as services and their technologies available; (2) a “Partnership Hub” which will work as an administrator of all information and licensing partners available; and (3) a range of specific “Supporting Activities” to facilitate negotiation and to address technical matters. *Id.* What is peculiar about this initiative is that members commit to the licensing of their IPRs under specific terms, which are, however, subject to individual negotiation. *See id.* In other words, licenses are the results of one-to-one bargaining activities within a set of standard terms and conditions, encompassing, among other things, commitments to not appropriate the patentable results of the common research and to not assert their own IPRs against the other members of the consortium. *See id.*

124. *See supra* notes 40–43 and accompanying text.

125. *See supra* notes 40–53, 67–78 and accompanying text.

126. *See supra* notes 60–66 and accompanying text.

127. This means that the license will last until the expiration date of the patent.

128. Of course, the geographic scope of the license cannot be broader than

non-exclusive, no-charge license, to ensure that the use of third parties' patents will never become, in any part of the world, an infringing activity for whoever chooses to become a licensee. In other words, our licensing scheme consists of a unilateral standard offer that would be implicitly accepted whenever someone uses the licensed patent.

Furthermore, in order to encourage its adoption, our proposal, like the other already existing open licenses (such as General Public License, Creative Commons, and the Model Patent License), does not charge the patentees and licensees fees additional to the ones required by ordinary patent systems. Our licensing scheme has been conceptualized to work without the help of any centralized administrator. To be sure, the lack of such an agent may raise concerns as to where would-be licensees could find information about the available patents and their features. Yet, the empirical experiences show that in some sectors, such as biotechnologies, there is a natural trend toward the creation of repositories to ease access and sharing of knowledge. Therefore, it is likely that, in order to spread needed information among would-be licensees, our licensing scheme will have to build upon this continuing trend and put those experiences to use. Moreover, given that our licensing scheme is an online tool, an easier way to solve the described information problem is inserting metadata to make it not only machine readable, but also searchable via search engines. This solution, which is the one actually adopted by CC, as well as proposed for the MPL and the BioBrick public agreement, requires only the existence of a website performing as a "tag generator."¹²⁹

The difference between the current open licensing schemes already envisaged and available on the web and our system rests with the possibility for patentees to customize their offer. Indeed, where our proposal contravenes is in giving patentees the freedom to tailor the license that they adopt according to their will and to the features of the industrial sectors where they operate. This is done by maintaining a core of unchangeable clauses, guaranteeing the openness of the license, but leaving patentees free to choose among a pre-

the scope of the granted patent. Therefore, if the patentee holds a national patent, the license herein proposed will be national as well.

129. See *supra* note 50 and accompanying text.

determined set of clauses that will customize the license if the patentee so desires. Namely, we believe that *attribution*, *non-assertion*, and *viral clauses* should be compulsory in order to ensure the openness of the license; we would also maintain, at patentee's discretion, the choice of whether to allow commercial exploitation of the granted patent, the charging of royalties according to the uses chosen by the licensee, and the use of the patent for producing substitute goods.¹³⁰ In addition, another compulsory clause should state that the use of the licensed patent for research purposes is always royalty-free.¹³¹

As to the justification for the compulsory clauses, attribution is needed to remove what could be a possible hurdle to the use of our license. Indeed, in the case of public or nonprofit research institutions, researchers could be interested in maintaining credit for what they have invented—a result that would not be possible with the adoption of a share-alike, non-attribution license. In a different vein, the non-assertion pledge and the viral clauses are essential in keeping the license open. First, the non-assertion pledge guarantees the creation of a safe environment where operating and innovating are not infringing activities and there is no risk of misappropriation. Second, such a safe environment will keep expanding by the effect of the viral clause, which prevents the building of fences around these open patents. In addition, use of a viral clause overcomes the need to adopt other clauses, such as those regarding grant-backs and sub-licenses. Indeed, with the viral clause, there is no need to further regulate improvements and additional licenses because they will be subject to the same terms and conditions of our licensing scheme. Finally, we

130. This is, for example, what happens in GX, where patentees can choose to allow commercial uses in fields other than the primary market of exploitation of the patent that is offered under the GX license. Cf. Hayes & Schulman, *supra* note 3, at 9 (proposing a carve-out from the MDPL for “cloning” products and services and also “foundry” products and services, on the ground that “participants may be concerned about wholesale product copying [or] circumvention of the DPL's purpose by an entity set up solely or principally to launder products through a DPL member”).

131. As already mentioned, the lack of a statutory research exemption constitutes a significant difference among U.S. patent law and those of the main foreign jurisdictions. See *Patent Tools Public Discussion*, *supra* note 56. See also Chris Dent et al., *Research Use of Patented Knowledge: A Review* (Org. for Econ. Cooperation & Dev. Directorate for Sci., Tech. & Indus., Working Paper No. 2006/2, 2006), available at <http://www.oecd.org/science/scienceandtechnologypolicy/36311146.pdf>.

believe that research should be royalty-free to promote the cumulative nature of innovative processes.

Moving now to the options that in our proposal are granted to patentees in relation to commercial uses of their patents, patentees shall first decide whether to allow commercial exploitation in general. Once the choice for commercial exploitation is made, patentees shall decide which uses are permitted and whether they should be charged and, finally, they would set ranges of royalties. In particular, in the customizable part of their offer, patentees shall decide whether to permit, and, once permitted, whether to charge for: (1) uses in other fields; (2) follow-on uses (i.e., uses that will not result in competitive products); and (3) substitute uses (i.e., uses that will result in competitive products). This articulation of uses in three main categories derives from the need to involve as many players as possible, including big patent portfolio holders, across as many industrial sectors as possible. In particular, holders of valuable patents can shield profits they generate by choosing to not allow substitute and follow-on uses, but they can increase their patent cash-flow by monetizing uses in other fields that they would be unlikely to pursue on their own.

In sum, we believe that Open Patenting is not strictly a no-profit choice, but can be a choice for non-profit research. In practicing within our framework, a patentee cannot choose to charge for the research uses of his or her patents, but he or she can choose whether to profit from their possible commercial uses. In other words, while openness and profit can go together, and should do so to involve as many stakeholders as possible—specifically those active in profit-driven sectors—research should remain not only free (like free speech), but also royalty-free. This will enhance innovation without depleting the economic incentives to innovate. We believe that legal rules are not supposed to shape innovative paths within industry, but to help innovators find their way. Therefore, our intent is not to change industry dynamics, especially in traditional sectors where the incentives to keep patents closed are, unfortunately, very significant.

III. CONCLUSION

In this paper we built on the initial definition of Open

Patenting as a legal phenomenon establishing standardized terms and conditions for managing patented knowledge¹³² in order to identify the clauses that an Open Patenting standard license should encompass to effectively foster Open Innovation. To this aim, we matched the current main Open Patenting experiences with the theoretical licensing schemes that have been envisaged in literature in the pursuit of using patents in a way different from traditional proprietary notions, in the attempt to align them to the Open Innovation principles.

What emerged from the analysis of the Open Patenting empirical experiences and the theoretical schemes belonging to the Open Innovation environment is that while the former achieve the goals of spreading and pooling patented knowledge—goals that, of course, each achieves to a different extent—the latter aim at promoting freedom to operate and innovate as well as the ability to navigate the patent thicket among the inner circle of licensors and licensees. In our opinion, although belonging to the same environment, practical and theoretical models do not coincide in the way in which they intend to foster the Open Innovation phenomenon since they have different visions of how patented knowledge should be opened up and what parties should benefit from openness. In particular, if the theoretical models are conceived for the pool of participants in the project, the practical experiences—or at least some of them—address a more broad range of users of the patented knowledge. As a result of these differences, we have highlighted that the safe environment that both theoretical and practical models aim at establishing is a “fenced” one in the first case—as Open Innovations takes place only inside the environment but not outside—and an “unfenced” one in the second case—as the Open Innovation is meant to spread as much as possible from the inside towards the outbound.¹³³

With this background, we proceeded to formulate a proposal for a standard Open Patenting license that, in the pursuit of Open Innovation, would eliminate the difference between fenced and unfenced environments, yet would at the same time take into account the specificities of certain industrial sectors. These are the specificities that drove the formulation of the theoretical models, such as, for example, the need to attract big players holding valuable patents.

132. Maggiolino & Montagnani, *supra* note 2.

133. See discussion *supra* Part II.C.

We propose that this is possible by adopting a license that combines a high degree of standardization and is meant for any inventor, regardless of his or her capacity of conferring patents, with the option of tailoring some license conditions to the will of patentees and the needs of specific sectors. In other words, a license that is standard as to the core, mandatory conditions—i.e., those conditions that guarantee the spread of knowledge—but is elective as to the conditions that would enable patentees to take into account field specificities and individual needs, such as the conditions regarding commercial and chargeable uses of patents. Without jeopardizing the spread of knowledge, such a license might permit patentees to maintain a degree of control of their patents sufficient to encourage them to open up their patented knowledge in an unfenced environment.