

## **The Sustainability Innovation Network:**

### **A Proposal for Promoting Sustainability Through Networks of Open Innovation**

**(a collaborative project of Nike and Creative Commons)**

#### **Building a Better Innovation Ecosystem**

Innovation can arise not only within companies but also from distributed networks of empowered users. These users may be part of a company's supply chain, its consumer or user base, or from public/private partnerships. Innovation can arise not only from big breakthroughs, but also from a series of micro-improvements made by many individuals solving particular problems in a distributed way. When such improvements can be shared and built upon in a network that includes a large and diverse community, then we call this "open innovation." The power of open innovation to transform entire industries and how we solve complex problems is evident from the impact of the Linux and other open source software. It is also demonstrated by the massive cultural and scientific collaboration enabled by the Creative Commons licenses, which has made an enormous impact on the sharing of Web content, from Wikipedia and Flickr to open access scientific journals.

Nike and Creative Commons share a vision of creating an open innovation platform that promotes the creation and adoption of technologies that have the potential to solve important global or industry-wide challenges. Open innovation is characterized by leveraging knowledge shared across many participants in a market, including companies, individuals, suppliers, distributors, academia, and many others to solve common problems and to assist internal innovation. Open innovation is an investment in the capacity of the market to support a firm's ability to innovate and implement revolutionary technologies. Finally, it enables the development of new business models that leverage the creative output made possible by open collaboration to create new value and products. Open innovation is also a key component of engaging the resources and capabilities of large communities in finding ways to create sustainability, such as developing new ways to promote efficient resource use, implementing green manufacturing techniques, and delivery of products to consumers with lower impact to the environment.

This white paper describes some of the ideas for promoting open innovation and cross-industry collaboration. It begins with a discussion of the potential of open innovation to solve intractable problems that require community collaboration. It then discusses specific strategies that promote open innovation. Finally, it challenges companies to find opportunities to leverage open innovation to solve key challenges, both of internal innovation and external collaboration.

#### **Open Innovation Is Based on Collaboration in Social Networks**

Traditional collaboration is face-to-face. It requires collaborators to manage schedules and arrange to meet in person or by conferencing. This limits the rate at which information can propagate, and it is premised on the control of informational content. Mechanisms of control can either be based on intellectual property ownership or "club-based" collaboration where the participants are part of a small community.

However, increasingly, modern collaboration, powered by the Web, is distributed. Examples of distributed collaboration include the Google search, the Wikipedia article, and the eBay auction, all which bring together disparate and distributed sources of information into a collaborative network mediated by common rules. Network mediated collaboration is based on small transactions, built upon standard technical and policy platforms, that enable low transaction costs both at a technical and legal level. By doing so, network mediated collaboration has a democratizing impact and therefore can engage mass audiences of users, contributors, and mediators, in ways that would otherwise be impossible. Likewise, open innovation is based on the mediated network collaboration concept: by making it easier to share documents, music, software, data, ideas, discoveries, and other kinds of knowledge, it has the potential to engage mass communities in the creative process. That brings with it innovation potential that not single company can match throw internally funded R&D.

Even as network mediated collaboration has transformed the Internet, with business models such as NikeID, Amazon, eBay, Wikipedia, Craigslist, Web 2.0, it has not fundamentally affected scientific research or internal R&D divisions. Sustainability research is funded and undertaken by diverse stakeholders, including governments, non-profits, universities, individuals, foundations, and companies. Yet, these efforts remain largely unconnected and based on traditional, rather than networked, models of collaboration. Traditional ways of protecting value through patents, linear flow of business knowledge, and institutional inertia all contribute to “failed sharing,” which occurs when stakeholders need and want to share knowledge, but are prevented from doing so by technological, legal, or policy constraints that make collaboration and knowledge sharing non-scalable.

A different model that has demonstrated success for knowledge sharing is a “digital commons,” which is a private, voluntary system created by standard, mutually agreed upon contracts, which lower transaction costs and increase the volume of sharing. Creative Commons is an organization that has helped to revolutionize Web-based sharing by constructing successful, large-scale commons-based collaboration for copyrighted cultural works, scholarly journals, biological information and materials, educational courseware and syllabi, and much more. With millions of works on the Web licensed under Creative Commons licenses, Creative Commons has demonstrated that a digital commons can overcome many of the barriers to scalable sharing. This methodology is based in part on building a standard “layer” of rights transmission. Each Creative Commons license is a standard license that allows an owner of a work to give others permissions, but to place conditions on those permissions. For example a Creative Commons NC license allows users to make copies and prepare derivative works, but not for commercial gain. Other licenses have other restrictions. This empowers content owners and users to collaborate using pre-defined bundles of rights.

Another important aspect of the Creative Commons licenses is the use of plain English summaries that make the key conditions of each license easy to understand. This allows rights owners and rights recipients to communicate and understand each other without requiring legal expertise. Finally, each license is associated with metadata that integrates with search engines, such as Google, Yahoo, and Microsoft, and that make it easy to integrate with commercial business models. For example CC+ technology allows users to choose on version of a file online with certain rights retained and have one-click access to contact the owner for additional rights. Creative Commons licenses are localized in over 50+ countries, and our porting process ensure license compatibility across many different jurisdictions. Creative Commons is a non-profit organization, supported by philanthropic grants and corporate support, so we do not have conflicts of interest based on selling particular products. Science Commons is a project of Creative commons to realize the potential of open innovation by applying the CC methodology to solving problems of collaboration in science research, such as sharing of databases, biological materials, patents, clinical trial data, and more.

## **Patent Strategies for Promoting Open Innovation**

Nike and Creative Commons are calling upon other companies and stakeholders to bring the network

efficiencies of open innovation to solving the problems of sustainability. The project will seek to bring together stakeholders in working groups to discuss strategies for advancing the commons by exploring ideas such as using patent pools, research non-assertions, and using technologies that support networked and community-based knowledge transfer and sharing.

Networks work best with a standardized and simple set of protocols. The Internet is one example of a network based on the TCP/IP Protocol. The Creative Commons community is a network based on users of Creative Commons licenses who share content under these standard transfer regimes. For the proposed network of sustainability innovation, the core protocols relate to the freedom to experiment and conduct research, the standardization of transfer of ideas, and the use of technology to monitor and quantify downstream impact.

## **Research Non-Assertion**

The freedom to innovate and conduct research is at the core of the innovation ecosystem. We want to promote the adoption of policies that promote, rather than inhibit research, because innovation is crucial to solving many of the problems related to sustainability. The core innovation capacity of the economy is driven in large part by basic research and the publication of scientific knowledge in journals, at scientific conferences, and in other public forums. To promote, and expand this capacity, we propose that companies consider adopting voluntary research non-assertions.

A voluntary research non-assertion would grant researchers who conduct basic academic (non-profit) research, particularly of the type that typically leads to publication in a journal, a voluntary waiver of enforcement under a company's entire patent portfolio. In fact, the vast majority of companies do not have as part of their patent portfolio strategy the assertion of patents against academic, non-commercial research. As a result, many of them can adopt such a broad policy without having to conduct individualized patent review.

Freedom to conduct research can be restricted if patents are asserted aggressively against scientists and other academic researchers engaging in non-commercial research. In the past, many academic scientists believed that they are protected by the experimental use exception under patent law. However, a series of U.S. court decisions in recent years have drastically narrowed that exception or called it into doubt.<sup>1</sup> Other countries may have different or even no research exception. As a result, there is increasing concern in the academic community that researchers engaging in noncommercial experimental research may be subject to patent infringement claims. The chilling effects of patent assertion against basic research can extend beyond academic research and affects all sectors of the innovation ecosystem. Companies benefit directly or indirectly from many basic research occurring in public institutions. Therefore, we propose that companies adopt a voluntary research exemption as a standard policy.

### **Basic Research Non-Assertion Recommendation**

As a basic commitment to promoting open innovation, companies may consider adopting a voluntary research exemption policy. This would be a binding commitment not to assert patents against basic academic (or non-profit) research, without field of use restrictions or registration requirements, and would cover a broad portfolio of patents.

While such a policy would go far towards promoting a thriving innovation ecosystem, powered by basic academic research, many important innovations occur outside of academic centers. However, some companies may be understandably reluctant to commit their entire patent portfolio to uses outside of basic academic research, which may include implementations of the technology by competitors. Therefore, to enable use of a technology beyond the basic research exemption outlined above, a company should

consider a number of different strategies for separating pre-competitive uses of their patented technologies from core competitive uses. These potential strategies are outlined below.

As we noted, innovation in a network involves many different stakeholders and types of contributors. Some of these are individuals, such as customers or inventors. Others are companies that are part of a supply chain or that are part of an industry. The power of network mediated innovation is that it can link all these different inventors and creators into a single collaboration network. However, in order for that to be effective, they must share common rights and responsibilities. Therefore, a general research exemption that applies to all experimental uses, whether inside of a for-profit company, in an academic university laboratory, in a government laboratory, or by individuals. Commercial use in connection with the offering or sale of products or services for a fee could be excluded from the exemption. This would permit others to experiment with a technology, under a general research exemption, but may require them to come back to the patent holder for a license in the event that they wish to commercialize the technology further.

Some contributors may be concerned that by promoting research in their technology area they may inadvertently promote blocking patents in improvements. The risk posed by blocking patents varies by industry, by the nature of the foundational patent (e.g., whether it is broad or narrow), and on the market for that technology. Strategies for dealing with blocking patents and preserving freedom to innovate include the use of defensive termination provisions and defensive publication, both of which will be discussed later in this paper.

### **General Research Non-Assertion Recommendation**

Like the Basic Research Non-Assertion, this would be a commitment not to assert patents against experimental and research uses, but it would apply broadly to all kinds of researchers, rather than just academic or non-profit ones. Because this is a broader scope of use, the patent holder evaluate patents on a case-by-case basis for inclusion.

### **Patent Pools**

Beyond the basic grant, it might be useful to promote the implementation or commercial use of certain standards or technology throughout a community (for example, a water conservation technology). In those cases, it makes sense to consider the creation of patent pools consisting of specific patents that are available for public use.

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**"Patent pledges and covenants made by Contributors to the Patent Commons are not licensed to the [community] as a whole, nor are they licensed to any particular individual or company. Instead, ownership of the patent remains with the pledgor or promisor, but subject to an enforceable pledge or promise governing how the owner or holder will or will not enforce the patents in the future."**

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Patent pools are well-known tools to reduce the negotiation costs associated with trying to form technology standards. Examples of patent pools in existence or under development include industry standards like MPEG-2, IEEE 1394 (Fire wire), and Bluetooth technology. Patent pools have been used extensively in the open source software industry to encourage the development and adoption of open source software. The largest contribution of patents to open source software development was IBM's dedication of 500 patents in its Statement of Non-Assertion Against Open Source Software (OSS).<sup>3</sup> These patents are available to any open source software project, provided that IBM retains the right to terminate its non-assertion against anyone who brings a patent lawsuit against open source software. Likewise, the recently formed Eco-Patent Commons accepts donations of patents from several companies, and the patents are then made freely available for uses that have "environmental benefit". The Eco-Patent Commons was launched 2008 with contributions from IBM, Sony, Nokia, Pitney Bowes, and others. The program is managed by the World Business Council for Sustainable Development.<sup>4</sup> A common feature of these patent pools is that they make patents available for use in a particular field: open source software, industry standards, or environmental uses. For the maximum public benefit, patent holders should consider contributing specific patents for general use, with broad scope of use permissions. However, when this is competitively impractical, then a patent holder may still contribute the patent to the pool, subject to reservations of specific fields of use ("carve-outs") that are in the core competitive areas of the contributor's business. While the Eco-Patent Commons does not provide a mechanism for reserving specific fields of use, such flexibility could be made a part of the patent pool presently under consideration (although at the cost of increased complexity).

**"Individuals and others who take advantage of these promises or covenants ("users") to facilitate innovation do so in reliance on the legal doctrines of implied license, equitable estoppel, or laches to protect themselves against a claim of patent infringement by the pledgors and promisors...."<sup>5</sup>**

One significant benefit of using a patent non-assertion as compared with a public domain dedication of a patent is the possibility of reserving defensive use of a patent. Because the owner who pledges the patent retains ownership of the patent, it may condition the non-assertion on reserving the right to use patents in order to defend itself in a patent infringement lawsuit. Both the IBM Open Source Non-Assertion and the Eco-Patent Commons pledge have provisions that terminate the non-assertion in specific circumstances. Another example of defensive patent pools is the Open Invention Network (OIN), which was founded by IBM, Novell, Philips, Sony and Red Hat to provide a mechanism for protecting Linux from patent claims. It uses an initial patent donation by CommerceOne to create a defensive patent pool through cross-licensing of patents that apply to Linux. Thus, defensive termination allows a company to retain the defensive use of a patent even as it makes it available for sustainability use. The inclusion of a defensive termination provision may also help to mitigate some of the potential problems that may arise from downstream blocking patents, to the extent that those who rely on the patent pledge but later obtain blocking patents may be deterred from asserting their improvement patents against the contributor.

**"A patent grants the right to exclude others from a particular area of claimed technology, but does not confer the right to practice an invention. In the Blocking Patent scenario, patent infringement liability may attach when the scope of the claims in the patent are exceeded and infringe on the patented technology of another patentee."<sup>6</sup>**

One goal of the network is to provide a way to evaluate and quantify the downstream impact of inventions. To enable this, it is necessary to collect data on practical applications of an invention, measures of impact, and subsequent development. This data can be collected, analyzed, and modeled in order to provide a dashboard with metrics on community impact. Projects such as the Eco-Patent Commons allows patent holders to contribute patents to broad uses that have environmental benefit, but in order to maintain simplicity and ease of use, they do not require that users who rely on these patent non-assertions register or share back information regarding their use of the patent. As a result, it is difficult to evaluate or quantify their impact beyond anecdotal evidence of use. Therefore, one strategy that should be considered for this project, and that would distinguish it from existing or prior patent pools, is to request that users who wish to rely on the patent non-assertion for public commercial uses register with the network their particular uses, along with data that will allow for impact assessment, using an easy-to-use interface based on Creative Commons tagging technology. This would give patent users an incentive to provide more complete information about public downstream uses of a contributed invention, which would in turn allow patent contributors to obtain objective, quantifiable information about the impact of their contributions. Such information can help provide credit and public recognition to particularly innovative companies that are contributing towards solving sustainability problems.

### **Patent Pool for Sustainability (Implementing Sustainability Beyond Research)**

Considerations include:

Patent holders will voluntarily contribute specific selected patents related to sustainability into a patent non-assertion pool for uses beyond basic research, including development and commercialization.

Patents to be contributed are specifically selected at the discretion of the contributor. All other patents not named in this way are not included.

Patents contributed may be made available for all uses or particular well-defined uses, at the discretion of the patent contributor. Patent holders are encouraged to contribute for the broadest possible uses of sustainability innovations whenever possible, but in some cases, core competitive fields of use may be reserved.

The patent pool may include provisions for patent holders to reserve defensive termination rights, and users who rely on the pool for public commercial uses are asked to register and provide basic information about their applications for impact assessment.

### **Complementary Patent Strategies**

The primary goal of this project is to make innovations freely available for others to experiment with and build upon in order to solve key sustainability challenges. Therefore, it is not our intention to create a platform for patent licensing infrastructure based on fees or royalties. However, companies who contribute patents to the pool reserve rights in other patents not designated for inclusion. For those patents, they may consider publishing a standardized patent license with a standard table of fees. This approach may complement the contributions to the "free" patent pool, because it will assure users that if they are successful in implementing the "free" technology and wish to license other related technologies from a company that they will have a predictable "upgrade" path. Thus, they may find it more attractive to invest in implementation of that technology. As a result, this may attract more users interested in licensing from the patent contributor's reserved portfolio in the future and allow it to realize modest revenue from an

otherwise underutilized patent portfolio.

## **Unpatented Know-How**

Patents are a prominent part of the innovation ecosystem, but many useful inventions—in fact the vast majority—are not patented. This body of knowledge, once published, becomes part of the public domain, which is available for everyone to draw on and use.

Publication of unpatented inventions serves a number of useful purposes that includes:

1. drawing attention to the invention and enabling others to make use of it,
2. contributing to the creation of common industry and technical standards, and
3. establishing “prior art” that prevents others from patenting the invention.

Sources of prior art include scholarly articles, trade journals, public conference presentations, and technical disclosures. The patent office examiner can draw upon prior art to deny any patent claim that fails to appear “novel” or “non-obvious” in light of prior art references. The patent examiner may combine prior art references to conclude that an invention is anticipated.

A risk for any company or community that uses an invention is that someone else will seek patents to block potentially useful improvements or extensions of the technology. This is sometimes referred to as the “picket fence” strategy: building a fence of blocking patents that prevents a technology from growing. One way to prevent or mitigate the risks of picket fence strategies is to make “defensive publications,” in order to establish improvements of the technology as prior art. The most effective way to establish prior art is to publish where the patent office examiner is likely to look. Depending on the industry, this can include peer reviewed journals, trade publications, or even some online databases of inventions. This reduces the risk that bad or invalid patents will be granted, which may be difficult or expensive to challenge. Thus, defensive publications or technical disclosures are cost-effective means to protect freedom to operate and to reduce “bad patents” from being granted, especially where exclusivity is not wanted.

Another purpose of publication is simply to draw attention to the invention and to encourage others to use and build upon it. Information that is kept confidential is considered a “trade secret” until publicly disclosed, but public disclosure, such information is considered in the public domain, and free for anyone to use, unless already patented (or within one year of disclosure in the U.S.). Inventions that are published can lead to further experimentation by others, who can make improvements, adapt it to many possibly unanticipated uses, and advance the state of the art. They can also be incorporated into industry standards, best practices, and technical specifications or standards.

Therefore, a component of the network should enable the publication of unpatented technical knowledge that can support key uses of sustainability technologies. This repository of knowledge can not only attract inventors and others looking for solutions to key sustainability problems, but it can also be a source of prior art for defensive publications.

## **Architecture of the Network**

The network will include standardized digital descriptions of patents that make it easy and transparent to build maps of patent portfolios in sustainability. It should also include unpatented know-how, particularly related to quantifying and dashboarding internal and external metrics of sustainability. It will include many contributors and collaborators, including Nike and Science Commons, as well as existing patent pools and projects that can be linked together into a network.

A benefit of the system is that it will reveal gaps in knowledge around subject areas relevant to

sustainability. These gaps can be targeted for discovery investments or jointly funded collaborations. They can also be the subject of prizes or other competitions involving the public in finding solutions. Part of the network will also include developing standard policies for collaborators in such competitions and collaborations. Results of such efforts can either be introduced into the public domain, contributed to the patent pool, or licensed under standard licenses, using any of the strategies discussed above.

Example of organizations that might be involved include Science Commons, Innocentive, and Ashoka. Other nodes of this network include corporations, academic institutions, government agencies, business schools, open source and open access communities, and individual inventors. Using existing social network technology, such as ccMixter, to manage content and the community experience, these networks can grow based on the same platforms that have driven the explosive growth of other Web-based user communities.

Long terms goals include the integration of data and technology with climate and economic models to provide benchmarking, dashboarding, and report card impact assessment. Expertise for such networks can be found in places like the MIT Center for Collective Intelligence.

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1. See *Madey v. Duke University*, 307 F.3d 1351, 1362 (Fed. Cir. 2002) and *Merck KGaA v. Integra Lifescience Ltd.*, 545 U.S. 193 (2005).
  2. Diane M. Peters, "Understanding Patent Pledges: An Overview of Legal Considerations" available at [http://www.patentcommons.org/publications/OSDL\\_Whitepaper\\_Final\\_final\\_4-12-06.pdf](http://www.patentcommons.org/publications/OSDL_Whitepaper_Final_final_4-12-06.pdf). Please refer to this article for an in-depth analysis of patent pledges and legal considerations related to them. (Diane Peters is currently general counsel for Creative Commons, but this work was written for Open Source Development Labs, Inc., where she was formerly General Counsel).
  3. See the IBM Statement of Non-Assertion of Named Patents Against OSS, also available at [www.ibm.com/ibm/licensing/patents/pledgedpatents.pdf](http://www.ibm.com/ibm/licensing/patents/pledgedpatents.pdf).
  4. See the Patent Pledge for the Eco-Patent Commons, available at <http://www.wbcds.org/web/publications/external/pledge.pdf>.
  5. See Peters, p. 1.
  6. See Peters, p. 5.