**A Little Knowledge Can Hurt!**
**The Quandary of a Balanced IPR Policy**

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***Introduction***[2]

Standards have always been and still are an important part of shaping any civilization. Today, as in the past, governments enforce standards to protect the safety, security and well being of their citizens. Non-governmental organizations also develop standards to protect the interests of the public. The Good House Keeping® seal is a great example of a quality standard set by the Good Housekeeping Institute in its role as a champion for consumers. Industries also adopt market driven standards to meet customer needs.

In recent years, there has been a proliferation of critical market-driven industry standards that have fueled the growth of information technology around the globe. These industry standards are "open" standards that define technical interoperability requirements that enable a myriad of products to work together in a growing number of consumer scenarios. Sending digital photographs via email to your parents, checking into your flight electronically, receiving your email on your PDA, and watching a movie on your portable DVD player are all common scenarios today that would not be possible without voluntary market-driven open industry standards.

Standards cannot please everyone on every issue, however, because there is a tension among consumers' market interests to use products and services that work together as well as to offer consumers a variety of choices, and among suppliers that seek to maximize their market share and profit. Standardization can level the playing field, but it can also eliminate any playing field if there is no technical cooperation. In order to maximize cooperation to deliver standards that suppliers will implement and deploy to consumers, standards setting bodies generally endeavor to define the rules of cooperation, including those involving intellectual property, in a way that promotes the objectives of the particular standard, or set of standards, given the interests of the various stakeholders.

Yet with the proliferation of so many interoperability standards has come a tremendous surge of competitiveness around the very standards that require so much cooperation to develop. As a result, there is an ever-increasing awareness of how the intellectual property rights (IPR) policy and processes adopted by a standards setting organization (SSO) can impact consumers and suppliers. With this increased awareness, we are seeing more attention paid to defining patent policies that address challenges, both real and perceived. This paper will explore the various challenges, separate the perceptions from the realities, and though case law is of little direct

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guidance on some of these challenges, offer possible solutions to address some of the real challenges faced in today's standards setting environment.

***Standards Setting Basics***

SSOs take many forms and follow different policies and procedures. Yet most SSOs today operate under a patent policy that obligates its members that participate in the development of an open standard to disclose patent rights owned by those participants that would be infringed by implementers of the standard. Often participants are required or requested to license certain patent rights, especially those patent rights that have been disclosed under reasonable and nondiscriminatory terms and conditions (RAND) to implementers of the standard. Although RAND terms have not been specifically defined,[3] many standards legal experts will agree that RAND licenses may include a variety of terms commonly found in patent licenses such as reasonable royalties, field of use restrictions, reciprocity conditions, defensive suspension, and prohibitions on sublicensing. While somewhat rare, some open standards have been plagued by "unreasonable" royalties imposed by a patent holder, or high royalties resulting from the stacking of royalties imposed by many different patent holders. In addition, as open source software (OSS) becomes more mainstream in the Information and Communications Technology (ICT) sector, tension is revealed between some RAND terms and the OSS licensing model for software distribution.

***A. High Royalties***

The debate over royalties stems from the premise that a patent holder should be able to obtain a return on the investment it made when it invented an important innovation through its research and permitted the inclusion of this innovation in an open standard for the benefit of all. The problem lies in determining what a reasonable return on this investment should be. Some standards developers believe that patented technology becomes worth more to the patent owner because of its inclusion in the standard, giving the patent owner a greater business and technological stake in implementations of the standard, than if other technology was chosen.[4] Simply put, some believe the patent owner should not benefit from any additional value derived from inclusion in the standard.

One way SSOs have tried to avoid investing in the development and adoption of a standard, only to find out that one of the contributing developers holds blocking patent rights by imposing unreasonable royalties, is to require early disclosure of such patent rights. In theory, early disclosure permits standards developers to choose a different technology to include in a standard if the patent rights for a proposed technology can only be licensed for excessive royalties. In practice, it is not that simple.

Patents are complicated legal documents that patent attorneys along with standards developers must interpret. So determining how to avoid infringing disclosed patent rights in many situations

[3] At least one current case *Broadcom v. Qualcomm* invokes issues relating to whether or not Qualcomm's 3G patent licenses are RAND.

[4] The added value created by greater use of a product, service, or intellectual property is referred to by economists as a "network effect." *See* D. Wagner, *The Keepers of the Gate: Intellectual Property, Antitrust, and the Regulatory Implications of Technology Policy*, 51 Hastings L.J. 1073, 1096 (Aug. 2000) (network effects "arise when the utility that a user derives from the product increases with the number of other individuals who also use the product"); M. Katz & C. Shapiro, *Network Externalities, Competition, and Compatibility*, 75 Am. Econ. Rev. 424 (1985)

will involve a lengthy and costly process involving patent attorneys, not just the standards developers and may significantly impede the development of the standard. Even a proper evaluation may not yield definitive results, and frequently, a well-reasoned opinion by a patent attorney that a patent is either not infringed or invalid is not upheld in subsequent litigation. If the opinion is not well-reasoned those involved in the selection of alternative technologies including the SSO, as well as those implementers put on notice of the patent and the rationale why it will not be infringed when implementing the standard, may be subject to an increased risk of willful infringement in the US if in fact the alternative technology is ultimately found to infringe.

In the standards context, the complications of selecting alternative non-infringing technologies are increased by several factors. First, the evaluation of the patent rights and alternatives is often handled by multiple collaborating independent parties resulting in the potential loss of attorney-client and work product privileges. Secondly, since not all of the potential alternatives and their respective patent landscapes will be known at the time of any such evaluation, it is quite foreseeable that the selection of an alternative technology may also be covered by another party's patent rights, but that party is not subject to the patent policy and has no obligation to license whatsoever. Another complicating factor in the standards context especially with early disclosure is that the specification may be incomplete making the evaluation of whether or not the patent rights will actually be necessary for implementation uncertain. This uncertainty increases when the patent rights are merely pending because the scope of those patent rights is likewise unknown until patent claims have been allowed. Finally, not only are there uncertainties concerning potential infringement but there may not ultimately be any licensing constraints that would impede the adoption of the standard. In other words, there are often unwarranted fears that patent owners will charge excessive royalties as is discussed below but in reality they do not, thus making the costs, delays, and legal risks associated with the selection of an alternative technology unnecessary altogether. Consequently, while there can be benefits to knowing early on about patent rights that will be infringed by implementation of the standard and will not be licensed to implementers under reasonable royalty rates, there also many downsides to over broad patent policies that result in the disclosure patent rights that would not block adoption of the standard either because of their scope or their corresponding license terms.

***Mandatory Patent Searches Are Not Favored Nor Are They Practical***

Most disclosure requirements are limited to the personal knowledge of the individuals participating in the process. Very few, if any, patent policies require participants, and more importantly, their employers to search their patent portfolios to identify patents which cover a proposed standard. The reason for this is simple. A requirement to search ones' patent portfolio is so onerous that many crucial technology contributors would not participate in a standards development process that requires them to search their entire portfolio.

A broad search requirement is so onerous for some because larger corporations often own thousands of patents and patent applications throughout the world and employ thousands of employees that participate in hundreds of standards development efforts. The cost of a single patent search for just a single proposed standard alone could be many thousands of dollars. Still further, the analysis of whether or not a patent covers a standard or would be infringed by implementing or using the proposed standard requires a complicated analysis by a trained patent

attorney, exacerbating costs. Even the patent attorney's analysis will not be conclusive in the vast majority of cases as discussed above. One can only know, with legal certainty, if a product infringes a patent claim after litigation, including any appeals, has been concluded. Consequently, most SSOs define their patent disclosure policies in a way that attempts to balance the objective of encouraging participation with the objective of obtaining useful information about potentially blocking patent rights. Different SSOs ultimately draw the line in a different place to achieve the best balance of their perceived interests.

***A RAND Assurance is Not An Actual RAND License***

Another aspect of patent disclosure policy involves what information participants are obliged to disclose when they declare patent rights. In most cases, participants must identify the patent or patent application (if published) and whether the patent owner will license the identified patent rights on RAND terms. One of the most widely held misperceptions about a RAND license assurance is the belief that all implementers of the standard will need to go to the patent holder and obtain a license before commercial distribution or use of a product that includes an implementation of the standard. In reality, the patent owner rarely launches any licensing program or asks anyone to take a license.

In the majority of cases, the patent owner is more interested in the success of the standard to drive its own product sales than its success in licensing its patents that cover the open standard. However, patent holders rarely, if ever, publicly confirm that the patent may be freely used without the need for any license. Often patent owners want to retain or reserve certain rights for use beyond the scope of the standard or for defensive purposes, and therefore, disclose their patent rights merely with a commitment to make a RAND license available. Because the vast majority of patent declarations made in the standards setting context are not definitive statements that the claims of the patent will be unavoidably infringed by all implementations of the standard, it is unlikely that each and every implementer is expected to investigate every patent that is declared as relevant to a particular standard. To date, no case is known to the authors in the US that has found an implementer liable for willful infringement on the sole basis that the patent owner disclosed the existence of the patent during the standards setting process.

***Ex Ante Disclosure of Licensing Terms Is Not The Right Answer***

While some patent policies require royalty free patent licensing, the vast majority permit a reasonable royalty. However, what is reasonable to the patent owner may not ultimately seem reasonable to implementers and users of the standard. Many have argued that a reasonable royalty should not be an inflated value attributed to patent technology that becomes commercially successful only because of its inclusion in a widely adopted industry standard. However, patent owners that have disclosed their patents before the adoption of a standard and pledge to license the patent under reasonable rates if the patented technology is included in the standard believe that they need to offer reasonable rates to all given that the patented technology is commercially successful. While there have actually been very few disagreements about the ultimate royalty rates charged by patent owners that have disclosed patents during the standards development process, many implementers, perhaps irrationally, raise this possibility as the most significant problem facing standards setting. As a result, there is a movement by some advocates to require patent owners not only to declare the existence of a patent that might include essential claims, but also to state the maximum royalty the patent owner would charge for implementation

of the standard if its patented technology becomes required by the standard. Other advocates are proposing that a more objective formula be defined for determining RAND royalties.

In the authors' view, however, existing proposals for *ex ante* disclosure of licensing terms during standards development would create far more problems than any benefits achieved through disclosure. First, such proposals respond at most to the rarest of circumstances. Indeed, there are very few cases where a patent is disclosed in advance of a standard being adopted, and then, following widespread commercial development and deployment of products based on the standard, the patent owner charges unreasonable royalties despite the assurance that royalties would be reasonable.[5] These scenarios are remote because those parties that disclose patents can be asked about their royalties before the standard is adopted. If they refuse to respond to legitimate requests for information from potential licensees, it is unlikely that the patented technology will become included in the standard. A more common scenario that is addressed below is the situation where a patent owner does not disclose a patent before the standard has been adopted, but then nonetheless charges unreasonable royalties.

Some claim that there is even something unfair about having to ask a patent owner for its licensing terms. They insist that the patent owner should instead be required to publicly disclose its licensing terms or be subject to a rigid definition so that standards developers can better predict the potential royalty landscape. However, assuming that the patent has been disclosed and is subject to an assurance by the patent owner to license the patent on RAND terms, there already exists a judicial framework for determining a reasonable royalty as a measure of damages in a patent infringement case. In *Georgia Pacific*, the court enumerated 15 factors that can be considered in determining a reasonable royalty rate.[6] The Court of Appeals for the Federal Circuit has affirmed the use of these factors as appropriate in all scenarios.[7] No case law today suggests that these factors need to be ignored or modified in the context of standards setting. The framework is sufficiently flexible to apply to the facts and circumstances of any infringement including those that infringe patent technologies that have been incorporated into industry standards. The *Georgia Pacific* factors are not predictable enough for some, and often involve complicated economic analyses by experts, but these reasons should not be sufficient to create rigid patent policies that subvert this long-standing judicial analysis.

Importantly, a requirement to publicly disclose ex ante licensing terms or force RAND assurances into a rigid formula that suits licensees may have numerous negative consequences. In many instances, those that have the most to contribute to the standards development process are often the same parties that have invested substantially in research resulting in valuable IPRs. IPR policies of SSOs that subject those parties to onerous licensing restrictions, or worse, to negotiations among prospective licensees colluding to force this party to license on terms far less than the market may independently bear, may encourage the party to avoid participation in the

[5] In *Symbol v. Proxim*, Symbol disclosed that it might have essential patents and would license them on reasonable rates, terms and conditions that were the same as its then current licenses. The jury awarded a 6% rate as a reasonable royalty. There is nothing in the facts stated that suggests that Proxim had inquired about those rates before the standard had been adopted. *Symbol Techs., Inc. v. Proxim Inc.*, 2003 U.S. Dist. LEXIS 13767 (D. Del., 2003), Decided, Judgment entered by *Symbol Techs., Inc. v. Proxim Inc.*, 2004 U.S. Dist. LEXIS 14949 (D. Del., 2004)

[6] *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1121 (S.D. N.Y. 1970)

[7] S*ee e.g.,* Monsanto Co. v. Ralph, 382 F.3d 1374, 1383 (Fed. Cir. 2004); see also Dow Chemical v. MEE Industries, Inc., 341 F.3d 1370

standards development effort altogether. Without the participation of such key contributors, who may possess key blocking IP applying to a standard, the resulting standard may take much longer to develop and be technically inferior. For users and vendors that need a successful standard, this result may be unacceptable. Moreover, a party that does not participate is not subject to the patent policy at all, increasing the risk that such party's patents may be used to block adoption of the standard. That is a problem that is far more difficult to address from a patent policy perspective.[8]

The most practical way to be able to predict a royalty in the situation where the patent is known in advance is to ask the patent owner about its licensing terms before the standard has been adopted. It is unlikely that any standard will be adopted over objections of participants and potential implementers claiming that the patent owner has refused to provide them with license terms. Where a patent is not disclosed ex ante, i.e., before the adoption of the standard, there is no opportunity to ask about licensing terms or to make any objections. In many cases, those patents are also not subject to any assurances by the patent holder to make a license available on RAND terms. There may be no perfect solution to this problem, but what follows is a summary of a few different approaches.

***Existing Law Encourages Early Disclosure***

The most common approach is to rely on fraud, misrepresentation or antitrust law as a basis for rendering a patent unenforceable when the patent is not disclosed ex ante, but is owned by a participant in the standards setting process. The common fact pattern is that the participant allegedly knew about its patent, did not declare it in a timely manner and then after the standard was widely adopted, the participant sought unreasonable and excessive royalty rates from implementers. In a few cases, notably *Dell* and *Unocal*, the patents were rendered unenforceable against implementers.[9] However, in many cases, the patent holder remains free to seek royalties because the court could not find a violation of the patent policy, and short of that, could not find that a duty to disclose the patent ever existed.[10] For this reason, it is important for SSOs that have RAND licensing policies to have clear patent disclosure requirements that can be reasonably implemented and do not require patent searches or other onerous activities aimed at identifying essential patents. In other cases, supported by the fact pattern that the patent owner delayed in disclosing its patent, infringers have avoided royalties altogether by asserting the patent defenses of laches or estoppel.[11]

***Policies That Attempt to Protect Against Patents Owned by Non-Participants***

Appropriate disclosure policies can only be useful with respect to those that are obliged to follow them – typically those who have agreed to follow the policy. For those patent owners that are not members of the SSO and are not participating in any way in the standards development

[8] The Supreme Court will be examining some aspects of the limits of injunctive relief for patent infringement later this year in the context of patent holder MercExchange seeking to enjoin eBay from use of certain on-line auctioning technology. However, at this time, it is well settled law that a patent holder may seek injunctive relief where infringement is found, in exercising the patentee's exclusive rights.

[9] *Dell Computer Corp.*, 121 F.T.C. 616 (1996); *Union Oil Co. of Cal.*, FTC Docket No. 9305 (Mar. 4, 2003)

[10] *In the Matter of Rambus Inc.*, 2004 FTC LEXIS 17 (2004); See also *Rambus Inc. v. Infineon Technologies Ag*, 318 F.3d 1081 (Fed. Cir. 2003)

[11] *Stambler v. Diebold, Inc.*, 11 U.S.P.Q.2nd 1709 (E.D.N.Y. 1988); *Potter Instrument Co. v. Storage Technology Corp.*, 207 U.S.P.Q. 763 (1980); *Wang Lab. v. Mitsubishi Elecs. Am.*, 103 F.3d 1571 (Fed. Cir. 1997)

process, there is little anyone can do to ensure that those patent owners make a license available *at all*, let alone on RAND terms. One SSO, the W3C, has a requirement that if a patent becomes known after a W3C Recommendation[12] has been approved, which is unavoidably infringed by implementations of the Recommendation and for which a license is not available that is consistent with the W3C's license requirements, then the W3C will form a Patent Advisory Group (PAG). The PAG is then chartered to evaluate and determine appropriate actions including rescission of the Recommendation in the event that the PAG cannot envision a way for the Recommendation to be implemented without infringement of the patent or otherwise under acceptable license terms.

In sum, SSO patent policies should clearly define the circumstances concerning when a participant must disclose patents that the participant believes may be essential. Those circumstances should be reasonable to maximize participation and permit efficient development of a standard based on the most appropriate technical solutions. If the patent disclosure policy is reasonably balanced, there is little need or benefit to either ex ante requirements to publicly disclose license terms or to define a rigid formula for determining a reasonable royalty.

### *B. Patent Stacking*

Another challenge facing standards development and adoption is patent thickets that can result in implementers and users of the standardized technology owing royalties to many different patent owners on many different patents. While each patent license may individually include a reasonable royalty, the combination of all of the royalties can be excessive and unreasonable. This situation is sometimes referred to as patent stacking.

#### *Perception Is Not Always The Reality*

As discussed above, most IPR policies require a RAND license assurance for certain patents. However, many IPR policies have broad obligations to disclose patents. Some policies, for instance, request participants to disclose patents that "relate" to the standard being developed. While other policies are narrower, they often still request disclosure of patents that cover optional features of the proposed standard or disclosure of patents that cover alternative solutions permitted by the proposed standard. Under such broad policies, there is an increased risk that numerous patents will be disclosed giving rise to patent stacking concerns. As discussed below, these concerns may turn out to be purely speculative and have little basis in reality. When IPR policies are more narrowly defined requiring only the disclosure of patents with claims likely to cover only those portions of the proposed standard that are required for conformance and which could not be implemented without infringing the patent, then prospective implementers have a more realistic picture of the patent landscape relative to determining what patent licenses may be needed to implement the standard should it be adopted. Such patent rights are often referred to in more narrowly defined IPR policies as "essential patent claims." Since, generally, not all essential patent claims will be known and disclosed before a standard is adopted, there is never a complete understanding of the patent landscape. Patent stacking, however, does not generally become a problem when there are only a very small number of disclosed essential patent claims that are licensed under acceptable terms and conditions.

[12] A W3C Recommendation is the equivalent of an industry standard for purposes of this discussion.

Many implementers prefer to have more information about patents, even beyond what is required for conformance with the standard, and for that reason favor broader disclosure policies although those policies may unduly raise concerns about patent stacking. They want additional information so that they can make more informed decisions about their product designs in advance. For example, if there are several ways to implement a particular feature of a standard and the standard does not specify how to implement that particular feature, they want to know if some of the ways are covered by patents. The assumption those entities make is that if no patents have been disclosed, there are no patents covering a particular way to implement the feature. The assumption may not give rise to the desired conclusion, however. Sometimes it is better to work with the enemy you know than one you do not.

Some policies, although it is not very common, may encourage patent owners that disclose their patents to identify those portions of the standard to which their disclosed patent relates so that implementers can assess if it potentially covers a mandatory part of the standard or if it can be avoided by using a permitted alternative solution. Unfortunately, many IPR policies define "Essential Patent Claims" in a way that expressly or arguably includes claims covering optional features as well as permitted alternatives and does not require patent owners disclosing these Essential Patent Claims to specify the features that relate to these claims.[13] Many prospective implementers and users are not aware of these nuances and upon seeing a multiplicity of disclosures fear that there will be no way to implement or use the standard without having to pay an excessive royalty due to patent stacking. In fact, such situations are relatively rare and where they exist, patent pools can often be formed in a way that makes the overall royalty reasonable for implementation.

Thus, to avoid unwarranted patent stacking concerns, the patent disclosure policy should be defined narrowly such that only those patents with claims likely to be essential to implement requirements of the standard are disclosed. Where standards participants seek more information about the patent landscape, the patent disclosure policy should encourage patent owners that disclose to state whether their disclosure relates to an option or alternative included in the standard, or to an implementation requirement.

***Patent Pools are an Effective Tool to Address Real Patent Stacking***

Patent pools, whereby owners of essential patent claims aggregate, or pool, those patent claims together under a single license, can be an effective mechanism to make collective patent rights available to implementers and users of the standardized technology on RAND terms. Like SSOs and their respective IPR policies, patent pool license agreements do not conform to a one-size-fits-all format. The structure of the pool, as well as the license terms, may vary greatly from one pool to another, although such differences in structure and license terms are beyond the scope of this paper. Because the patent owners that join a patent pool are also often implementers that want the standard to succeed to support their respective businesses, they have a vested interest to ensure that the royalties established by the patent pool will be viewed as reasonable by the vast majority of prospective implementers in relevant categories.

[13] See *Intel Corp. v. VIA Technologies, Inc*., 319 F.3d 1357 (Fed. Cir. 2003) (the Federal Circuit held that the ambiguous license language at issue allowed VIA to implement both "required" and "optional" features of the AGP specification)

There are competition concerns relating to patent pools that have resulted in some patent pools seeking a business review from the U.S. Department of Justice (DOJ).[14] The business reviews have provided some guidance regarding both the structure and the licensing terms and conditions adopted by various patent pool arrangements. Moreover, illustrating long-standing tension by Chinese companies over having to pay royalties to entrenched companies, two Chinese DVD player manufacturers, Wuxi Multimedia and Orient Power Digital Technology, have filed a class-action suit against consumer electronics giants Philips, Sony, Pioneer and LG Electronics, alleging they violated U.S. antitrust laws in the licensing of patented technologies. If Wuxi and Orient succeed, they will seek refunds for royalty payments made by Chinese DVD player makers over the past three to four years, plus a punitive claim that would triple the refunded royalty payments.

One of the most significant concerns raised by the DOJ in its business review letters is whether or not the patent pool includes only complementary patent rights which will provide pro-competitive benefits or substitute patent rights that may harm competition. According to the DOJ business review letters, it is very important that patent pools do not include substitute patents, i.e., those patents that cover permitted alternatives or perhaps optional features of a standard. Indeed, general patent tying concerns would lead one to believe that any patent license that bundled patents together in a way that required licensees to pay for patents that they did not need or want might amount to patent misuse. However, reversing a final order of the International Trade Commission, the Federal Circuit has held in at least one instance there was no *per se* patent misuse when Philips included patents that were essential and patents that were nonessential to the licensee's intended use in manufacturing CDs, while charging a fixed rate for the license package. The Federal Circuit held that the patentee Philips, in that instance, was surrendering its rights to the nonessential patents for free rather than forcing a sale of a patent that the licensee did not want in order to obtain one that it did.[15]

As discussed above, overbroad patent disclosure policies can lead to a potentially inaccurate perception that there are many licenses required to implement a particular standard. Forming a patent pool to include all such patents may not be justified and, more importantly, may give rise to competition and patent misuse concerns. To address DOJ concerns, there are many ways to potentially provide an appropriate licensing framework where substitute patents have been disclosed and there is a demand for them to be licensed. If the standard includes optional features, although the optional features if implemented must be implemented in the required way, an implementer can simply choose not to include the optional technology in its products. If the patent pool requires the implementer to license the patents covering the optional feature in order to obtain the license for the patents covering only the required features, the patent pool may be anticompetitive in coercing all implementers to implement the optional feature since they are paying for the license when instead they could have developed a new alternative. Similarly, a standard may specify a number of permissible alternative solutions. If a patent pool includes patents that cover a subset of these alternative solutions, the patent pool includes substitute patents and may be considered anti-competitive by eliminating opportunities for those alternative solutions that have not been included in the pool.

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[14] See the DOJ's Web site at http://www.usdoj.gov/atr/public/busreview/letters.htm. Similar review processes have been used by the EU competition agencies to provide comfort letters in connection with certain patent pool arrangements.
[15] *U.S. Philips Corp. v. International Trade Commission,* 2005 U.S. Dist. LEXIS 6820 (Fed. Cir. 2005)

Specifically, the DOJ has said that a broader inclusion criterion than essentiality carries two anticompetitive risks, both arising from the possibility that there may be substitutes for patents included in the pool. Consider, for example, a situation where there are several patented methods – each a useful complement, but not essential to the standard. A licensee needs to license only one of them, i.e., they are substitutes for each other. According to the DOJ, inclusion in the pool of two or more of those patents risks turning the pool into a price-fixing mechanism. Moreover, inclusion in the pool of just one of the patents, which the pool would convey along with the essential patents, could in certain cases unreasonably foreclose the competing patents from use by manufacturers – because the manufacturers would obtain a license to the one patent via the pool, but they might choose not to license any of the competing patents for additional cost, even if they otherwise would regard the competitive patents as superior. Limiting a pool to essential patents thus ensures that neither of these concerns will arise; rivalry is foreclosed among patents within the pool because they must all be essential, and rivalry is also foreclosed between patents inside and outside of the pool because no optional or alternative solutions are unfairly included the pool.[16]

Another way to address these challenges is to develop multiple specifications where each specification includes only required features and does not permit optional alternative solutions. A separate patent pool, where warranted by the number of essential patent claims, can be created for each specification. In this way, implementers can license those patents and only those patents that they require for their implementation or use. Since many standards developers do not typically define their specifications with patent pools in mind, rarely are standards developed as separate specifications with each offering a different subset of alternatives and options. However, separate patent pools can be formed for different parts of a standard so that options and alternatives can be separately licensed from the core set of requirements allowing implementers to choose which licenses it needs. While this increases the administrative overhead associated with the licensing program, it gives implementers a mechanism for deciding when the combined patent royalty for various licenses exceeds what they deem reasonable by enabling them to select among alternatives and choose whether or not to implement various options.

In sum, patent stacking is rarely a concern when patent disclosure policies are narrowly crafted to apply only to essential patent claims that cover the required features of the standard. However, in the rare cases when multiple patents from multiple patent owners have been disclosed under such policies, patent pools can generally be formed to provide a combined royalty rate that enables most implementers and users of the standard to adopt it. Where policies are broadly written and as a result more patents are disclosed, unwarranted concerns over patent stacking can be reduced if the policy encourages patent owners to also state when their patents relate to optional or alternative technologies specified in the standard. Finally, patent pool agreements formed to reduce patent stacking concerns should not include substitute patents due to anticompetitive risk; rather, multiple patent pools may be formed to allow implementers and users to choose only those licenses they need.

[16] Philips, Sony and Pioneer's business review letter pursuant to the Department of Justice's Business Review Procedure, 28 C.F.R. § 50.6 (available at http://www.usdoj.gov/atr/public/busreview/2121.htm)

## *C. Open Source Software (OSS)*

### *The Open Source Definition (OSD)*

OSS is software that is released under an open source license. The Open Source Initiative (OSI) has created a definition, the open source definition (OSD),[17] against which it evaluates open source licenses to determine whether or not a license meets the criteria to be approved by OSI as an OSS license.[18] Of the ten requirements of the OSD, a few of them create a tension with RAND licensing that is common in the context of standards setting. In particular, the following requirements of an OSI-approved OSS license are relevant to this tension:

> **1. Free Redistribution**
> The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.
> **3. Derived Works**
> The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.
> **7. Distribution of License**
> The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.
> **8. License Must Not Be Specific to a Product**
> The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.
> **10. License Must Be Technology-Neutral**
> No provision of the license may be predicated on any individual technology or style of interface.[19]

In other words, OSS must be available for free, must permit modifications to the code, permit code extraction and reuse separate from the product in which the code was originally included, and must not require downstream recipients of the code to provide an "explicit gesture of assent" to establish a contract. This section focuses on the friction these requirements of the OSD cause in connection with RAND patent licensing, though to understand these points of friction, one must understand OSS development, distribution and use models.

### *Open Source Software Development and Distribution*

The above-listed requirements of the OSD are evident in the common methods of software creation and distribution employed by OSS developers. Often communities of developers

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[17] The complete definition can be found at http://www.opensource.org/docs/definition.php
[18] For a list of approved licenses go to http://www.opensource.org/licenses/
[19] Click-through licenses, like shrink-wrap licenses, require a person to act in a certain manner before the product governed by the license may be used, thereby expressing his or her consent to the terms set forth in the license, and arguably creating an enforceable obligation. *See* ProCD, Inc. v. Zeidenberg, 86 F.3d 1447, 1449 (7th Cir. 1996). A click-through license, creating alternative licensing terms that might be considered to supersede the terms of an open source license, may thus be at odds with the provisions of the OSD, and are thus prohibited. *See* www.opensource.org.

collaborate to create software that they make available for free under an OSS license. Some communities are very structured with only a small number of individuals having any substantial influence over the software contributions incorporated into the code base. Other communities are more diffuse and less structured enabling anyone to have as much or as little influence as the individual desires. While less common, some OSS is developed by a single corporate entity in a proprietary and confidential manner, but nevertheless released by the corporation under an OSS license.

As the definition makes clear, recipients of OSS must be able to obtain the source code. Typically, the source code is made available in an electronic format and distributed electronically with the accompanying OSS license so that recipients of the source code know what their rights and obligations are with respect to using and further distributing the source code. Even if the OSS code is distributed in an executable form, the OSS license will typically accompany the distributed code in a "readme" or similar file. According to the OSD, recipients of OSS, whether in source or executable form, must not be required to physically accept the terms of the OSS license to use and distribute the code. As a result, OSS licenses are self-executing. Some OSS licenses may be bare licenses, while others may be contracts, but irrespective of the legal framework, users and redistributors do not have the right to copy, modify or redistribute the copyrighted code unless they are licensed to do so. Accordingly, recipients of OSS must obtain a software license and use it without a requirement to sign and return a license or agreement.

While most OSS licenses are predicated on the copyright that is owned by the developers of the OSS, some OSS licenses also grant certain patent rights to downstream recipients of the OSS. Even where there are no express patent rights granted in the OSS license, in many cases, there may be an implied right to any of the authors' and distributors' patents that are needed to use the code as specified by the OSS license. As downstream recipients of the OSS code make their own modifications, the scope of the patent rights from the original authors and intermediary distributors becomes less clear. Accordingly, many OSS licenses explicitly require anyone distributing the OSS or modifications of the OSS to license certain patent rights to recipients for use of the OSS. However, unlike the copyrighted code which is already in a tangible form, patented technology is not fixed in a tangible form, and consequently is licensed for OSS only with respect to certain code.

***OSS Business Models***

While OSS must be available for free, many entities still profit from OSS. OSS can reduce development and testing costs if the OSS can be developed by a community of developers working for free. However, most cutting edge and innovative software today is still developed by paid developers employed by corporate employers that retain ownership in the software. So, for products and services that require truly innovative software, those products and services will use software developed in a traditional manner and distributed under a non-OSS license. OSS can nonetheless be given away to drive sales of this higher value software, and complementary hardware. For example, Oracle promotes and invests in Linux, the free software operating system, so that it can sell its high end databases to corporate IT customers to run on their free Linux servers. OSS can underpin a profitable software support service such as IBM's Global

Services Division which reported revenues of over $47 billion in 2005.[20] For example, corporate IT departments and online service providers often require substantial support to maintain and run the OSS servers and applications. So while it is common for OSS to be perceived as a no-cost solution for customers, it rarely is no-cost. Instead, the cost to consumers is shifted to complementary products or to support, integration and maintenance of the OSS.

***OSS is Code not an Open Standard***

Because so much OSS is developed in a community process and made available to anyone without a fee, some erroneously believe that OSS is an open standard. As discussed above, there are many types of standards including interoperability standards and product standards. While there is no formal definition for an open standard, most will agree that an interoperability specification is open if it is made available to everyone and has been approved by a SSO under consensus-based methodologies.[21] However, open standards are also typically characterized by substantial market adoption. A product standard is not an interoperability specification, but rather in the case of software, the standard is the code embodied in the product itself. The code may have been developed by a single entity or by a community, but its only similarity to an open standard is that it is characterized by substantial market adoption. Software developed to implement an open standard may be released under any software license. A common misconception is that an OSS license is more likely to be used for implementation of an open standard. The authors are unaware of any evidence that supports this notion and importantly there are perhaps more benefits to releasing implementations of an open standard under a software license that does not permit recipients to change the code and thereby render the implementation non-conformant with the standard. Certain OSS products, such as a Red Hat Linux distribution, may be a standard based on its wide distribution, but it is not an open standard like MPEG, the ISO/IEC standard used to encode and decode audio-visual content.

***Points of Friction***

As discussed above, most SSOs operate under an IPR policy which results in participating patent holders providing assurances that they will license certain patent rights on RAND terms. Although there may be different views as to what terms and conditions of a patent license are RAND, there is generally some common ground for agreement. For example, most will agree that a RAND patent license may include reasonable royalties. This is perhaps the most contentious term for those who wish to implement an open standard and distribute the implementation under an OSS license. For this reason, some SSOs have adopted IPR policies that prohibit reasonable royalties. Such policies are often referred to as RAND-Z policies, indicating that the royalty term is zero. However, even with a RAND-Z patent policy, there are a number of common patent license terms that cause friction for OSS distributors and users. For example, RAND licenses consistent with most IPR policies may have a limited field of use, may prohibit sublicensing, and may be available only for a specific product. Finally, patent licenses

[20] IBM's vaunted Global Services business posted a 5 percent sales decline in the fourth quarter and eked out 3 percent growth for the year, reporting total revenue of $47.4 billion, but increased its profitability by boosting its gross margins. Gross profit margin improvement in the quarter of more than five points shows the benefits of the company's focus on more profitable "high-value segments" of IT, coupled with emphasis on productivity and integration. IBM Chief Executive Officer Sam Palmisano said in a prepared statement that the company's business model is "much more balanced and profitable than it was just a few years ago." See http://www.infoworld.com/article/06/01/18/74257_HNibmhigher_1.html

[21] See, e.g., October 27, 2004 ANSI Letter Responding to Lawrence Rosen's Sept. 29, 2004 Letter to the FTC regarding use of the term "open standard."

are customarily accepted by signing or otherwise agreeing to a patent license agreement; they are rarely self-executing like OSS licenses that flow with the code.

***Reasonable Royalties Are Not Prohibited by OSS Distribution Models But Accounting For OSS Distributions May Be Impractical***

The OSD requires that OSS be available for free. Specifically, the copyright license that grants recipients the right to copy, modify and further distribute both the source and the executable code must be free. That does not mean that the copyright holder cannot "sell" the software, but it is unlikely many will pay for something they can get for free somewhere else. To get value from its OSS, some entities may offer other software, hardware and/or services bundled with the OSS to shift costs and create an incentive for paying customers, as discussed above. Given that much OSS is created or distributed, often indirectly, by one or more for-profit entities so that those entities can enable and promote their unique profit centers, it is reasonable to expect those entities to pay a RAND royalty for an OSS implementation of an open standard when making, using or selling the implementation if it infringes another's patent.

Interestingly, though, some of the greatest concerns regarding RAND patent policies have come from individuals and non-profit organizations that do not use OSS in for-profit businesses. In the vast majority of situations, patent owners are seeking product differentiation or a price advantage created via their patent portfolios, or alternatively, to be able to use their portfolios defensively with respect to competitors. Given those objectives, it is not surprising that unlicensed OSS implementations of open standards that are not part of any for-profit activity have been largely ignored by patent holders from an infringement enforcement standpoint.

In this respect, to the extent that a patent license granting the right to make, use, sell, etc. an implementation of an open standard includes a RAND royalty rate, the rate is no more or less reasonable based on whether or not the implementation is distributed under an OSS license or a non-OSS license. Reasonableness will need to be judged, as discussed above, based on a variety of situation specific factors. However, if a royalty rate is reasonable, any mechanism to account or track distribution under an OSS distribution model will prove to be very challenging since the OSS license accompanies the OSS itself and is self-executing. The patent owner or licensor will not know who has received the OSS code and subsequently used, made new copies and further distributed it. Moreover, as discussed, as a practical matter, the patent owner is generally more concerned with its business-related objectives than it is with eliminating all infringement of its patents. Additionally, patent owners may find that accounting for only the profit-making bundle of products and/or services is sufficient for OSS implementations of open standards. In such cases, however, the patent owner should be very careful not to waive its rights to enforce or license its patents against other not-for-profit infringers, either through an implied license, laches or estoppel, because the patent owner may need to rely on those rights defensively in the future.

***RAND Terms do not Grant All Rights OSS Distribution Requires, but There are only a Small Number of OSS Licenses that are Incompatible with such RAND Grants.***

Most standards-related patent licenses are granted to permit licensees to make, use, sell, offer to sell, and import an implementation of the open standard in the licensee's product.[22] Moreover,

[22] For instance, the Organization for the Advancement of Structured Information Standards (OASIS) RAND license commitment states, in relevant part, that a licensor "will grant … a nonexclusive, worldwide, non-sublicensable, perpetual patent license (or

most of such patent licenses do not grant the license to the licensee for any purpose other than this standards-related purpose, yet OSS licenses will specify that any recipient is free to modify the code for any purpose and in any way. In this regard, the standards-related RAND license does not prohibit these modifications; it simply is silent as to whether the patent owner will grant any additional patent rights. Implementers choosing to distribute an implementation of an open standard under an OSS license should thus consider obtaining a patent license that exceeds the scope of the standard-related license before distributing their OSS implementation of the standard, or at least put downstream recipients of the OSS implementation on notice with language to the effect that the implementation includes patented technology licensed only for the purpose of conforming to the standard. The problem, however, lies in the possibility that such a broader patent license may not be RAND and may not even be available at all since SSO IPR policies do not require patent owners to grant licenses for anything but a conforming implementation of the SSO's open standard. Thus, a downstream notice on OSS implementations of open standards makes good sense. In fact, certain OSS licenses, such as the Mozilla Public License[23] and the Common Public License,[24] already require distributors of software under these licenses to include appropriate IPR notices so that downstream recipients know that they might need additional patent licenses and can make an informed decision about requesting such licenses.

The vast majority of OSS licenses are silent on the inclusion of patented technology that is incorporated in the software, but is licensed only within a particular field of use or scope. The General Public License (GPL) and its less restrictive form, the Lesser GPL (LGPL), both include a provision that essentially states that if you do not have all the patent rights you need to distribute the software consistent with the rights granted by the GPL and LGPL, you do not have the right to distribute the software at all.[25] Consequently, the friction created by licensing any modification to software that is subject to a patent license with a limited field of use becomes more than a friction point for the GPL and LGPL -- it becomes an outright incompatibility that results in the GPL/LGPL prohibiting the distribution of that software.

Limiting a RAND license to the licensee's product, such as limiting a RAND license to conforming implementations of a standard, raises additional complications in the context of open source licensing. The OSD makes it clear that an OSS license cannot be specific to a product to ensure that any OSS code that is generally included in products can be freely removed, further modified and redistributed. In contrast, most patent licenses for implementations of open standards are limited to a licensee's product and are personal to the licensee. In most cases, the license will extend to the licensed product through the licensee's chain of distribution and to the licensee's end users.

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an equivalent non-assertion covenant) under its Essential Claims covered by its Contribution Obligations or Participation Obligations on fair, reasonable, and non-discriminatory terms to make, have made, use, market, import, offer to sell, and sell, and to otherwise directly or indirectly distribute Licensed Products that implement such specification.

[23] For a copy of the Mozilla Public License (version 1.1), see www.opensource.org/licenses/mozilla1.1.php

[24] For a copy of the Common Public License (version 1.0), see www.opensource.org/licenses/cpl.php

[25] For instance, Section 7 of the Gnu Public License (version 2) states that "If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program." Section 7 goes on to state, "…it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice."

The nature of software conveyances is a source of complication. Unlike other products that are sold outright, software is not typically sold, but rather licensed. The patent statute does not provide for an exclusive right of distribution, or even a right to practice the invention, but rather provides the right to exclude others from making, using, selling, offering to sell and importing the invention.[26] It is thus unclear whether or not a patent license granting the right "to distribute" includes a sub-license to intermediary distributors to make copies of the software and redistribute those copies or whether or not the principles of patent exhaustion apply to a product that has been so licensed as though it were sold. Unfortunately, the authors are aware of no case law that is directly on point that provides a definitive answer to this software distribution licensing dilemma. Because there is no clear answer, it is also not clear whether or not OSS distributors that extract code from a product that has been licensed under a RAND patent license must separately obtain a patent license to distribute such code, or modified versions of the code, under an OSS license.

As a result of this dilemma, many OSS advocates believe that RAND or RAND-Z patent licenses must be sub-licensable to be consistent with OSS distribution models. Like the field of use being limited to conforming implementations of the standard in a licensed product, a prohibition on sublicenses commonly found in patent licenses does not mean that the patent owner will not grant such additional rights, but rather that those rights are not available through the patent owner's RAND or RAND-Z license. Furthermore, the failure to expressly include the right to sublicense will not, in and of itself, preclude the right to distribute the OSS implementation under the vast majority of OSS licenses, with the GPL being a notable exception.

The problem with sub-licensing can be resolved in most cases by making a patent license available to all, for example, by posting the license on a publicly accessible website that any potential distributor of the OSS implementation can download and accept. Some OSS developers and distributors view this physical "acceptance" of a patent license as a blocking factor to OSS distribution. This is an unfortunate misperception held by many OSS advocates, as discussed below.

***Physical Acceptance of a Patent License Does Not Conflict With the OSD***

The OSD makes it clear that an OSS license can not be conditioned on the recipient of the OSS accepting a separate license. However, nothing in the nature of RAND or RAND-Z licensing in the standards context requires that a distributor of an OSS implementation of an open standard in turn require recipients of its OSS implementation to sign the RAND or RAND-Z patent license before copying, modifying or redistributing the OSS implementation. It is true that recipients that copy in order to make or use the implementation, copy in order to modify, or distribute modified or unmodified copies of the implementation may need the RAND or RAND-Z license to avoid infringement, but the OSD does not place that burden on the initial OSS distributor. As discussed above, OSS distributors that know that the OSS distribution includes an implementation of an open standard for which a patent owner has declared essential patent rights, should notify the downstream recipients of the OSS distribution. The Mozilla Public

[26] 35 U.S.C. § 271(a) states "Except as otherwise provided in this title [35 USC § §1 et seq.], whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent."

License[27] and the Common Public License[28] already require such notification as a requirement beyond the OSD.

The OSD also makes it clear that the OSS license must not be conveyed using any particular technical approach that requires physical assent to the terms of the OSS license. It is worth repeating that this requirement of the OSD applies to the OSS license and not any other IP licenses that may be needed to avoid infringement when copying, modifying or redistributing the code. The fact that one may need to separately sign an agreement to obtain a patent license to avoid infringing activity with respect to an OSS implementation of an open standard does not run afoul of the OSD unless the use of the OSS implementation is conditioned on the the recipient signing that other agreement. Understandably, the need to execute a separate patent license that does not flow and self-execute with the OSS implementation itself may seem onerous to some, but there is just as much reason to read and understand any self-executing OSS licenses that accompany an OSS distribution as there is to read and understand any other license that may need to be executed.[29]

In sum, the distribution of software is not necessarily like the sale of a product and accordingly presents some significant complexities for IPR licensing. The fact that OSS may be distributed under an OSS license in a way that permits extraction from the product in which the OSS was originally incorporated exacerbates these complexities. Despite the complexities, the vast majority of OSS licenses can nonetheless be used to distribute OSS implementations of open standards that are also covered by conventional terms of RAND or RAND-Z licenses. While the nature of the rights granted through OSS licenses may increase risks of patent infringement where the OSS distribution includes an implementation of an open standard under a RAND/RAND-Z license, there already exist OSS distribution mechanisms, such as IP notices, that can be included with the OSS itself to reduce these risks to downstream recipients. Finally, given that there have not been any infringement claims against OSS implementations of open standards, and despite points of friction for OSS licenses in the context of standards-based implementations, excessive fears over the potential risks remain unfounded and such fears fail to balance all of the interests that are at the root of effective IPR policies, as they have developed over the years. Changing the IPR policies of SSOs to accommodate OSS may not only be unnecessary, but tampering with the careful balance established by an SSO and its members to achieve its objectives may actually harm the SSO's standards development and adoption activities by placing undue burdens on the process.

***Conclusion***

As a global community we are creating more interoperability standards than ever as they become the foundation for new products and services enabling the scenarios of the twenty first century. Correspondingly, there is a growing number of SSOs, with each attempting to define a balanced patent policy that meets its members' technical and business objectives and consumers' market requirements. As each SSO struggles to define its patent policy, it is important that the patent

[27] For a copy of the Mozilla Public License (version 1.1), see www.opensource.org/licenses/mozilla1.1.php
[28] For a copy of the Common Public License (version 1.0), see www.opensource.org/licenses/cpl.php
[29] There are 58 approved OSS licenses all with different terms and conditions currently listed on the Open Source Initiative's web site www.opensource.org. Often OSS distributions include code that is covered by multiple OSS licenses. The fact that these licenses are not explicitly signed does not mean that they are not complicated IP licenses that need to read and understood in order to comply with their terms.

policy for disclosure and licensing addresses the most practical and likely problems that could arise. Policies that attempt to address all potential problems, no matter how unlikely or remote they may be, can reduce participation in the standards development effort resulting in standards development and adoption delays, potentially inferior technologies, as well as create a higher risk for patent blocking situations since non-participants are not obligated by any patent policy. While unreasonable royalty rates, potential patent stacking, and possible OSS licensing incompatibilities are all legitimate concerns under certain circumstances, current SSO patent policies can be tailored to address the vast majority of those concerns on a case-by-case basis in a practical, balanced manner keeping both the objectives and market requirements of all stakes holders in mind.