Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing

Jorge Contreras, American University Washington College of Law

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FIXING FRAND:
A PSEUDO-POOL APPROACH TO STANDARDS-BASED PATENT LICENSING

Jorge L. Contreras*

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ABSTRACT

Technical interoperability standards are critical elements of mobile telephones, laptop computers, digital files, and thousands of other products in the modern networked economy. Most such standards are developed in so-called voluntary standards-development organizations (SDOs) that require participants to license patents essential to the standard on terms that are “fair, reasonable and non-discriminatory” (FRAND). FRAND commitments are thought to avoid the problem of patent hold-up: the imposition of excessive royalty demands after a standard has been widely adopted in the market. While, at first blush, FRAND commitments seem to assure product vendors that patents will not obstruct the manufacture and sale of standards-compliant products, in reality these commitments are vague and unreliable. Moreover, they have proven ineffective to address the problem of patent stacking, which occurs when multiple patent holders assert rights in, and demand royalties on, the same standard. The recent surge of litigation in the smart phone and other technology sectors, much of which concerns the interpretation and enforcement of FRAND commitments, has brought these issues to the attention of regulators, industry, and the public, and many agree that a better approach to FRAND is needed.

In this paper, I propose a novel solution to the SDO FRAND problem that borrows from the related field of patent pools. In patent pools, multiple patent holders agree to charge a single, collective royalty on patents included in the pool. This structure, which has been utilized in connection with several successful industry standards, allows market participants to manufacture and sell standards-compliant products with a high degree of certainty regarding their aggregate royalty burden. While the cost and administrative overhead of patent pools may make them inapposite for the majority of standards developed in the SDO setting, salient features of pools can be adapted for use in SDOs under what I term a “pseudo-pool” approach.

The pseudo-pool approach includes the following principal elements: (a) SDO participants must declare patents in good faith, (b) SDO working groups that include patent holders and potential vendors are encouraged to establish aggregate royalty rates for standards, (c) patent holders continue to grant licenses on FRAND terms, subject to the aggregate royalty agreement, (d) each patent holder is entitled to a share of the aggregate royalty based on a proportionality measure, (e) there is a defined penalty for over-declaration of patents, (f) each

* Associate Professor of Law, American University Washington College of Law, Washington, D.C. An earlier version of the proposal contained in this paper was submitted to the International Telecommunications Union (ITU) Patent Roundtable held in Geneva on October 10, 2012. The author thanks Jonathan Baker, Michael Carroll, Heather Hughes, Tim Simcoe, David Snyder and the participants in the 2012 Works in Progress in Intellectual Property (WIPIP) Conference held at Seton Hall Law School and the American University Washington College of Law Business Law Faculty Workshop for their helpful comments and suggestions. Research assistance by Chris Pepe, Sydney Kestle, and Ripple Westing are gratefully acknowledged.
patent holder is permitted to license its patents independently of the pseudo-pooling arrangement, and (g) patent holders can opt out of the collective royalty structure if they so choose. This proposal encourages joint negotiation of royalty rates prior to lock-in of a standard, conduct that has been viewed with approval by several regulatory agencies and acknowledged as offering various procompetitive benefits. It is hoped that the proposed structure will eliminate the current uncertainty surrounding royalty levels on standardized products, while at the same time addressing the related issue of patent royalty stacking.
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INTRODUCTION

Technical interoperability standards pervade the modern networked economy. Every mobile telephone, laptop computer and digital file, along with thousands of other high-tech and low-tech products, depend on standards to communicate seamlessly and invisibly to the consumer. The existence of such standards and the widespread product interoperability that they enable give rise to significant market efficiencies known as “network effects”.¹ According to the U.S. Department of Justice and Federal Trade Commission, “[s]tandards can make products less costly for firms to produce and more valuable to consumers. They can increase innovation, efficiency, and consumer choice; foster public health and safety; and serve as a ‘fundamental building block for international trade.’”²

Most of the thousands of technical standards currently deployed throughout the world were developed collaboratively by market participants in voluntary standards-development organizations (SDOs).³ Because of the significant benefits conferred by technical standards, this degree of cooperation among competitors has long been viewed favourably by regulators who might ordinarily be wary of such large-scale coordination efforts.⁴

But all is not well in the world of standards. In the past few years, litigation over standardized technology has dramatically increased both in quantity and potential market impact. Most significant among these recent suits are the so-called “smart phone wars”, in which the largest global manufacturers of mobile devices and software – Apple, Motorola (now owned by Google), Samsung, Microsoft and others – have been engaged in a high-stakes battle over the


³ Standards may be developed in a range of collaborative organizations, from large, well-established fora that address the standardization needs of major industry segments (e.g., the European Telecommunications Standards Institute (ETSI) (mobile telecommunications), Internet Engineering Task Force (IETF) (Internet protocols) and Worldwide Web Consortium (web technologies)) to smaller groups often referred to as “consortia” that focus on one or a handful of related standards (e.g., the HDMI Forum, Bluetooth Special Interest Group, and Wireless Gigabit Alliance). So-called “de facto” standards, which are developed by a single company and later gain market acceptance, are not addressed by this article. See generally Brad Biddle et al., The Expanding Role and Importance of Standards in the Information and Communications Technology Industry, 52 JURIMETRICS 177 (2012) (generally describing the standards-development “ecosystem”); Brad Biddle, Andrew White & Sean Woods, How Many Standards in a Laptop? (And Other Empirical Questions) (working paper, Sep. 10, 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1619440 (identifying 251 technical standards implemented in a single laptop computer, of which 80% were developed by SDOs and 20% of which were developed by individual companies); AMERICAN BAR ASSOCIATION, STANDARDS DEVELOPMENT PATENT POLICY MANUAL ix-xi (Jorge L. Contreras, ed., 2007) (describing the different organizations that contribute to standard-setting) (hereinafter “ABA PATENT POLICY MANUAL”).

⁴ See, e.g., DOJ/FTC Antitrust and IPR, supra note 2, at 33; Renata B. Hesse, IP, Antitrust and Looking Back on the Last Four Years at 16 (speech presented at Global Competition Review, Miami, Fla., Feb. 8, 2013) (hereinafter “Hesse – Looking Back”) (“standards serve the public interest in many ways and collaboratively-set industry standards may substantially reduce transaction costs by helping firms avoid wars between competing standards”).
infringement of dozens of patents, including many that are essential to key industry standards. These cases involve product markets measured in the tens of billions of dollars, and royalty demands that also extend into the billions. As lamented by one senior government official, “[t]he world . . . is awash in lawsuits related to patented technologies used to make mobile devices.”

Patent disputes, which tend to be disruptive to markets under any circumstances, are particularly disruptive when industry standards are involved. Patents, which are available on a wide range of technologies and processes, enable a patent holder to exclude others from making, using or selling the patented technology. Ordinarily, if the vendor of a product that is allegedly covered by a patent is unable, or does not wish, to obtain a license on the terms offered by the patent holder, that vendor has three choices: to stop selling the infringing product, to design around the patent, or do neither and risk liability as an infringer. With standards, however, the calculus is somewhat different. Typically, firms collaborate to develop standards that are intended to be utilized by an entire industry. Thus, once a standard is approved and released by an SDO, market participants may make significant investments on the basis of the standard (a situation often referred to as “lock-in”). Such investments may include contractual commitments, purchases of durable goods and capital equipment, employee training, development or procurement of information technology, identification and outfitting of suppliers, and built-up customer loyalty. In such cases, the cost of switching from the standardized technology to an alternative technology may be prohibitive, dramatically increasing the patent holder’s leverage in any ensuing negotiation. This phenomenon has been termed patent “hold-up” and is discussed extensively in the literature. In addition to harming potential competitors,

5 See Table 1, infra, and accompanying discussion.


8 The term “adoption” is used in the context of standardization in a variety of different contexts, including the finalization and approval of a standard by an SDO, and the take-up of the standard in the marketplace. Because these events may occur at different times and have significantly different economic implications (see Figure 1, infra), I will use the term “approval” to signify the finalization of a standard by an SDO (often effectuated by an approval vote by the relevant oversight body of the SDO and/or publication of the standard as an official document of the SDO), and “market adoption” to signify a meaningful level of use of the standard within products in the relevant industry.

9 See Shapiro & Varian, supra note 1, at 116-30.

10 See id., at 116-30; see also Rambus Inc., Opinion of the Commission, at 102-04 (determining that implementers and producers of complementary products would have needed to spend hundreds of millions of dollars to switch to an alternative, non-infringing technology).

11 See, e.g., Joseph Farrell et al., Standard Setting, Patents, and Hold-Up, 74 Antitrust L.J. 603, 616 (2007); Doug Lichtman, Understanding the RAND Commitment, 47 Hous. L. Rev. 1023, 1033 (2010). The general problem of hold-up is not, of course, unique to standard setting, and has been considered in the economics literature for decades. See Farrell et al, supra, at 603-04 (citing the work of Nobel laureate Oliver Williamson, among others). In cases in which SEPs were not disclosed until after the adoption or lock-in of a standard, or in which the patent holder has otherwise engaged in deceptive conduct, the term “patent ambush” has been applied.
it is also believed that patent hold-up can have other undesirable market effects, including raising prices for consumers and hindering the advancement of technological innovation.\textsuperscript{12}

The risk of hold-up is likely to increase as the number of patents covering a single standard rises. Complex technological products may implement dozens, if not hundreds of standards, each of which may be covered by hundreds or thousands of patents.\textsuperscript{13} As such, any single patent holder could cause significant disruption to the market, and the aggregation of royalty demands by multiple patent holders could lead to cost-prohibitive burdens on implementing standards-compliant products. This situation is sometimes referred to as “royalty stacking” and has been identified by numerous commentators as a significant impediment to efficient transactions.\textsuperscript{14}

Aware of the possibility of patent hold-up and stacking, many SDOs have promulgated internal policies designed to mitigate these risks. Perhaps the most prevalent of these is a requirement that SDO participants\textsuperscript{15} license their patents to all potential vendors of technologies implementing those standards on terms that are “fair”, “reasonable” and “non-discriminatory”

\textsuperscript{12} See, e.g., DOJ/FTC Antitrust and IPR, supra note 2, at 35-36. But at least a few commentators take a contrary view, and question whether patent hold-up presents a significant risk, or exists at all. See Richard A. Epstein, F. Scott Keiff & Daniel F. Spulber, The FTC, IP, and SSOs: Government Hold-Up Replacing Private Coordination, 8 J. CORP. L. \& ECON. 1, 12 (2012); J. Gregory Sidak, Patent Holdup and Oligopsonistic Collusion in Standard-Setting Organizations, 5 J. COMPETITION L. \& ECON. 123, 128 (2009).

\textsuperscript{13} See, e.g., Biddle, White \& Woods, supra note 3 (reporting that a single laptop computer studied was covered by at least 251 different technical standards); Dirk Weiler, Welcome to the World of Standards. Presentation to National Academies of Science Symposium on Management of IP in Standards-Setting Processes. Session 4, p. 4 (Oct. 3, 2012), available at http://sites.nationalacademies.org/xpedio/groups/pgasite/documents/webpage/pga_072720.pdf (reporting that at ETSI, as of September 2012, 126,602 patents had been declared essential to 4,854 different standards).


\textsuperscript{15} Patents covering standardized technology may be held both by participants in an SDO and by non-participating third parties. The risk posed by SDO participants’ patents is perceived as particularly serious because, unlike non-participating third parties, SDO participants have the ability to guide the technical parameters of a standard toward their own patent positions. For this reason, most SDOs in the high technology sector have adopted rules and policies governing patenting behavior by their participants. For the same reason, SDOs may be wary of developing standards that are covered by patents known to be held by non-participants. See, e.g., Hesse - Looking Back, supra note 4, at 20 (describing allegations that a particular patent holder “steered” an SDO toward its own patents during the standards-development process); SHAPIRO \& VARIAN, supra note 1, at 241.
The patents covered by FRAND commitments are typically those that are essential to use the standardized technology (so-called “standards-essential patents” or SEPs). FRAND commitments purport to assure vendors that they will not be prevented from using a standardized technology, so long as they obtain the required license (which may sometimes involve a payment). Because of this baseline assurance, and because FRAND commitments require relatively little administrative overhead to enact, their use has become widespread among SDOs. FRAND commitments (or similar commitments to license patents on a royalty-free basis) are required of all SDOs accredited by the American National Standards Institute (ANSI) and are also utilized widely among SDOs throughout Europe and elsewhere.

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16 See, e.g., Kai-Uwe Kühn, Fiona Scott-Morton & Howard Shelanski, Standard Setting Organizations Can Help Solve the Standard Essential Patents Licensing Problem, CPI Antitrust Chronicle, Mar. 2013, at 3. It is important to distinguish a FRAND commitment, which is a promise to grant a license in the future, from the actual patent license that is subsequently granted by the patent holder, typically pursuant to a written license agreement. See ABA Patent Policy Manual, supra note 3, at 47 (“a Licensing Commitment is not an actual license and does not include all of the terms that the Patent Holder may include in the license it offers to prospective licensees. The Licensing Commitment may, however, prescribe the general nature of some of the terms and/or prohibit other terms”). While some commentators have argued that the mere existence of a FRAND commitment should itself be considered the grant a license (see Mark A. Lemley, Intellectual Property Rights and Standard-Setting Organizations, 90 Cal. L. Rev. 1889, 1925 (2002)), I find this conclusion difficult to reconcile with both the actual language of such commitments and the likely intentions of SDO participants.

For purposes of this paper, I will use the term FRAND to refer both to “reasonable and non-discriminatory” terms, as well as “fair, reasonable and non-discriminatory” terms: two competing formulations that are specified by SDOs. Though it is tempting to attempt to identify differences between the meanings of these two phrases, commentators have so far been unable to do so in any convincing manner. See U.S. Dept. Justice & U.S. Pat. & Trademark Off., Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary FRAND Commitments, at 1 n.2 (Jan. 8, 2103) (hereinafter “DOJ/FTC Policy Statement”) (”[C]ommentators frequently use the terms [RAND and FRAND] interchangeably to denote the same substantive type of commitment”).

While other patents may be useful in practicing a standardized technology and may offer various commercial advantages, these are generally not covered by the FRAND commitment and may be licensed and enforced on terms of the patent holder’s choosing (subject to applicable antitrust laws).

18 In many SDOs, the language implementing FRAND commitments is fairly brief. For example, the patent policy of the American National Standards Institute (ANSI), which has been emulated by numerous SDOs, provides that standards may include technologies covered by known patents, so long as the SDO receives a written assurance from the patent holder that a license will be made available either without consideration or “on reasonable terms that are demonstrably free of any unfair discrimination.” AMERICAN NAT’L STANDARDS INST., ANSI ESSENTIAL REQUIREMENTS: DUE PROCESS REQUIREMENTS FOR AMERICAN NATIONAL STANDARDS, Sec. 3.1.1(b) (Jan. 2013).


20 See Rudi Bekkers & Andrew Updegrove, A Study of IPR Policies and Practices of a Representative Group of Standard Setting Organizations Worldwide, Presentation to National Academies of Science Symposium on Management of IP in Standards-Setting Processes, Session 4, p. 89, table 13 (Oct. 3, 2012), available at http://sites.nationalacademies.org/xpedio/groups/pgsite/documents/webpage/pga_072197.pdf (of 12 major SDOs studied, 10 explicitly specify FRAND licensing as an option in their IPR policies); Jorge L. Contreras, Technical Standards and Ex Ante Disclosure: Results and Analysis of an Empirical Study, __ JURIMETRICS __ (Winter 2013, in press) (finding that 76% of patent disclosures at IETF, and x% at IEEE, were accompanied by a FRAND or
But despite the intuitive appeal of FRAND commitments, a consistent and practical definition of FRAND has proven difficult to achieve. Virtually no SDO defines precisely what this elusive phrase means, and many SDOs affirmatively disclaim any role in establishing, interpreting, or adjudicating the reasonableness of FRAND licensing terms.\(^{21}\) In fact, some SDOs go so far as to prohibit discussions of royalties and other licensing terms at SDO meetings, making the development of any consensus view highly unlikely.\(^{22}\)

For this reason, it is a common complaint that FRAND commitments are vague and offer little, if any, useful guidance to SDO participants.\(^{23}\) Such ambiguity, it is argued, may permit opportunistic patent holders\(^{24}\) to insist on licensing terms, particularly royalty rates that are not

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\(^{21}\) *See, e.g.,* IEEE Standards Assn., Policies and Procedures Sec. 6.3.1 (“The IEEE is not responsible for . . . determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory”); Scott Bradner, Intellectual Property Rights in IETF Technology – Request for Comments 3979, Sec. 4.1 (2005), http://datatracker.ietf.org/doc/rfc3979/?include_text=1 (“[IETF] will not make any explicit determination that the assurance of reasonable and non-discriminatory terms or any other terms for the use of an Implementing Technology has been fulfilled in practice”).

\(^{22}\) *See* Lemley, *supra* note 16, at 1965 (observing that such restrictions are generally intended to shield SDOs from antitrust liability for collusive price fixing by its participants).


\(^{24}\) While most of the literature focuses on opportunistic behavior by patent holders, it is also theoretically possible for product vendors to act opportunistically. *See, e.g.,* Qualcomm, Inc., *Comments of Qualcomm Incorporated Submitted to FTC Patent Standards Workshop* iii (Jun. 13, 2011), http://www.ftc.gov/os/comments/patentstandardsworkshop/00011-60525.pdf (warning of “reverse hold-up” of licensors through the collusive action of licensees who refuse to pay even reasonable royalty for standards-essential patents). Reducing the inherent uncertainty of FRAND commitments is likely to alleviate this form of hold-up as well.
bounded by meaningful limitations. This lack of certainty has contributed to much of the litigation over FRAND commitments. Such disputes have typically arisen when a patent holder and a vendor cannot agree on the terms of a license for standards-essential patents, typically after market adoption, and dispute whether the patent holder’s proposed royalty rate is “reasonable.” However, FRAND disputes can also involve the reasonableness of non-royalty terms such as requirements that the vendor license its own patents to the patent holder (“reciprocity”), or that the license be “suspended” if the vendor threatens the patent holder with litigation (“defensive suspension”). When parties cannot agree on license terms, no license is granted and, absent a license, any product that conforms to a standard is likely to infringe patents that are essential to that standard. The parties are thus left in a difficult and ambiguous situation, which has led to a vigorous debate with industry, government, and academia regarding the scope and contour of FRAND obligations.

Appendix 1 briefly summarizes the principal lawsuits that have been brought in U.S. state and federal court in which disputes regarding the meaning of FRAND terms have arisen. Table 1 illustrates the number of such cases by year of filing. As Table 1 shows, the number of such suits has increased sharply in the last year. This trend has drawn significant attention to the difficulties of interpreting FRAND commitments, both from regulators and from commentators.

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25 FTC Evolving Marketplace, supra note 23, at 192 (“there is much debate over whether such RAND or FRAND commitments can effectively prevent patent owners from imposing excessive royalty obligations on licensees”).

26 See Kühn, Scott-Morton & Shelanski, supra note 16, at 3 (“Not surprisingly, there are frequently disputes among different parties about what a “reasonable” royalty might be for a particular portfolio of intellectual property.”). For a snapshot of the way that FRAND issues are involved in the larger patent suits among these parties see, e.g., Jorge Contreras, The FRAND Wars: Who’s on First, Patently-O (Apr. 17, 2012), http://www.patentlyo.com/patent/2012/04/the-frand-wars-whos-on-first.html.

27 This fact pattern is alleged, more or less, in the suits currently pending between Motorola Mobility (now owned by Google) and Microsoft. In those actions, Motorola allegedly offered Microsoft a license under patents covering aspects of the popular IEEE 802.11 Wi-Fi standard and ITU H.264 video compression standard. Both IEEE and ITU require patent holders to license their SEPs on FRAND terms. Motorola offered a license to Microsoft at a royalty rate of 2.25% of the price of each end product utilizing the technology, there being evidence that this rate was consistent with the rates charged by Motorola to other licensees. For Microsoft, however, the end products requiring use of the standards included laptop computers and X-Box gaming consoles, each of which sells individually for hundreds of dollars. According to Microsoft, Motorola’s royalty demand would have amounted to more than $4 billion per year. Microsoft argues that this royalty demand is so high that it cannot be considered “reasonable” and thereby violates Motorola’s FRAND obligations to IEEE and ITU, as to which Microsoft claims to be a beneficiary.

28 See Michael A. Lindsay, Negotiating Royalty or Other License Terms Before the Standard is Set 7 (presented at Am. Intell. Prop. L. Assn. 2009 Spring Meeting), available at http://www.dorsey.com/files/upload/lindsay_negotiating_royalties_AIPLA_spring09.pdf (describing a dispute at VITA regarding a ‘defensive suspension’ clause in a license agreement subject to a FRAND commitment); ABA PATENT POLICY MANUAL, supra note 3, at 62-67 (discussing other non-royalty FRAND license terms).

29 Though, as discussed at Part I.B.2, infra, not all patents declared by patent holders to be essential to a standard may in fact prove to be so.
In this paper, I propose a novel solution to the uncertainty of FRAND commitments that can be implemented before the initiation of costly and disruptive litigation by implementing new policies at the SDO level. SDO-based approaches have gained currency over the past year, and a set of SDO-focused proposals has recently been advanced by individuals connected with the principal antitrust regulatory enforcement agencies in the U.S. and European Union. The current proposal differs from these, however, in several significant ways.

In particular, my proposal seeks to improve SDO effectiveness by drawing on some of the beneficial attributes of patent pools, privately-ordered structures in which multiple patent holders agree to charge a single, collective royalty. Patent pools, which have been utilized in

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31 See Section III.E, infra.
connection with several widely-adopted industry standards (e.g., CD, DVD, HDTV and 3G), allow vendors to manufacture and sell standards-compliant products with a high degree of certainty regarding the patent royalty burden of doing so. Despite these benefits, patent pools still represent a small percentage of overall standards development activity, most likely because they require high start-up costs and extensive planning. My proposal works within the existing framework of voluntary SDO-based standards setting, which avoids many of the up-front costs of patent pools, but utilizes the collective royalty cap approach seen in patent pools to alleviate issues of patent hold-up and stacking in standard setting. I term this a “pseudo-pool” approach, as it draws on pooling strategies, but is adapted for use in the more flexible and prolific world of SDO standard-setting.

In Part I of this article, I review the current debate concerning FRAND licensing commitments and offer an account of why the existing system fails to work as intended. In Part II, I describe the attributes of a well-functioning standards-based patent licensing system and refute some of the common arguments made in support of the status quo. In Part III, I describe the pseudo-pool proposal and its potential for alleviating uncertainty and inefficiency in the area of standards-based patent licensing.

I. THE FAILED PROMISE OF BILATERAL NEGOTIATION

SDOs typically impose FRAND obligations on their participants through policy documents or membership agreements. Once such policies are in place, SDOs generally maintain a “hands off” approach toward the licensing of SEPs by their participants. That is, they leave patent holders and vendors alone to identify and negotiate with one another with almost no involvement by the SDO. Patent holders, who often disclose their SEPs in public statements required by the SDO, either wait for vendors to approach them to request licenses or seek out vendors that are likely to require licenses. In either case, the parties are left to conduct private, bilateral contract negotiations in the hope of reaching mutually-agreeable terms. In this Part, I identify several weaknesses in this bilateral negotiation approach in the context of standards-setting.

A. Pre-Adoption versus Post-Adoption Negotiation

Several commentators (whom I term “bilateralists”) have argued that private, bilateral negotiations between patent holders and product vendors are most likely to result in efficient

32 The enforceability of FRAND commitments, and the legal mechanisms by which such commitments may be imposed on SDO participants and third parties, is subject to some debate and is beyond the scope of this paper. Theories that have been advanced to support such enforceability include contract law, equitable estoppel, antitrust and property-based servitudes. See generally Jorge L. Contreras, Standards, Patents and Market Reliance, manuscript on file with the author); Jay P. Kesan & Carol M. Hayes, Patent Transfers in the Information Age: FRAND Commitments and Transparency 14-23, Presentation to National Academies of Science Symposium on Management of IP in Standards-Setting Processes, Session 7, (Oct. 4, 2012), available at http://sites.nationalacademies.org/xpedio/groups/pgasite/documents/webpage/pga_072485.pdf.
royalty rates and other terms for SEPs. In general, the theory is that before the approval of a standard, a patent holder is not assured that the technology covered by its patent will be adopted in the standard. If, during pre-approval negotiations, the patent holder demands excessive royalties, then vendors are likely to vote against the incorporation of that technology into the standard. In this way, different technologies can compete within the SDO to be included in the standard and patent holders are constrained from demanding unreasonable terms by the risk of being “designed out” of the standard.33

These commentators view the indeterminacy of FRAND commitments as intentional – a “feature” rather than a “bug” in the system.34 For example, Epstein, Keiff, and Spulber have argued that the flexibility inherent in FRAND obligations is both beneficial and necessary, in that it enables parties to negotiate efficiently to differing outcomes based on their individual interests, priorities, and negotiating resources.35 Gerardin argues that any license terms agreed by parties in bilateral “market-driven, arms-length negotiations” should, by definition, be considered reasonable and thereby compliant with FRAND commitments.36 These commentators express a general satisfaction with the current state of standards licensing and question the premise that hold-up is a problem (or that it even exists at all).37 Not surprisingly, their perspective is consistent with that of market participants that earn substantial revenue from patent licensing.38

33 See, e.g., Lichtman, supra note 11, at 1033, who offers this example:

[C]onsider a situation in which two comparable technologies are vying for inclusion in a given standard: Dolby's high-fidelity audio compression codec on the one hand and DTS's rival audio compression technology on the other. Were prices being negotiated at the time of the selection, participants in the standard-setting process would compare the Dolby and DTS approaches. They would identify advantages and disadvantages, and they would ultimately offer the winner a price that reflected its marginal value as compared to the unsuccessful alternative. If the winning patent holder were to hold out for more, standard-setting participants would presumably threaten to switch to the second-best technology. Ultimately, a competitive bidding process would typically yield something close to the efficient price.

34 See, e.g., Qualcomm, supra note 24, at 19 (“in the case of ETSI … the history of its IPR policy makes clear that it was a considered decision of the membership not to define these terms with any inflexible precision, nor by reference to any particular economic theory … Indeed, the flexible nature of RAND is a positive attribute of SSO rules”).

35 Epstein, Keiff & Spulber, supra note 12, at 12; see also Miller, supra note 23, at 370 (calling FRAND commitments “appropriately open-textured”).


38 See, e.g., Qualcomm, supra note 24, at 30, 39. Qualcomm earned 36% of its net revenue from patent licensing activity in 2011, approximately $5.42 billion, yielding an enviable 88% operating margin. Id.; see also SHAPIRO & VARIAN, supra note 1, at 16 (observing that “both Motorola and Qualcomm have sought to gain competitive advantages, not to mention royalty income, by having their patented technologies incorporated into formal standards”).
Bilateralist logic works, however, only if licensing negotiations occur before market adoption and lock-in of a standard. As many commentators have pointed out, once a standard is widely adopted and significant investments have been made on that basis, the cost of switching to an alternative technology can be prohibitively high and the patent holder is no longer at risk of being designed-out of the standard.\(^{39}\) The increase in a vendor’s switching cost as a function of the stage of standardization is illustrated in Figure 1.

**Figure 1**
Switching Cost v. Stage of Standardization

As shown by Figure 1, while a standard is being developed (a process that often takes one to three years),\(^{40}\) SDO participants have relative flexibility to choose different technical approaches to achieving interoperability. They may base such decisions on the technical merits of different solutions that have been proposed, the predicted cost of implementing these solutions, compatibility with existing technologies, and, sometimes, anticipated patent licensing costs. At this stage, switching from one potential technical approach to another is relatively low cost, and the primary cost associated with switching is the additional time that developing an alternative technical approach may take. Once a standard is approved by the relevant SDO voting body, it is generally published and released to the marketplace. At that point, product vendors

\(^{39}\) Farrell et al., *supra* note 11, at x.

\(^{40}\) See Contreras – Ex Ante, *supra* note 20, at x (observing time for standardization at three SDOs ranging from approximately one to four years); Timothy Simcoe, *Delay and de jure Standardization: Exploring the Slowdown in Internet Standards Development*, in *STANDARDS AND PUBLIC POLICY* 260 (2006) (available at http://www.rotman.utoronto.ca/strategy/research/working%20papers/Simcoe%20-%20Delays.pdf).
may begin to make investments in the design and manufacture of products that comply with the standard. These costs can be significant and are generally not recoverable if the standard is later abandoned to alternative technologies. Finally, when and if the standard becomes widely adopted in the marketplace and an increasing number of vendors make their products compatible with it, a vendor’s cost of switching to an alternative technology involves not only the initial capital investments associated with designing and manufacturing the new technology, but potential market losses arising from the new technology’s incompatibility with existing platforms.

Thus, as time progresses, the burden of a failed licensing negotiation shifts to the product vendor, who risks being shut out of the market for interoperable products or facing high switching costs if an acceptable license agreement cannot be reached with a patent holder. This reversal gives the patent holder significant leverage in any post adoption licensing negotiation because the vendor often has no viable choice other than accepting a license on the terms offered by the patent holder, even if they can be construed as “unreasonable.” As a result, vendors have a clear incentive to seek out and negotiate licenses with patent holders as early in the standardization process as possible. Many SDOs facilitate early licensing negotiations by requiring patent holders to disclose up-front all patents that they believe to be essential to a standard under development. In theory, these requirements inform vendors in advance all of the patent licenses that they must negotiate in order to implement a particular standard. And, if

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41 In some cases, vendors in highly competitive and fast-moving markets may elect to begin to design and manufacture products complying with a standard before its formal SDO approval. Doing so, of course, involves risk if the standard is not eventually approved, or if it is materially changed before approval.

42 The consumer electronics marketplace is littered with defunct, failed, and superseded standards, each of which requires vendors to invest significant resources to implement. Consider, for example, well-known examples such as Sony’s Betamax, Toshiba’s HD-DVD, Apple’s Firewire (IEEE 1394) and a host of different and incompatible formats for digital cameras. See also SHAPIRO & VARIAN, supra note 1, at Ch. 9 (describing several historical “standards wars” that resulted in the demise of one or more technical standards).

43 See, e.g., id. at 1033-34.

44 The threat of standards lock-in was described by FTC Chair Deborah Platt Majoris in an influential 2005 speech:

> If, at the start of the process, any one of a number of competing formats could win the standards battle, then no single format will command more than a competitive price. But standardization can change that dynamic. After the standard is chosen, industry participants likely will start designing, testing, and producing goods that conform to the standard—that is, after all, the whole idea of engaging in standard setting. Early in the standardization process, industry members might easily be able to abandon one technology in favor of another. But once the level of resources committed to the standard rises and the costs of switching to a new technology mount, industry members may find themselves locked into using the chosen technology. In that case, competition for the standard ends (at least for a time, until, for example, the next generation of technology supplants it).

Majoris, supra note 23. Mark Patterson offers the concrete example of the differential royalties charged by Rambus, Inc. for patents included in a standard (3.50%) and not included in a standard (0.75%). Mark R. Patterson, Commentary, Antitrust and the Costs of Standard-Setting: A Commentary on Teece & Sherry, 87 MINN. L. REV. 1995, 2001 n.33 (2003).

45 See BEKKERS & UPDEGROVE, supra note 20, at ___ (describing prevalence of patent disclosure requirements among SDOs studied).
there are too many, or if the aggregate royalties appear to be too high, vendors can legitimately attempt to influence the standardization process to ensure that less costly technologies are included in the standard (e.g., by choosing technical alternatives that are not covered by such costly patents, or by designing around patented technologies).

B. Why FRAND Licenses Are Not Negotiated in Advance (even though they should be)

But if it is so clearly in a vendor’s interest to negotiate a patent license prior to market adoption of a standard, and patent holders are required to offer licenses on FRAND terms, then why don’t all such licenses get negotiated in advance, before standards are approved or at least before they are widely adopted? As it turns out, very few such licenses are negotiated prior to the market adoption of a standard. Is this omission simply a result of vendor negligence and inattention? Probably not. There are many reasons why patent licenses do not get negotiated prior to the market adoption of standards and parties are willing to make substantial investments simply on the basis of FRAND commitments. In some cases, vendors simply may not have the opportunity to negotiate prior to market adoption of a standard because they were not part of the standards-development process, they were not aware of the standard at an early stage, they do not yet participate in the relevant product market, or because the extent of market adoption of the standard was unexpected.

1. Efficiencies of Not Negotiating

But even when vendors participate in the standardization process and are aware of patents that might implicate a standardized technology, few seek out licenses. There are rational justifications for this strategy, as well. First, negotiating patent licenses requires the expenditure of time, effort, and money. Many large companies are involved in a hundred or more SDOs simultaneously, each developing multiple (sometimes dozens of) standards. But while thousands of engineers may be involved in standardization projects across the company, this level of resource commitment is seldom matched by the corporate legal department. Armies of lawyers would be required to negotiate all of these patent licenses, potentially increasing the cost of standardized technology and bogging down the standardization process. Moreover, much of this

46 This statement is based on the author’s experience and is consistent with that of other observers including the U.S. FTC (U.S. Federal Trade Commission), Request for Comments and Announcement of Workshop on Standard-Setting Issues, 76 Fed. Reg. 28,036, 28,037 (May 13, 2011). However, not all agree. For example, Qualcomm states that it entered into numerous licenses for patents covering the WCDMA standard prior to its adoption, including manufacturers representing “more than 60% of royalty-bearing unit sales in 2005”. Qualcomm, supra note 24, at 11.

47 One example of this phenomenon is the now-ubiquitous Uniform Serial Bus (USB) standard, which was originally developed to improve the connection between personal computers and stand-alone printers and similar peripheral devices. At the time it was developed, very few expected that USB would become a broadly-adopted standard used in a wide range of computer memory and other products. See Earl Nied, Oral Comments, Transcript: Federal Trade Commission – Tools to Prevent Patent “Hold-Up” 117 (June 21, 2011); cf. FTC Evolving Marketplace, supra note 23, at 9 (noting that product vendors, in general, may fail to obtain patent licenses prior to incurring costs due to the large number of patents in certain technology markets and the failure of patents to notify the market of the scope of their claims in a coherent manner).
effort would be spent negotiating licenses for standards that were never adopted, or that failed in the marketplace. As Lichtman explains, “the [F]RAND commitment thus simplifies the conversation, allowing the engineers alone to run the show until the technical details are fully selected and documented.”

2. The Dilemma of Over-Disclosure

Second, despite SDO rules that require patents to be disclosed only if they are (or are likely to be) “essential” to the implementation of a standard, there is usually no verification that this is the case. In other words, patent holders may disclose to an SDO patents that are not actually essential, or even relevant, to a standard with few consequences. Given that patent holders could face serious potential liability for failing to disclose essential patents to an SDO (including claims of anticompetitive behavior, fraud, and deceptive conduct), patent holders have a strong incentive to disclose to an SDO, and make FRAND commitments with respect to, all patents that have even a remote possibility of being relevant to a standard. And, given that patent holders often compute royalties based, at least in part, on the number of patents being licensed, there is a clear commercial incentive for patent holders to claim as many SEPs as possible. These incentives, for better or for worse, result in significant over-disclosure of patents within SDOs, a conclusion that is borne out by empirical data. For example, recent studies have

48 See Lichtman, supra note 11, at 1028 (describing unsuccessful standards such as DAT and HD-DVD).

49 Id.

50 This situation is quite different than that in patent pools, in which a significant up-front investment is made to verify the “essentiality” of all patents proposed to be included in the pool.

51 See, e.g., Lemley, supra note 14, at 157. It is possible that intentional over-disclosure could support a claim of fraud or deception, especially if the patent holder then sought to charge royalties on patents that were not essential to the standard. However, such a case has not yet, to my knowledge, arisen.


53 But see Bernhard Ganglmair & Emanuele Tarantino, Patent Disclosure in Standard Setting, NET Institute Working Paper #11-15, 3 (2011) (arguing that patent holders may strategically delay disclosure of patents in order to increase leverage in licensing negotiations). It is also possible that some patent holders may wish to limit the number of patents that they declare to be essential to a standard in order to insulate such patents from requirements that they be licensed on a FRAND basis. The allegations in one recent suit suggest that this is a possibility. See Lotes Co., Ltd. V. Hon Hai Precision Industry Co., Order, Case No. 1:12-cv-075465-SAS (S.D.N.Y. Feb. 6, 2013) (denying defendant’s motion to dismiss antitrust claims alleging that defendant (more commonly known as Foxconn) violated a FRAND commitment made with respect to patents covering the USB 3.0 standard, when defendant claimed that such patents were not actually essential to the standard and thus not subject to the FRAND commitment in question). However, given the relatively unbounded nature of FRAND licensing rates, at least in the current environment, and the severe penalties for under-disclosure of standards-essential patents, it seems unlikely that patent holders would intentionally withhold patents of potential relevance to a standard in order to license them on terms that are explicitly not FRAND.
found that only 27% and 28% of patent families declared “essential” to ETSI’s GSM and WCDMA standards, respectively, were actually essential to implementation of those standards.\(^5^4\)

Typically, such over-disclosure would not become manifest until a patent holder sought to enforce its patents against a vendor, at which point a court would decide whether those patents were infringed and/or invalid. But prior to market adoption of a standard, a vendor is confronted with the prospect of engaging in multiple time-consuming and costly negotiations to license patents that may not, in the end, actually be essential to a standard (even if the standard is ultimately successful, which is also uncertain). It may thus be rational for a vendor to adopt a ‘wait and see’ approach and engage in licensing negotiations only with patent holders that approach it with credibly essential patents. In most cases, such approaches will occur only after the market adoption of a standard and the release of a vendor product that implements the standard and is thus likely to be infringing.

3. Avoiding the “Sleeping Dogs”

Widespread vendor inaction is further explained by the fact that many patent holders that are engaged in standards development do not actively seek to license or enforce their SEPs. These companies have been termed “sleeping dogs,”\(^5^5\) and are generally believed to hold SEPs primarily for “defensive” purposes (i.e., to use in counterclaims should they be sued for patent infringement, or as bargaining chips in licensing negotiations with other patent holders). Vendors are loathe to approach sleeping dogs for licenses, as doing so could “wake” these companies and result in royalty obligations that otherwise would not have materialized. Thus, it is a common strategy not to approach these companies for licenses, even if they are known to hold SEPS. In other words, to let these sleeping dogs lie.

Add to all of the above the inescapable fact that patent holders who actively seek to monetize their patent portfolios know very well that their leverage in licensing negotiations increases dramatically with the passage of time. With this in mind, it is not surprising that such patent holders have an incentive to defer seeking out potential licensees for royalty negotiations until after a standard is adopted and widely implemented.

Thus, despite theoretically sound rationales for leaving the licensing of SEPs to private pre-approval bilateral negotiations among parties, there are many reasons that pre-approval license negotiation is relatively rare. Thus, we are left with a situation in which FRAND licenses for SEPs are being negotiated after approval, market adoption, and lock-in of standards. When such negotiations occur after lock-in, a vendor’s principal protection from excessive demands by patent holders is the FRAND commitment made by the patent holder. And because FRAND

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commitments by themselves have proven to be vague and indeterminate, this protection can be largely illusory.

II. GOALS OF A FRAND SYSTEM

The SDO-based voluntary standardization system evolved in response to a market need for standards to enable different vendors’ products to interface with one another. As such, I view the fundamental purpose of the standardization system to be producing as many useful interoperability standards as possible, as rapidly as possible, while generating as few transaction costs as possible. Accordingly, the system of FRAND patent licensing commitments should support this goal to the greatest extent possible. With this in mind, I examine the features of the current FRAND licensing system and outline a set of parameters for FRAND licensing that is most likely to achieve this systemic goal.

A. Increasing Information

When firms make decisions about technology adoption, marketing, and distribution, it is desirable for them to have as much information as possible about input costs (including the cost of licensing necessary patents). By the same token, imposing obstacles on the acquisition of this information is likely to degrade the quality of decision making. It thus follows that, so long as information is not shared in a manner that is anticompetitive, greater information should lead

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56 The origin of modern standardization practices has been attributed, among other things, to early instances of incompatibility surrounding railroad track gauges, fire hose attachments, artillery caliber, and air brakes. See, e.g., LAWRENCE BUSCH, STANDARDS – RECIPES FOR REALITY vii (2011); MICHAEL CARRIER, INNOVATION FOR THE 21ST CENTURY – HARNESING THE POWER OF INTELLECTUAL PROPERTY AND ANTITRUST LAW 323 (2009).

57 As explained by Ronald Coase in his seminal 1960 article The Problem of Social Cost, 3 J. L. & Econ. 1, 15 (1960), transaction costs include those costs that must be incurred “to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on.” Thus, for purposes of the present discussion, I consider transaction costs to include those costs that are incurred during the standardization process but that are not directly related to the production of standards. These include costs of identifying patent holders, evaluating the essentiality of patents to a standard, negotiating license agreements, and litigating disputes relating to FRAND commitments. Importantly, I do not consider patent royalties themselves to constitute transaction costs, as these are more aptly viewed as input costs for standardized products.

58 See FTC Evolving Marketplace, supra note 23, at 8 (emphasizing the importance to manufacturers of considering patent-related cost information before making substantial investments in a technology).
to better decision making.\textsuperscript{59} For this reason, other things being equal, it would be preferable for vendors to have more rather than less information regarding the patent royalty burden of standards during the standards approval and adoption process.\textsuperscript{60}

Of course, obtaining information is not always costless. It is well understood that, in most cases, the incremental cost of information gathering will eventually exceed the expected marginal benefit of an increment of additional information.\textsuperscript{61} As observed by Schwartz and Scott, parties to a transaction may deliberately defer formal contracting until they have had the opportunity to invest in information gathering.\textsuperscript{62} However, these principles do not apply in the context of information that is already known to one party to a potential transaction but not to the other, and which the other cannot discover through diligent search or the investment of resources. Here, a simple informational asymmetry exists.\textsuperscript{63}

A patent holder knows (or can easily determine) the rate at which it would license its patents that are essential to a particular standard and declines to provide that information to standards developers, even though such information could be conveyed at virtually no cost. This information is not generally dependent on extrinsic factors (the state of the world), except to the degree that the patent holder wishes to factor evolving market conditions into its royalty rates. Moreover, such information cannot be determined through investigation by a vendor or standards developer. Even when a patent holder has previously concluded negotiations with other vendors, such negotiations are typically conducted pursuant to non-disclosure agreements, so that vendors cannot disclose negotiated terms with other vendors, participants in the SDO or the SDO itself.\textsuperscript{64} Moreover, SDOs typically do not monitor, track, or even record the results of these negotiations, especially if the information is not generally dependent on extrinsic factors (the state of the world), except to the degree that the patent holder wishes to factor evolving market conditions into its royalty rates. Therefore, a simple informational asymmetry exists.

\textsuperscript{59} The economics literature on organizational decision making in the face of incomplete information is large and varied and well beyond the scope of this paper. For a general overview, see Herbert A. Simon, \textit{Rational Decision Making in Business Organizations}, 69 AM. ECON. REV. 493 (1979) (Nobel price acceptance lecture) and Bengt Holmström & Roger B. Myerson, \textit{Efficient and Durable Decision Rules with Incomplete Information}, 51 ECONOMETRICA 1799 (1983). As noted by one source, “[i]ncomplete information is the central problem in game theory and the law. Shaping laws that give parties an incentive to act in a way that leaves everyone better off is a straightforward matter as long as all the parties . . . possess enough information. Complications arise, however, when the necessary information is not known or, more commonly, is known, but not to all the parties”. \textsc{Douglas G. Baird, Robert H. Gertner & Randall C. Picker, Game Theory and the Law} 2 (1994).

\textsuperscript{60} This line of reasoning has been echoed by U.S. regulators. The Federal Trade Commission has expressed a general preference for licensing of patents before a vendor has made substantial investments in a technology and before its switching costs become prohibitive, as have representatives of the Department of Justice. \textit{See FTC Evolving Marketplace, supra note 23, at 50-52; Hesse - Looking Back, supra note 4, at 18.}


\textsuperscript{63} Such asymmetries have been observed and studied extensively in markets such as used cars and real estate. \textit{See, e.g.,} George Akerlof, \textit{The Market for Lemons}, 70 QUARTERLY J. ECON. 488 (1970). In general, an information asymmetry is viewed as resulting in transactions that are inefficient. \textit{See generally Michael L. Katz & Harvey S. Rosen, Microeconomics} 613 (1991).

\textsuperscript{64} Parties have demonstrated the high value that they place on the confidentiality of royalty information by the strenuous efforts they have undertaken to seal court records in which such information may be revealed. \textit{See Bill Rigby, Microsoft, Motorola File to Keep Patent Case Details Private, Reuters} (Dec. 14, 2012), http://www.reuters.com/article/2012/12/15/us-microsoft-google-trial-idUSBRE8BE01Y20121215.
and are presumably unaware of when and whether they take place. Information regarding the details of negotiated FRAND licenses is thus scarce.

As in any information asymmetry situation, a party withholds information in order to gain a strategic advantage. Patent holders gain several advantages in licensing negotiations by withholding royalty information from the marketplace. A general lack of information makes it difficult for prospective licensees to benchmark and compare the “deal” that they are offered with market norms. Withholding such information also obstructs policing of a patent holder’s obligation to grant licenses on terms that are “non-discriminatory” (the often-overlooked “ND” prong of FRAND). As Lemley and Myhrvold have argued in relation to disclosure of licensing information generally:

The only people who stand to lose from mandatory disclosure of licenses are those who are taking advantage of the current state of ignorance. . . . [W]e should not use claims of secrecy to prevent the development of a robust market in technology.66

A few commentators have argued that there are efficiency-enhancing reasons for patent holders to conceal royalty information from prospective vendors during the standards development process. In particular, they hypothesize that the disclosure of such information could be detrimental to the standardization process, as it could distract standards developers from the technical tasks at hand. Standards developers, they contend, should focus primarily on optimizing the technological features of a standard without regard to the potential cost of producing the standardized technology. After all, it is engineers who hash out the technical details of interoperability standards, not lawyers, economists, or financial analysts, and engineers are probably ill-suited to analyze patent claims and financial data such as input costs, pricing projections, and market trends.

So is ignorance regarding patent royalty rates during the standardization process actually preferable to information about them? I think not. While engineers may not have expertise in finance or patent law, it is naïve to suppose that in today’s sophisticated technology environment, engineers do not work side-by-side with legal counsel and financial analysts. Thus, I do not believe that it is reasonable to argue that withholding royalty-related information is beneficial or efficiency-enhancing. Greater certainty regarding the cost of implementing standards should be beneficial to those who are considering the design and eventual approval of standards, notwithstanding any incidental distraction that it may cause.

65 See Gilbert, supra note 23, at 875-76 (arguing that the non-discrimination prong of FRAND commitments be given greater weight and attention, and proposing that vendors be given the opportunity to select one of a range of pre-determined and publicly-disclosed royalty structures offered by patent holders).
68 Id.
B. Accelerating Information

As discussed in Part I.A above, licensing negotiations between patent holders and vendors work most efficiently when they occur prior to the market adoption and lock-in of a standard. After lock-in, a patent holder obtains undue negotiation leverage based not on the value of the licensed patents, but on the fact that switching costs are so high for the vendor. Though patent holders can benefit from delaying licensing negotiations until after market adoption of a standard, most bilateralists concede that it is desirable to engage in licensing negotiations prior to market adoption if both parties are willing to do so. Thus, they maintain that they are ready, willing, and able to engage in licensing negotiations prior to market adoption of a standard, and that it is vendors who typically delay negotiation for the reasons discussed in Section I.B.

Assuming that, absent some greater inducement for vendors, most licensing negotiations will typically not occur prior to market adoption of a standard, a second-best approach might be for patent holders to give vendors more information about royalty rates prior to this point. Thus, instead of keeping royalty rates secret, or negotiating them confidentially on a vendor-by-vendor basis, patent holders could be required to disclose their royalty rates and other terms prior to approval of a standard by the SDO. Such disclosures would enable vendors to assess the potential cost of particular SEPs during the development cycle and decide whether or not to seek a less costly technical alternative or attempt to design-around particularly expensive patents. This early disclosure approach has been termed “ex ante” disclosure of licensing terms, or simply the ex ante approach.

Early disclosure of royalty rates, it is argued, would enable SDO participants to evaluate the cost of including particular patented technologies in a standard prior to market adoption, and would thus enable more efficient decision making with respect to the technical design of the standard. That is, if a patent holder disclosed a royalty rate that was exorbitant, or multiple patent holders disclosed royalty rates that, in the aggregate, could not be supported by projected profits from the sale of standardized products, then standards-developers could adjust the design of the standard to avoid one or more of these patents and/or opt for an alternative, less costly technology.

Beginning in the mid-2000s, a number of SDOs including ETSI, IEEE, and VITA began to discuss policy changes favoring ex ante disclosures. Several of these policies were eventually adopted and approved by both the U.S. Department of Justice and ANSI. In approving the VITA policy, the U.S. Department of Justice observed that ex ante disclosures could enable SDO

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69 Though this position is stated publicly, there are anecdotal accounts of “foot dragging” and other delaying tactics by patent holders to push licensing negotiations later into the standardization process and closer to lock-in.


working group members to evaluate technologies on both “technical merit and licensing terms,” creating incentives for patent holders to compete as to royalties and to avoid disputes over licensing terms after standards are set. The European Commission has expressed similar tolerance for ex ante disclosure of licensing terms.

Despite these endorsements, few SDOs have adopted policies encouraging ex ante disclosure of licensing terms, and, to my knowledge, no SDO other than VITA mandates such ex ante disclosures. There are several possible explanations for this lack of uptake, including self-interested opposition by patent holders and the perceived effort and inconvenience of making such disclosures. Some critics have argued that the early disclosure of licensing terms will inappropriately focus standards developers’ attention on patents and licensing issues, making the standards development process more cumbersome, lengthy and expensive, will drive members away from SDOs adopting such policies, and will lead standards developers to settle for sub-optimal technologies in order to avoid the payment of royalties on patented, but superior, technologies. These predictions, however, have not been borne out by the evidence. Legal objections have also been raised with respect to ex ante policies. In particular, it has been suggested that a group of vendors negotiating license terms with a patent holder could collectively exert anticompetitive pressure to reduce the patent holder’s royalties below their reasonable level, and in many cases to zero. In this scenario, group pressure could drive all

72 DOJ VITA Letter, supra note 71, at 9-10; see also DOJ/FTC Antitrust and IPR, supra note 2, at 53-55.


74 The case of NGMN (discussed at note 83, infra) is somewhat different, as disclosures were made on an anonymous basis. As noted below, such anonymous disclosures resulted in royalty rates that were likely overstated. Some commentators have argued that even non-anonymous ex ante disclosures of maximum royalty rates would be overstated (Herman, supra note 67, at 38), though there is no evidence that this has been the experience at VITA.

75 These rationales are discussed in greater detail in Contreras – Ex Ante, supra note 20, at x.

76 See CLAUDIA TAPIA, INDUSTRIAL PROPERTY RIGHTS, TECHNICAL STANDARDS AND LICENSING PRACTICES (FRAND) IN THE TELECOMMUNICATIONS INDUSTRY 170 (Köln: Carl Heymanns Verlag) (2010); Richard S. Taffet, Ex Ante Licensing in Standards Development – Myths and Reality 15, Presentation to AIPLA Spring Meeting (May 4, 2006), available at http://www.bingham.com/Media.aspx?MediaID=2742 (“the ability to conclude the technical development of a standard could be tremendously inhibited” by the adoption of ex ante policies); DOJ/FTC Antitrust and IPR, supra note 2, at 50; Herman, supra note 67, at 39 (“collective consideration of patent licensing issues may unacceptably delay the standards development process”); Skitol, supra note 70, at 734.

77 See DOJ/FTC Antitrust and IPR, supra note 2, at 50 (citing concerns of various panelists); Lindsay, supra note 28, at 7.

78 See Taffet, supra note 76, at 15; TAPIA, supra note 76, at 178.

79 Contreras – Ex Ante, supra note 20, at _ (finding no correlation between the adoption of ex ante policies by VITA and IEEE and predicted process degradation at these SDOs).

80 See Sidak, supra note 14, at 126, 142-51 (“ex ante collective action that is privately undertaken in an SDO to counteract potential patent holdup may facilitate, if not serve as an outright façade for, horizontal price fixing by oligopsonists of the patented input”). But see CARRIER, supra note 56, at 336-37 (largely dismissing the threat of oligopsonistic behaviour in the standards-setting environment).
royalty rates toward zero, resulting in the devaluation of patents covering the standard.81 This type of improper buyer cartel, or “oligopsony,” is avoided, so the argument goes, only when patent holders are permitted to negotiate license terms with vendors on an individual, bilateral basis.

All of these factors likely contribute, to some degree, to the poor adoption of *ex ante* policies in the marketplace. But most important, in my opinion, is the fact that *ex ante* policies, while theoretically capable of promoting efficiency-enhancing benefits, are insufficient, standing alone, to do so when many, sometimes hundreds or thousands of, patents may be essential to the implementation of a single standard.82 In this environment, advance disclosure of the royalty rate for a single SEP may be inconsequential given the overall volume of patents to be contended with. That is, even if all patent holders participating in an SDO are required to disclose their royalty rates before approval of a standard, and even if each patent holder’s royalty rate might, on its face, appear “reasonable”, the aggregate of such disclosed royalties might be excessive.83 In practice, then, for standards that are covered by large numbers of patents, *ex ante* policies may offer few benefits to offset their costs and to overcome the objections of influential patent holders.84

This issue is addressed in the next section. However, despite the various criticisms of *ex ante* disclosure policies as they are currently understood, general notions of efficiency and fairness still seem to tilt the balance toward a need for greater transparency of royalty rates and other terms for SEP licenses. This is not to say, however, that mandatory *ex ante* disclosure policies themselves are likely to cure the problem of FRAND uncertainty in most SDOs.

81 In fact, some commentators argue that royalty-free licensing is the most appropriate solution for interoperability standards. See, e.g., Andrew Updegrove, *Ex Ante Disclosure: Risks, Rewards, process and Alternatives*, Consortium Standards Bul., p. 11-12, June 2006; Herman, supra note 67, at 37-38 (arguing against this position). This position reflects the well-known economic tradeoff between static efficiency (favouring royalty-free licensing) and dynamic efficiency (favouring the use of patents to provide incentives for innovation). See William M. Landes & Richard A. Posner, *The Economic Structure of Intellectual Property Law* 12-13 (2003).

82 For example, ETSI’s legal advisor reported in 2007 that approximately 4,700 patents had been disclosed as essential to implementation of the GSM standard, 7,700 for UMTS and 3,500 for 3GPP. Michael Fröhlich, ‘The Interface Between Standards and IPRs – The ETSI IPR Policy’, Presentation to The Standards Edge Conference: ‘Building Economic Strength and Social Benefit’, p. 9, Beijing, 17-18 (Apr. 2007).

83 This situation is reported to have occurred in the Next-Generation Mobile Networks consortium (NGMN). NGMN required its members to disclose their maximum SEP royalty rates and other licensing terms for certain ETSI standards on an anonymous basis. These rates were then compiled by a neutral third party law firm. One commentator reports that in at least one case the resulting aggregate royalty rate reached 130% of the net sale price of the standardized equipment. Tapia, supra note 76, at 194; see also Contreras – Ex Ante, supra note 20, at x.

84 This is likely the reason that virtually no *ex ante* licensing disclosures have been made at ETSI and IEEE, both of which permit such disclosures. Contreras – Ex Ante, supra note 20, at x.
C. Reasonable Limits

A FRAND commitment requires SEPs to be licensed on “reasonable” terms. While patent royalty rates vary according to a number of factors including the value of the patents, the number of patents being licensed, profit margins and manufacturing costs in the relevant industry, and overall market conditions, it must be the case that there are some finite and objective limits on the level of royalties subject to a FRAND commitment. In particular, this limit must be definable by criteria other than the wishes of the patent holder. Moreover, the term “reasonable” implies that there is not a single acceptable royalty rate in a given situation, but that royalties may span some range of “reasonable” values.

The difficulty, of course, is determining that range in any given context. Intellectual property royalty rates differ dramatically from industry to industry and transaction to transaction. One 2005 study shows, for example, that in the telecommunications industry, royalty rates over ninety-five license agreements averaged 4.9%, with a range of 0.4% to 15.5%, while in the software industry, 198 license agreements had an average royalty rate of 11.8% with a range from 0.0% to 77.0%. Lemley and Shapiro observe similarly broad ranges of royalties in judicial royalty damages awards. Thus, the determination of “reasonable” rates can be highly context-specific, as well as party-specific and patent-specific.

Nevertheless, numerous commentators have offered suggestions regarding the best method for evaluating the reasonableness of SEP royalty rates. One of the leading theories posits that the “reasonable” rate is the one that the vendor and the patent holder would have negotiated in an arm’s length negotiation prior to market adoption of the standard (i.e., before the patent holder gained additional leverage due to the hold-up potential of the patent). Others tie the royalty rate to the “value” of the licensed SEP in view of the overall standardized technology or product. Still others refer to the fifteen “hypothetical negotiation” factors enumerated in Georgia-Pacific v. United States Plywood more than 40 years ago, and which are still cited by U.S. courts when assessing “reasonable royalty” patent damages. And bilateralists argue that

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85 Industry Royalty Rate Data Summary, LICENSING ECON. REV., Dec. 2005, at 6-7; see also WILLIAM MURPHY, JOHN L. ORCUTT & PAUL C. REMUS, PATENT VALUATION: IMPROVING DECISION MAKING THROUGH ANALYSIS 253 (2012) (reporting royalty rates in the electronics industry between 0.5% and 15.0% and in the pharmaceutical and biotechnology industry of between 0.1% and 40.0%, based on a 2007 study).

86 Lemley & Shapiro, supra note 14 at 2030-35.


88 This approach was highlighted in Lucent v. Gateway, 580 F.3d 1301 (Fed. Cir. 2009); see also Anne Layne-Farrar, A. Jorge Padilla & Richard Schmalensee, Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of FRAND Commitments, 74 ANTITRUST L.J. 671, 675-79 (2007) (describing various approaches).


The Georgia-Pacific factors comprise the following:

1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.
the only “reasonable” royalty is the one negotiated by a vendor and a patent holder at the time of
their negotiation, no matter when it occurs.

Each of these theories has merit and may be useful for assessing the reasonableness or
unreasonableness of a royalty rate in the event of a dispute. However, none of these measures
(except perhaps that offered by the bilateralists, which is essentially tautological90) offers
anything close to certainty prior to or during a licensing negotiation. In other words, these
theories are well-suited for assessing the reasonableness of royalty rates after they have been
imposed,91 but ill-suited for assisting SDO participants in assessing rates offered by patent

2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.

3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in
terms of territory or with respect to whom the manufactured product may be sold.

4. The licensor’s established policy and marketing program to maintain his patent monopoly by not licensing
others to use the invention or by granting licenses under special conditions designed to preserve that
monopoly.

5. The commercial relationship between the licensor and licensee, such as, whether they are competitors in
the same territory in the same line of business; or whether they are inventor and promotor.

6. The effect of selling the patented specialty in promoting sales of other products of the licensee; the existing
value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such
derivative or convoyed sales.

7. The duration of the patent and the term of the license.

8. The established profitability of the product made under the patent; its commercial success; and its current
popularity.

9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used
for working out similar results.

10. The nature of the patented invention; the character of the commercial embodiment of it as owned and
produced by the licensor; and the benefits to those who have used the invention.

11. The extent to which the infringer has made use of the invention; and any evidence probative of the value
of that use.

12. The portion of the profit or of the selling price that may be customary in the particular business or in
comparable businesses to allow for the use of the invention or analogous inventions.

13. The portion of the realizable profit that should be credited to the invention as distinguished from non-
patented elements, the manufacturing process, business risks, or significant features or improvements added
by the infringer.

14. The opinion testimony of qualified experts.

15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed
upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an
agreement; that is, the amount which a prudent licensee — who desired, as a business proposition, to obtain a
license to manufacture and sell a particular article embodying the patented invention — would have been
willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been
acceptable by a prudent patentee who was willing to grant a license.

90 It is reasonable if it is reached through bilateral negotiation, therefore if it is reached through bilateral negotiation,
it must be reasonable.

91 But see the significant literature criticizing the Georgia-Pacific analysis for patent damages, including F. Russell
holders at the time of negotiation. Thus, from the perspective of a potential product vendor, the theoretical reasonable royalty rates suggested by most commentators seem no less indeterminate than the vague FRAND commitment that they seek to clarify. So, while it is not an aspiration of this paper to advance a new theoretical basis for calculating FRAND royalty rates, it is my contention that reasonableness must be constrained by some meaningful upper boundary.

D. Aggregated Burdens

As the number of patents covering a single standard increases, so does the uncertainty associated with the royalty burden of implementing that standard in a product. This is the familiar problem of royalty stacking discussed above. The certainty that might be achieved through a simple ex ante disclosure when a single SEP is involved is lost when multiple SEPs owned by multiple patent holders cover the standard. The issue, then, is not only one of disclosure, but of magnitude. As many commentators on the stacking issue have pointed out, the aggregate royalty burden that results from multiple separate royalty demands can be excessive and has the potential to make a standardized technology uncompetitive in the marketplace. This is the case even if individual royalty rates meet some threshold of “reasonableness” when considered separately. As Joseph Farrell explains, “[t]his is because the sum of the incremental values of [multiple] patents exceeds their value in combination.”

Herein lies the greatest problem with the bilateralist approach. One-on-one bilateral negotiation of royalty rates and other terms might yield efficient results when only one patent holder is involved. But when multiple patent holders emerge, it is difficult, if not impossible, for a vendor to negotiate simultaneously with each of them to reach an aggregate royalty rate that is “reasonable” from the vendor’s standpoint. The reason this issue arises is that none of the patent holders is required to take into account the rates charged by the others. In fact, without information sharing that might be anticompetitive, such coordination is not possible. Yet the combination of five, or ten, or twenty separately negotiated “reasonable” royalties can easily result in an aggregate royalty burden that is unreasonably high. It is thus critical that, in the context of technical standards, any assessment of the “reasonableness” of an individual patent

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92 See notes 13-14, supra, and accompanying text.

93 Farrell et al., supra note 11, at 642; see also Lemley & Shapiro, supra note 14, at 2013-15 (describing the well-known problem of Cournot-complements, which arises when multiple suppliers with market power sell complementary products and thereby, causing overall prices to increase above the level that would be set by an integrated monopolist).
holder’s royalty rate takes into account the overall number of SEPs applicable to a standard, the number of patent holders, and the aggregate royalty burden on the standard.\textsuperscript{94}

E. Unbundling of Non-SEPs

In the vast majority of SDOs, FRAND commitments apply only to SEPs, patents that are “essential” to the implementation of a standard. But there is a common refrain among bilateralist commentators that attempting to determine “reasonable” terms for FRAND licenses is, at best, an exercise in irrelevancy, as most vendors want licenses that cover more than SEPs.\textsuperscript{95} That is, holders of SEPs also hold a variety of other patents that are useful, but not essential, to products that implement standards. And because FRAND policies, by their terms, apply only to SEPs, patent holders can charge whatever the market will bear when they license non-SEPs. Thus, a vendor who wishes to obtain a license for a package of SEPs and non-SEPs is not protected by the patent holder’s FRAND assurance, and the terms of the license will be determined by bilateral negotiation and market pricing, in any event.

But this conclusion is far from foregone. It rests on the assumption that the bundling of SEPs and non-SEPs is driven by vendor (purchaser) demand rather than patent holder (seller) desire, and that some non-SEPs are so critical to the design, operation or commercial success of a standardized product that vendors require a license in order to deal in the product. The bilateralist argument assumes that virtually all vendors will want to license a SEP/non-SEP package of patents, and that very few will want to license only SEPs. Yet one need only look to industries in which patent pools are prevalent (e.g., consumer electronics products relying on data standards such as CD, DVD, etc.) to see that this is not always the case. When a patent pool relating to a standardized technology is formed, the parties expend significant resources to ensure that only SEPs are included in the pool.\textsuperscript{96} Thus, nearly all licensees of pooled patents receive a SEP-only license. If vendors wish to gain access to technologies beyond those covered by the relevant standard, they enter into separate negotiations with the patent holder. But this is not the

\textsuperscript{94} It is important to note that the aggregate royalty burden on a technology is not one of the fifteen Georgia-Pacific factors (note 89, supra); another reason that Georgia-Pacific does not offer a suitable analytical framework for assessing FRAND commitments.

\textsuperscript{95} Herman, supra note 67, at 38 (arguing that implementers “generally do not want a license only to essential claims, but rather to all of the patent claims that their commercial implementations infringe”). For example, Company X may hold a patent that is essential to implement a standard for compressing digital images on mobile telephones. Company X may also hold patents covering its market-leading technology for enhancing the color of compressed digital images. Color enhancement technology may not be part of the image compression standard, but most camera phone manufacturers would wish to use color-enhancing technology along with the image compression standard. Thus, the patent holder would seldom license the standards-essential patents separately, and the relevant royalty would be what it charged for the combination of image compression and color enhancement patents. This rate, however, would not be covered by Company X’s FRAND commitment, as this commitment would only extend to SEPs.

\textsuperscript{96} Under applicable antitrust/competition law guidelines, patent pools should include only SEPs. See DOJ/FTC Antitrust and IPR, supra note 2 at 76-78. This condition has been relaxed somewhat in recent cases when the status of a patent at the point of pool formation is unpredictable, but by and large this requirement remains. See Princo Corp. v. ITC, 616 F.3d 1318 (Fed. Cir. 2010) (en banc), cert. denied, 131 S. Ct. 2480 (2011).
norm. Thus, industries such as home entertainment consumer electronics are replete with SEP-only licenses.

The second major bilateralist assumption is that some non-SEPs are so critical to the design, operation and commercial success of a standardized product that virtually all vendors will desire a license. This begs the question, however, of what patents are actually “essential” to the standard. Traditionally, essential patents (or, more precisely, essential patent claims) must be technically necessary to implement a mandatory (i.e., non-optional) portion of a standard. However, some parties have argued that if a patent claim covers a technological feature that is commercially essential to implement the standardized technology, then this patent should also be considered a SEP and be subject to the SDO’s FRAND policy. This approach has been taken in several prominent patent pools relating to standards in the consumer electronics industry and has been approved by the U.S. Department of Justice in this context.

The question of commercial essentiality highlights the fact that the SEP/non-SEP boundary is not entirely clear. Thus, the bilateralist argument that vendors almost always wish to license non-SEPs in addition to SEPs, thereby rendering FRAND commitments irrelevant, could also be answered by expanding the universe of SEPs to include commercially essential patents. Doing so would increase the scope of a patent holder’s FRAND commitment and weaken the argument against focusing on FRAND solutions.

III. FIXING FRAND – A PSEUDO-POOL APPROACH

In this Section, I present a proposed framework for addressing FRAND uncertainty that draws upon the first principles elucidated above, as well as some of the successful elements of patent pools.

A. Patent Pools – Birds of a Different Feather

In a patent pool, multiple patent owners contribute or license patents to a common agent (sometimes one of the patent holders and sometimes a third party administrator). The agent then offers to license the entire pool to market participants at a single royalty rate, and net revenues

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97 See ABA PATENT POLICY MANUAL, supra note 3, at 18-19 (discussing differences between “technically essential” and “commercially essential” patent claims).


are allocated among the pool participants in accordance with a pre-determined formula. Because a vendor seeking to implement such a standard can obtain a license to many patents simultaneously, all at a single royalty rate, several commentators view patent pools as a potential solution to the patent stacking problem.\footnote{101} For example, VIA Licensing administers patent pools that cover the MPEG Advanced Audio Coding (AAC) standard. VIA charges a fixed per-unit fee ranging from $0.98 to $0.15, based on annual sales volume, for consumer products implementing the standard.\footnote{102} This fee does not vary based on the number of patents included in the pool, or the number of patent holders. The DVD6C pool offers licenses of patents essential to a range of DVD-related standards at either a fixed per-unit fee or a percentage royalty, subject to a cap (e.g., for DVD video players, the fee can be the greater of 4% of the net selling price, up to a maximum of $8.00 per player).\footnote{103}

Patent pools have been used effectively in connection with a handful of widely adopted consumer electronics standards such as the MPEG audio compression format,\footnote{104} the DVD video compression format,\footnote{105} and third generation (3G) wireless communications standards.\footnote{106} In each of these cases the U.S. Department of Justice approved the proposed pool, pointing to features that reduced potentially anticompetitive effects.\footnote{107} For example, each such pool contained only patents that were essential to the implementation of the standard; licensees were always free to obtain patent licenses directly from the patent holders, rather than from the pool; licensing of the

\footnote{101}See, e.g., AM. BAR ASSN. SECT. OF ANTITRUST L., HANDBOOK ON THE ANTITRUST ASPECTS OF STANDARD SETTING 130-31 (2nd ed. 2011); Lemley & Shapiro, supra note 14 at 2014-15 (describing the use of patent pools to address the Cournot complements problem in standard setting); Shapiro, supra note 14, at 119 (assessing patent pools as a “natural and effective” method to “cut through the patent thicket”).


\footnote{104}MPEG Letter, supra note 99.

\footnote{105}DVD 3C Letter, supra note 99; DVD 6C Letter, supra note 99.


\footnote{107}DOJ/FTC Antitrust and IPR, supra note 2, at 74-85.
pooled patents was conducted on a non-discriminatory basis; and any licenses that the patent holders required from their licensees only covered patents that were, themselves, essential to implementation of the standard.\textsuperscript{108} Among the procompetitive effects that the Department of Justice attributed to these patent pools are their ability to “create substantial integrative efficiencies by reducing the time and expense of disseminating [] patents to interested licensees, clearing blocking positions, and integrating complementary technologies.”\textsuperscript{109} Patent pools thus address many of the uncertainties associated with FRAND commitments: royalty rates and other terms are determined and made available at the outset, a single royalty covers all patents in the pool, and only SEPs are included in the pool.

But the certainty and efficiency afforded by patent pools comes at a steep cost. Most importantly, patent pools typically involve substantial up-front expenses (primarily legal and patent analysis costs) associated with their formation. Unlike SDOs, which permit (or require) patent holders themselves to disclose patents that they determine to be essential to the standard (often resulting in substantial over-disclosure\textsuperscript{110}), patent pools must ensure from the beginning that all patents placed in the pool are essential. This requirement flows from the risk that a patent pool may stifle competition if it contains patents covering technologies that are substitutes for one another. Under this theory, allowing patents on substitute technologies in the same patent pool could have the result of fixing prices on such competing technologies.\textsuperscript{111} For this reason, the parties forming patent pools typically engage in a lengthy and expensive process (usually through external counsel engaged for the purpose) of vetting each patent that is proposed to be included in the pool and ensuring its essentiality.\textsuperscript{112}

Such a vetting process would be cost-prohibitive in the context of SDO-based standards development. Unlike patent pools, which generally focus on discrete standards for well-defined product categories, some SDOs produce hundreds or thousands of standards in a wide range of areas.\textsuperscript{113} Many SDO standards are never widely-adopted or have limited application, making such a massive up-front investment of resources a highly dubious proposition. In contrast, relatively little up-front investment is required in SDO-based standardization: patents are voluntarily declared as essential by patent holders, and the actual essentiality of such patents is not tested unless and until litigation ensues. While this structure relies on litigation to resolve questions regarding patent essentiality, its significant up-front cost savings makes it far more desirable in the SDO context. It is likely for this reason that the large majority of technical interoperability standards are developed by SDOs (including both large, formal standard-setting

\begin{flushleft}
108 Id. at 68-84.
109 Id. at 71; see also Shapiro, supra note 14, at 134-36.
110 See Section I.B.2, supra.
113 See, e.g., Weiler, supra note 13 (reporting that at ETSI, as of September 2012, 126,602 patents had been declared essential to 4,854 different standards).
\end{flushleft}
organizations and smaller consortia) and not within patent pools.¹¹⁴ Figure 2 graphically illustrates the proportion of standards found in a recent study to be embodied in a single laptop computer that are subject to FRAND commitments (75%) versus patent pools (3%).

![Figure 2](image)

Thus, while patent pools have a number of characteristics that could significantly alleviate the uncertainty inherent in FRAND-based licensing, patent pools are not viable substitutes for the current SDO FRAND-based licensing system. In the next section, I explore how some of the beneficial features of patent pools can be exported to the SDO FRAND-based licensing structure.

**B. A Pseudo-Pool Approach to FRAND**

As discussed in the preceding section, patent pools address many of the “first principles” needed to reduce FRAND uncertainty: royalty rates and other terms are determined and made available at the outset and a single royalty covers all patents in the pool. However, the up-front investment of time and money that is required to create patent pools is prohibitive in the context of SDOs. Thus, I propose a “pseudo-pool” approach that incorporates some of the beneficial features of patent pools while preserving the flexibility and broad activity scope that is inherent

¹¹⁴ This is not to say, however, that a number of SDOs have not considered the formation of patent pools around some of their more successful standards. See, e.g., IEEE Standards Assn. Press Release, *IEEE 802.11 Patent Pool Exploratory Forum Launched* (Aug. 6, 2012), http://standards.ieee.org/news/2012/802pat.html (group formed to explore forming one or more patent pools in the area of IEEE’s popular WiFi standards).

in the SDO model. Below I outline the principal features of the pseudo-pool approach. I do not claim that this proposal offers a complete solution to all of the problems and uncertainty affecting standards development, or that it will curtail the current litigation that is being played out in courts across the globe. Moreover, I acknowledge that further work is required to analyze how such a proposal would be implemented in real SDOs, each having their own constituencies, histories, and idiosyncrasies. I also recognize that competition authorities may wish to confirm independently that this deviation from formal patent pool models offers sufficient procompetitive benefits to offset any potential anticompetitive risk. But with these caveats, I hope that this proposal may be of use to SDOs seeking to address FRAND uncertainty. In broad terms, the pseudo-pool approach comprises the following components, which are summarized below:

1. Declaration of SEPs
2. Aggregate Royalty Determination
3. Licensing of SEPs
4. Split of Royalties
5. Over-Declaration Penalty
6. Independent Licensing Permitted
7. Opt-Out

1. Declaration of SEPs

Patent holders will be required, much as they are today, to declare SEPs based on their good faith evaluation of the essentiality (technical and/or commercial) of such patents to a standard under development.

2. Aggregate Royalty Determination

Prior to, or shortly after, final approval of a standard,\textsuperscript{116} the SDO (through an appropriate working group that includes both patent holders and potential product vendors) may\textsuperscript{117} establish an aggregate royalty (“Aggregate Royalty”) to be divided among all holders of SEPs declared on the standard. Consistent with the FRAND commitment, such an Aggregate Royalty must be “reasonable”, taking into account the expected overall market for standardized products,

\textsuperscript{116} There may be some debate regarding the optimal timing for setting the Aggregate Royalty, and different SDOs may have different preferences depending on their individual procedures for developing and finalizing standards.

\textsuperscript{117} The establishment of an Aggregate Royalty rate for particular standards is the crux of the pseudo-pool proposal. However, rather than require that an Aggregate Royalty be established for each standard, it may be desirable (and politically expedient) to leave the choice whether or not to establish an Aggregate Royalty to individual working groups within the SDO, or simply to encourage (and permit) the establishment of such Aggregate Royalty rates. Such flexible approaches regarding royalty terms are already in place at SDOs such as W3C and OASIS.
historical royalty rates in the industry, typical product price ranges, and the like.\(^{118}\) To avoid antitrust concerns, participants would be expressly prohibited from discussing individual company pricing or marketing plans. The Aggregate Royalty determination will also establish the appropriate revenue base on which royalties will be calculated (e.g., net revenue from sales of components, subassemblies, complete products, related services, etc.). If an SDO does not wish to conduct the royalty-setting activity within the SDO itself, it may authorize a neutral, outside party (e.g., an arbitration panel appointed by a respected external agency such as the World Intellectual Property Organization (WIPO))\(^{119}\) to facilitate the Aggregate Royalty determination process. The Aggregate Royalty for a standard will be published on the SDO’s web site when the standard is approved.

It is important to note that the level of the Aggregate Royalty is independent of the number of SEPs declared with respect to a given standard, as the number of SEPs affects only the allocation of royalties among SEP holders pursuant to Step 5 below, but not the total amount paid by vendors. Thus, the Aggregate Royalty rate will not change if more SEPs are identified with respect to the standard.

3. Licensing of SEPs

Each patent holder must agree to license its SEPs to all vendors on FRAND terms to be negotiated (other than the Aggregate Royalty).\(^{120}\) Alternatively, the SDO may elect to establish a uniform form of SEP license agreement to be used by all patent holders. This approach would eliminate further uncertainty surrounding the scope of non-royalty FRAND terms such as reciprocity and defensive suspension.

Because royalties will be allocated among SEP holders pursuant to a methodology that is independent of the licensee, the SDO may wish to establish a mechanism for collecting royalty payments from licensees and disbursing the appropriate shares to SEP holders. Such a

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\(^{118}\) A discussion of the appropriate Aggregate Royalty cap in any given situation, or the preferred methodology for calculating such a cap, is beyond the scope of this paper. There is an extensive literature on calculating patent royalty rates in different industries. See, e.g., William J. Murray, John L. Orcutt & Paul C. Remus, Patent Valuation: Improving Decision Making Through Analysis 247-264 (2012); Layne-Farrar, Padilla & Schmalensee, supra note 88., at 675-79. And in industries such as pharmaceuticals, numerous governments and United Nations agencies have addressed the question of appropriate royalty levels for pharmaceutical products subject to a compulsory license. See World Health Org., Remuneration Guidelines for Non-Voluntary Use of a Patent on Medical Technologies at Ch. 6 (2005) (summarizing royalty computation guidelines developed by the UN Development Program, Japanese Patent Office, and the government of Canada).

\(^{119}\) The use of third party arbitration to determine FRAND royalty rates has gained currency recently. Such a proposal has been advanced by representatives of the U.S. Department of Justice (see Hesse – 6 Proposals, supra note 6, at 10), and formed a key element of the recent Consent Order between the Federal Trade Commission and Google, Inc. (In re Motorola Mobility LLC and Google, Inc., Decision and Order, at 9-10). See also David L. Newman, Going Once ... Going Twice ... Licensed Under the Most Reasonable and Non-Discriminatory Bidding Terms?, 11 NW. J. TECH. & INTELLECTUAL PROP. 139 (2013); Kühn, Scott-Morton & Shelanski, supra note 16, at 4.

\(^{120}\) As noted in note 16, supra, a FRAND commitment is not itself a license. Thus, a patent license must be granted separately.
mechanism could be internal to the SDO or handled by a third party licensing agent such as VIA Licensing or the MPEG-LA.\textsuperscript{121}

It is important to note that the Aggregate Royalty will be paid by vendors no matter how many FRAND licenses they have entered into with SEP holders. However, only SEP holders who have entered into FRAND licenses with a vendor will be entitled to share in the Aggregate Royalty paid by such vendor (see numerical example in Section III, \textit{infra}). This rule is intended to encourage agreement on FRAND licenses by licensees, as the Aggregate Royalty will not change based on how many such licenses are granted (and the vendor will risk infringing patents held by patent holders that it has not entered into licenses with).

4. Allocation of Royalties

Each patent holder will receive a share of the Aggregate Royalty based on the number of declared SEPs that it holds, subject to the Over-Declaration Adjustment described below. Such allocation is likely best achieved on the basis of simple numeric proportionality (i.e., a patent holder’s share equals the number of SEPs that it holds divided by the total number of SEPs \((n/\Sigma N)\)), though variants such as a step function/tiered basis (e.g., 0-10 patents yields one “share”, 11-25 patents yields two “shares”, etc.) are also possible. Attempting to allocate royalties by a method other than numeric proportionality, such as the perceived value of specific patents, is likely to lead to protracted negotiation and disputes that are not easily accommodated in the standards-setting environment.\textsuperscript{122} Thus, numeric proportionality, while perhaps less precise than might be achieved using a more finely-tuned valuation method,\textsuperscript{123} is intended to provide “rough justice” in an efficient and administrable manner.

5. Over-Declaration Penalty

In order to deter over-declaration of SEPs, the SDO will establish a procedure whereby any person may challenge the essentiality of a declared SEP. This procedure may be conducted internally at the SDO or by a third party adjudicator (e.g., WIPO). The SDO may wish to require that the cost of such adjudication be borne by the “losing” party in such procedure. If an SEP is found, through such a procedure, not to be essential to the relevant standard, then the patent

\textsuperscript{121} The fees of such a third party licensing agent could be taken “off the top” of any royalties received, prior to allocation among SEP holders, as is customary in patent pooling arrangements.

\textsuperscript{122} In the case of SEPs, allocation on the basis of numeric proportionality is reasonable, as every SEP, by definition, should be essential to the standard, and the lack of a license to any one SEP should prevent a compliant product from being sold. It is thus plausible that every patent be given the same value. Layne-Farrar and others have suggested that the numeric proportionality approach can lead to higher administrative costs by forcing parties to expend resources to determine the essentiality of patents included in the group. \textit{See} Layne-Farrar, Padilla & Schmalensee, \textit{supra} note 88, at 682-83. The proposed pseudo-pool approach addresses this concern, however, through the essentiality challenge mechanism described in Step 5.

holder’s share of the Aggregate Royalty will be reduced (the “Over-Declaration Penalty”) by some factor greater than represented by a single patent (e.g., if two patents are found not to be essential, then the patent holder’s share may be reduced by the value of four patents, perhaps subject to some floor below which an SEP holder’s share cannot fall). While this procedure is not as rigorous as the third party essentiality assessment typically conducted by patent pools, it is hoped that the incentive structure established by the Over-Declaration Penalty will regulate disclosure appropriately. At a minimum, it will lend greater discipline to patent disclosures than the unregulated system in place today. A finding of non-essentiality will not be binding on a subsequent court proceeding, though an SDO may wish to consider whether to require participants to abide by such findings and refrain from litigating this question following such an essentiality determination.

6. Independent Licensing Permitted

As with most patent pools, parties will be permitted to license SEPs outside of the pseudo-pool structure. This will be necessary if vendors wish to license both SEPs and non-SEPs from a patent holder. Clarifying the definition of “essentiality” will ensure that patents that are truly essential to the implementation of a standard are classified as SEPs and not held-back from the pseudo-pool in order to charge for them outside the Aggregate Royalty.

7. Opting Out

Some patent holders (e.g., the “sleeping dogs” discussed in Section I.B.3, supra) may not wish to incur the administrative burden of licensing their SEPs through the proposed pseudo-pool system. Patent holders can thus elect to make a binding covenant not to sue for the benefit of all vendors implementing the standard in lieu of granting the FRAND licenses described above. The SEPs held by such opting-out patent holders would not be counted for purposes of allocating the Aggregate Royalty among all patent holders (ensuring that the total allocated among the participating patent holders equals 100%). If an opting-out SEP holder later wishes to begin licensing its SEPs on a FRAND basis (opting-in), it may do so upon prior written notice to the SDO. Following this notice, the opting-in patent holder’s SEPs would be counted in the “denominator” for purposes of allocating royalties among SEP holders, and the opting-in SEP holder would be required to negotiate FRAND licenses with vendors implementing the standard.

C. A Practical Example

The proposal described in the preceding section is best illustrated by a numerical example. Suppose that an SDO working group is in the later stages of developing a standard. At this point, the group members determine that the Aggregate Royalty for all SEPs covering the standard should be 2.0% of the vendor’s net product revenue (based on its net sales price of products incorporating the standard, less cost of goods). At the time the standard is approved by the SDO, 600 SEPs have been declared by 10 different SEP holders. Of these, 100 are held by Alpha and 50 are held by Beta. Product vendors Victor and Whiskey wish to develop products that implement the standard. Victor and Whiskey must thus negotiate FRAND license agreements with each of the SEP holders who wish to charge royalties.
Suppose that in the first year following approval of the standard, Alpha does not wish to negotiate licenses or collect royalties. Alpha is thus deemed to grant Victor and Whiskey a covenant not to sue under its SEPs. Beta, however, does wish to collect royalties, and commences licensing negotiations with Victor and Whiskey. A FRAND license agreement with Victor is concluded quickly, but Beta is slow to approach Whiskey, and a license is not completed prior to the end of the year. Of the ten SEP holders, eight (seven plus Beta) conclude license agreements with Victor, and seven (excluding Beta) conclude license agreements with Whiskey.

For this first year, Victor’s net product revenue from sales of products implementing the standard is $1 million. Whiskey’s net product revenue is $300,000. These amounts are paid to a central clearinghouse, which collects and disburses individual shares to the participating SEP holders. Alpha has waived its share of the Aggregate Royalty this year. Beta, which has negotiated a FRAND license agreement with Victor but not Whiskey, is entitled to a share of Victor’s Aggregate Royalty equal to the number of Beta’s SEPs (50) divided by the total number of SEPs (excluding Alpha’s) (600-100 = 500). Beta is thus entitled to 10% (50/500) of the Aggregate Royalty, or $2,000. Beta did not enter into a FRAND license with Whiskey, so Beta is not entitled to share in Whiskey’s Aggregate Royalty. The portion of Whiskey’s Aggregate Royalty that otherwise would have been allocated to Beta will be divided among the other SEP holders in accordance with their pro rata shares. Table 2 summarizes this scenario.

**Table 2: Year 1**
(600 SEPs, 10 SEP Holders)

<table>
<thead>
<tr>
<th></th>
<th>Victor</th>
<th>Whiskey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Product Revenue (standardized products)</td>
<td>$1,000,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>Number of FRAND Licenses</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Aggregate Royalty paid (2%)</td>
<td>$20,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>Alpha’s Share (waived)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Beta’s Share (10%)</td>
<td>$2,000</td>
<td>$600</td>
</tr>
<tr>
<td></td>
<td>Paid to Beta</td>
<td>allocated among 7 SEP holders licensing Whiskey</td>
</tr>
</tbody>
</table>

Suppose that the next year, the total number of SEPs covering the standard increases (due to the net effect of patent expirations offset by the issuance of new patents) by 100, resulting in a total of 700 patents. Beta’s total number of SEPs has also increased to 75. Now, Beta’s share of the Aggregate Royalty equals 75/600 (as Alpha’s 100 SEPs are still deducted), or 12.5%. Thus, assuming that Victor’s revenue has remained constant, Beta’s share of Victor’s $20,000 royalty payment would increase to $2,500, and other SEP holders’ shares would be proportionately reduced.

But suppose that other SEP holders, unhappy with Beta’s increasing share of the Aggregate Royalty, decide to evaluate Beta’s declared SEPs more closely. In doing so, they
conclude that 15 of Beta’s declared SEPs are not actually essential to implementing the standard. An adjudication procedure is initiated, which determines that 10 of Beta’s declared patents are not actually SEPs. Beta is now subject to an Over-Declaration Penalty. Assuming that the SDO has set this penalty at three times the value of a single SEP, Beta’s share of the Aggregate Royalty would be reduced as follows:

\[
\text{Beta’s Full Share} = \frac{75}{600} = 12.5\%
\]

\[
\text{Beta’s Over-Declaration Penalty} = \frac{(3\times10)}{600} = 5.0\%
\]

\[
\text{Amount Beta receives} = 12.5\% - 5.0\% = 7.5\%
\]

Thus, under the same revenue assumptions made above, Beta’s share would fall to $1,500, and the amount of Beta’s Over-Declaration Penalty (5% or $1,000) would be ratably allocated among the other SEP holders.

\[
\begin{array}{|c|c|c|}
\hline
\text{Table 3: Year 2} & \text{Victor} & \text{Whiskey} \\
\hline
\text{(700 SEPs, 10 SEP Holders)} & & \\
\hline
\text{Net Product Revenue (standardized products)} & \$1,000,000 & \$300,000 \\
\hline
\text{Number of FRAND Licenses} & 8 & 7 \\
\hline
\text{Aggregate Royalty paid (2\%)} & \$20,000 & \$6,000 \\
\hline
\text{Alpha’s Share (waived)} & 0 & 0 \\
\hline
\text{Beta’s Full Share (12.5\%)} & \$2,500 & \$750 \text{ Allocated among 7 SEP holders licensing Whiskey} \\
& \text{Paid to Beta} & \\
\hline
\text{Beta’s Over-Declaration Penalty (5.0\%)} & \$1,000 & \text{n/a} \text{ Allocated among 7 other SEP holders licensing Victor} \\
& \text{Allocated among 7 other SEP holders licensing Victor} & \\
\hline
\text{Amount Paid to Beta (7.5\%)} & \$1,500 & \$0 \\
\hline
\end{array}
\]

Now suppose that Alpha, in Year 3, wishes to begin charging a royalty and negotiates a FRAND license with Victor and Whiskey. Alpha still holds 100 SEPs, and the total number of SEPs is 700. Alpha’s share of the Aggregate Royalty is thus 14.3%. Alpha’s share of Beta’s Over-Declaration Penalty is also 14.3%. Because Alpha has now elected to collect its share of the Aggregate Royalty, Alpha’s SEPs are no longer deducted from the total number of SEPs used to compute the other SEP holders’ shares. Beta’s base share is thus 75/700, or 10.7%. When reduced by its Over-Declaration Penalty (30/700 = 4.3%), Beta’s remaining share is 6.4%.
Table 4: Year 3  
(700 SEPs, 10 SEP Holders)

<table>
<thead>
<tr>
<th></th>
<th>Victor</th>
<th>Whiskey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Product Revenue (standardized products)</td>
<td>$1,000,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>Number of FRAND Licenses</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Aggregate Royalty paid (2%)</td>
<td>$20,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>Alpha’s Full Share (14.3%)</td>
<td>$2,860</td>
<td>$858</td>
</tr>
<tr>
<td>Beta’s Full Share (10.7%)</td>
<td>$2,140</td>
<td>$642</td>
</tr>
<tr>
<td>Beta’s Over-Declaration Penalty (4.3%)</td>
<td>$860</td>
<td>$258</td>
</tr>
<tr>
<td></td>
<td>Allocated among 8 other SEP holders licensing Victor</td>
<td>Allocated among 7 other SEP holders licensing Whiskey</td>
</tr>
<tr>
<td>Amount Paid to Beta (6.4%)</td>
<td>$1,280</td>
<td>$384</td>
</tr>
</tbody>
</table>

The above examples, in addition to illustrating the mechanical features of the proposed pseudo-pool arrangement, illustrate some important points regarding the proposal. First, actual license agreements must be put in place between patent holders and vendors. To encourage this outcome, patent holders who fail to enter into license agreements forfeit compensation and vendors who fail to enter into license agreements risk suit for patent infringement with concomitant damage awards and the risk of injunctive relief. Second, Over-Disclosure Penalties should have a significant effect in discouraging over-disclosure of patents to SDOs and thus reduce the number of declared SEPs pertaining to many standards. And finally, the establishment of a publicly-disclosed Aggregate Royalty prior to market adoption of a standard will offer significantly greater transparency and predictability both to participants in the standards-development process and to other potential vendors of standards-compliant products. Such transparency will address both the uncertainty currently associated with unknown FRAND royalty rates and the uncontrolled stacking of multiple royalties by different patent holders.

D. Addressing the Risks of Joint Negotiation

The pseudo-pool approach described above borrows from numerous proposals made by scholars, attorneys, and policy makers over the years. The idea of an aggregate cap on SEP

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124 While in general injunctive relief has become increasingly viewed as unavailable in the face of a FRAND licensing commitment, the FTC’s recent consent decree with Google, suggests that it may be appropriate for a patent holder subject to a FRAND commitment to seek injunctive relief if a prospective licensee has refused to pay a determined FRAND royalty.
royalties, in particular, is not new.\textsuperscript{125} Such a proposal was made within ETSI by participants including Research in Motion (RIM) as early as 2005.\textsuperscript{126} Discussion of this proposal at ETSI was terminated, however, following a 2006 letter from the European Commission’s Competition Directorate-General.\textsuperscript{127} The letter raised the specter that such a royalty cap could preclude price competition, as it would involve fixing the price of each SEP in advance.\textsuperscript{128} The Commission expressed instead a strong preference for “pure” \textit{ex ante} disclosures of royalty terms, which would enable price competition among competing patented technologies. The Commission’s analysis is, on its face, not unreasonable. However, in the years that have elapsed since the letter was prepared, the standards-development landscape has evolved. The time is ripe for the Commission to reconsider its 2006 position, at least as it may apply to the instant pseudo-pool proposal, in light of the following:

First, collective royalties have been approved repeatedly by competition and antitrust authorities in patent pooling arrangements (both before and after the Commission’s 2006 letter), with the acknowledgement that such arrangements can confer significant procompetitive benefits, so long as they are bounded appropriately (e.g., limited to essential patents). An Aggregate Royalty for SDO declared SEPs is very similar to a collective royalty on pooled patents.

Second, despite the potential procompetitive advantages that they offer, \textit{ex ante} disclosure policies have \textit{not} been adopted widely among SDOs for the reasons outlined in Section B.3 above. Thus, the price competition among patented technologies envisioned by the Commission in 2006 has not occurred to any appreciable degree. Instead, licensing negotiations for SEPs continue to be conducted in secret, bounded only by imprecise FRAND commitments.

Third, in the pseudo-pool approach outlined above, there is a significant opportunity for negotiation and price competition among patented (and non-patented) technologies during the procedure used to establish the Aggregate Royalty. In particular, patent holders who participate in this negotiation will be free to make their case for the inclusion of their patented technology, and others will be free to consider whether or not the proposed addition to the Aggregate Royalty justifies inclusion. U.S. regulators have considered the possibility of such \textit{ex ante} joint negotiations of licensing terms and have indicated that they will evaluate such negotiations under the “rule of reason” due to their potential procompetitive benefits.\textsuperscript{129} Such joint negotiations

\begin{footnotes}
\begin{enumerate}
\item \textsuperscript{125} See, e.g., Farrell et al., \textit{supra} note 11, at 642 (“FRAND implies an additional constraint on royalties: the sum of the royalty rates for any group of essential patents cannot exceed the combined value of all of these patented technologies to the standard”); Lemley, \textit{supra} note 14, at 161 (proposing a cap and step-down approach).
\item \textsuperscript{126} TAPIA, \textit{supra} note 76, at 165-66.
\item \textsuperscript{127} Angel Tradacete Cocera, Letter to Karl Heinz Rosenbrock, Director General ETSI, June 21, 2006.
\item \textsuperscript{128} Additional concerns have been raised by Herman, \textit{supra} note 67, at 39-40, and Gerardin, \textit{supra} note 36, at 10-11 & 13-15. Many of these objections are addressed by the proposal set forth herein.
\item \textsuperscript{129} DOJ VITA Letter, \textit{supra} note 71, at 9 n. 27; DOJ/FTC Antitrust and IPR, \textit{supra} note 2, at 54.
\end{enumerate}
\end{footnotes}
have also been endorsed by numerous commentators both in the U.S. and Europe. As early as 2005, Chairman Deborah Platt Majoris of the U.S. FTC explained the many potential procompetitive benefits of joint *ex ante* negotiation of licensing terms in the SDO context:

> [J]oint ex ante royalty discussions … can be a sensible way of preventing hold up, which can itself be anticompetitive. Put another way, transparency on price can increase competition among rival technologies striving for incorporation into the standard at issue. They may allow the “buyers” (the potential licensees in the standard-setting group) to get a competitive price from the “sellers” (the rival patenatees vying to be incorporated into the standard that the group is adopting) before lock in ends the competition for the standard and potentially confers market power on the holder of the chosen technology. … If joint ex ante royalty discussions succeed in staving off hold up, we can generally expect lower royalty rates to lead to lower marginal costs for the standardized product and lower consumer prices. By mitigating hold up, joint ex ante royalty discussions might also make possible the more timely and efficient development of standards. A reduction in ex ante uncertainty on royalty rates may “reduce the extent to which litigation is needed to resolve issues relating to patent and standards.” Joint ex ante royalty discussions also could prevent delays in the implementation of the standard resulting from ex post litigation (or threats of it), which may involve “inefficient allocation of resources intended for innovation.”

Carrier, in particular, identifies several characteristics of SDOs that significantly reduce the risk of anticompetitive oligopsonistic behavior by licensees. These include the presence of patent holders in royalty rate discussions, the power that patent holders wield in the standardization process, the unpredictability regarding which patents will ultimately be included in a standard, and the inability of licensees to reduce purchases to artificially depress prices.

The proposed pseudo-pool approach is also unlikely to harm patent holders significantly at the expense of product vendors, as both patent holders and vendors will participate in the negotiation of the Aggregate Royalty. Were vendors in an SDO to apply the type of oligopsonistic downward royalty pressure envisioned by Sidak and others, patent holders might flee such an SDO. The abandonment of an SDO by patent holders would remove such patent holders from the ambit of the SDO’s rules, including its FRAND commitments. Thus, forcing patent holders out of SDOs would worsen the position of vendors, as non-participant patent holders external to the SDO would not be constrained by any restraints on their ability to charge royalties on SEPs.

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131 Majoras, *supra* note 23, at 7-8 (citations omitted).


133 See *supra* note 80 and accompanying text.
For all of these reasons, it should be possible, with adequate precautions in place, to ensure that price competition does occur in the face of the pseudo-pool structure proposed herein. Such a proposal alleviates many of the problems caused by the inherent uncertainty of FRAND commitments without imposing substantial additional costs on the SDO standardization system. Accordingly, I recommend that such a proposal be considered seriously by SDOs seeking to reduce current inefficiency and disputes in standards-development.

E. Interaction with Other SDO-Based Proposals

As noted above, regulators in the U.S. and EU have recently taken an interest in SDO-based solutions to FRAND indeterminacy. The Department of Justice, for example has encouraged SDOs to “set forth well-defined patent policy rules that minimize ambiguity” so as to effectively promote competition.\(^{134}\) To this end, representatives of the Department of Justice, Federal Trade Commission and European Commission have recently made a series of proposals regarding steps that SDOs could take to clarify and potentially improve their policies regarding FRAND commitments.\(^{135}\) Specifically, the agencies seek to “benefit competition by decreasing opportunities to exploit the ambiguities of a [FRAND] licensing commitment.”\(^{136}\)

Many of the recent proposals in this area, together with a substantial amount of commentary, have focused on three general issues: (1) whether and to what extent breaches of FRAND commitments are actionable under antitrust and competition laws,\(^{137}\) (2) whether it is appropriate for a patent holder to seek an injunction preventing the use of standardized technology after the parties have failed to agree on FRAND licensing terms,\(^{138}\) and (3) whether a patent holder’s FRAND commitment binds subsequent transferees of a patent.\(^{139}\) Without a doubt these issues are important, particularly in the context of resolving the litigation currently

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134 Hesse – 6 Proposals, supra note 6, at 6.

135 For a general overview see Contreras – Officials, supra note 30.

136 Hesse – 6 Proposals, supra note 6, at 9.


139 See, e.g., ABA PATENT POLICY MANUAL, supra note 3, at 84; Hesse – 6 Proposals, supra note 6, at 9; Kesan & Hayes, supra note 32.
pending among market participants, and fashioning appropriate remedies for violations of FRAND commitments that are ultimately proven. However, these proposals do not address the fundamental question raised by this paper, which is how to reduce the number of disputes among private parties regarding FRAND terms and commitments, hopefully before they arise.

In an attempt to address this problem, numerous commentators have offered proposals regarding the most appropriate methodology for calculating FRAND royalty levels, ranging from an application of the Georgia-Pacific factors,$^{140}$ to hypothesizing the rate that would have been agreed by parties in an ex ante arm’s length negotiation prior to adoption of the standard,$^{141}$ to various bidding and auction procedures.$^{142}$ These proposals may prove useful both to parties seeking to negotiate FRAND license agreements, and to courts and arbitrators required to adjudicate disputes regarding compliance with FRAND commitments and to establish FRAND royalty rates in individual disputes.$^{143}$ However, even if these approaches lead to more equitable, fair and reasonable royalty rates between individual participants in the standardization process, they do not address the larger problem of royalty stacking that affects the marketplace. As noted above, even if a royalty rate established between two parties is eminently fair and reasonable, it may appear far less so when combined with royalty demands of multiple other parties.

Recently, representatives of the DOJ and FTC have backed a proposal that SDOs require patent holders to offer vendors the option to license standards-essential patents on a “cash-only” basis, without an obligation to cross-license their own patents.$^{144}$ This proposal is presumably intended to reduce perceived abuses that could arise from “bundling” non-essential patents with standards-essential patents, as well as inherent barriers to entry for market entrants lacking substantial portfolios of patents to exchange with other patent holders.$^{145}$ Assuming that such cash-only rates were made publicly-available during the standards-development process, such a proposal could achieve the procompetitive benefits associated with so-called ex ante disclosure of licensing terms.$^{146}$ Nevertheless, as discussed above, ex ante disclosure of licensing terms is a necessary, but insufficient, solution to the larger problem of royalty stacking in industry standards.

$^{140}$ See note x, supra, and accompanying text. See also Herman, supra note 67, at _; Layne-Farrar, Padilla & Schmalensee, supra note 88.

$^{141}$ Farrell et al., supra note 11; Lemley & Shapiro, supra note 14; Michel, supra note 138.


$^{143}$ As of this writing, the District Court in Microsoft Corp. v. Motorola, Inc., No 10-cv-1823 (W.D. Wash.) was considering this question, with a decision expected soon.

$^{144}$ See Kühn, Scott-Morton & Shelanski, supra note 16, at 4; Scott-Morton, supra note 30.

$^{145}$ This position seems to harken back to the FTC’s aversion to Intel’s “IP for IP” cross-licensing policy of the 1990s. See Shapiro, supra note 14, at 130-31 (describing the FTC’s 1998 complaint against Intel for “using its existing monopoly power to fortify its position by lowering its royalty costs per chip and potentially offering superior products by incorporating technologies patented by others”).

$^{146}$ See supra notes 70-84 and accompanying text.
CONCLUSION

FRAND licensing commitments have been utilized by SDOs for years in an attempt to alleviate the risk of patent hold-up in standard-setting. These commitments, however, offer few meaningful assurances to vendors or patent holders and do not address the threat of royalty stacking that is endemic to the modern technology landscape. A recent surge of litigation invoking FRAND commitments has brought this issue to the attention of regulators, industry and the public, and many agree that a solution is called for.

I propose an SDO-driven approach to addressing the uncertainty of FRAND commitments that is based on certain beneficial attributes of patent pools. I call this approach a “pseudo-pool” approach, as it draws on pooling strategies, but is adapted for use in the more flexible and prolific world of SDO standard-setting. The pseudo-pool proposal includes the following elements: (a) SDO participants continue to declare SEPs in good faith, (b) SDO working groups that include patent holders and potential vendors establish aggregate royalty rates for each standard, (c) patent holders continue to grant licenses on FRAND terms, subject to the overall royalty agreement, (d) each patent holder is entitled to a share of the aggregate royalty based on a proportionality measure, (e) there is a penalty for over-declaration of SEPs, (f) each patent holder is permitted to license its SEPs independently of the pseudo-pooling arrangement, (g) patent holders can opt out of the collective royalty structure. This proposal calls for the encouragement of joint ex ante negotiation of royalty rates prior to lock-in of a standard, conduct that has been viewed favorably by several regulatory agencies and acknowledged as offering various procompetitive benefits. I encourage SDOs to consider adopting policies that make use of some or all of the proposals made here, as there is a pressing need to address the inherent uncertainty of FRAND licensing commitments, as they exist today.
## Appendix 1

### Summary of U.S. FRAND Litigation

<table>
<thead>
<tr>
<th>Case</th>
<th>Year Filed</th>
<th>Standard(s)</th>
<th>Allegation(s)</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockwell v. Motorola (D.Del. 1997)</td>
<td>1995</td>
<td>ITU V.34 (modem)</td>
<td>Motorola’s licensing offers did not comply with FRAND commitments</td>
<td>Settled, whereby Rockwell secured a license for the patents</td>
</tr>
<tr>
<td>Townsend v. Rockwell (N.D. Cal. 2000)</td>
<td>1997</td>
<td>ITU V.90 (modem)</td>
<td>Townsend violated ITU’s policy by denying competitors access to standardized technology</td>
<td>Granted Townsend’s motions to dismiss</td>
</tr>
<tr>
<td>Broadcom v. Qualcomm (3rd Cir. 2007)</td>
<td>2005</td>
<td>ETSI WCDMA and UMTS (mobile telephony)</td>
<td>Qualcomm breached ETSI policy and violated antitrust law by licensing on non-FRAND terms</td>
<td>Claims dismissed for lack of antitrust standing</td>
</tr>
<tr>
<td>Ericsson v. Samsung (E.D. Tex. 2007)</td>
<td>2006</td>
<td>ETSI WCDMA (mobile telephony)</td>
<td>Ericsson’s proposed royalty rate violates FRAND commitment to ETSI</td>
<td>Contract claims separable from claims for patent infringement</td>
</tr>
<tr>
<td>Rembrandt v. Harris (Del. Superior Ct. 2009)</td>
<td>2007</td>
<td>ATSC A-53 (HD TV)</td>
<td>Harris seeks FRAND license based on commitment made by AT&amp;T prior to assigning patent to Rembrandt</td>
<td>Stayed pending outcome of multidistrict patent litigation</td>
</tr>
<tr>
<td>Research in Motion v. Motorola (N.D. Tex. 2008)</td>
<td>2008</td>
<td>ETSI GSM, GPRS, UMTS (mobile telephony) IEEE 802.11 (Wi-Fi)</td>
<td>Motorola refused to negotiate in good faith (would not re-license patents at a FRAND rate), breaching Cross License Agreement and FRAND commitment to IEEE and ETSI</td>
<td>Motorola’s motions to dismiss RIM’s claims denied</td>
</tr>
<tr>
<td>Wi-LAN v. Research in Motion (E.D. Tex. 2008)</td>
<td>2008</td>
<td>IEEE 802.11 (Wi-Fi)</td>
<td>Wi-LAN gave, then withdrew, a letter of assurance to IEEE; Motorola alleges that Wi-LAN violated its FRAND commitments</td>
<td>Motorola claims dismissed per joint stipulation</td>
</tr>
<tr>
<td>In re Negotiated Data Solutions (FTC 2008)</td>
<td>2008</td>
<td>IEEE 802.3 (Ethernet)</td>
<td>N-Data did not honor previous patent owner’s stated royalty commitment</td>
<td>Consent order requiring N-Data to honor prior royalty commitment</td>
</tr>
<tr>
<td>HTC Corp. v. IPCom (D.D.C. 2010)</td>
<td>2008</td>
<td>ETSI</td>
<td>IP Com breached FRAND commitment with respect to patents acquired from Bosch</td>
<td>IPCom must license US standards-essential patents to HTC on FRAND terms and conditions because IPCom obtained rights to the patents subject to a requirement to license pursuant to FRAND terms and conditions.</td>
</tr>
<tr>
<td>Case</td>
<td>Year Filed</td>
<td>Standard(s)</td>
<td>Allegation(s)</td>
<td>Outcome</td>
</tr>
<tr>
<td>------------------------------</td>
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<td>------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Nokia v. Apple (D. Del. 2011)</strong></td>
<td>2009</td>
<td><strong>ETSI GSM, UMTS</strong> (3G mobile) <strong>IEEE 802.11 (Wi-Fi)</strong></td>
<td>Nokia is seeking FRAND compensation for Apple’s infringement of its patents; Apple alleging that Nokia was not freely and fairly licensing its patents (which are part of a patent pool) to Apple</td>
<td>Settled, with Apple agreeing to pay Nokia</td>
</tr>
<tr>
<td><strong>Multimedia Patent Trust v. Apple (S.D. Cal. 2012)</strong></td>
<td>2010</td>
<td>MPEG-2 and H.264</td>
<td>MPT’s violation of a RAND agreement is an affirmative defense to patent infringement</td>
<td>Granted MPT’s motion for summary judgment</td>
</tr>
<tr>
<td><strong>Microsoft v. Motorola (W.D. Wash. and 9th Cir., pending)</strong></td>
<td>2010</td>
<td><strong>IEEE 802.11 (WiFi)</strong> <strong>ISO/IEC, ITU H.264</strong> (video codec)</td>
<td>Motorola breached RAND obligations</td>
<td>(1) Granted Microsoft’s motion for summary judgment that Motorola breached RAND obligations, in part; (2) Granted preliminary injunction barring Motorola from enforcing German injunction against Microsoft; (3) Microsoft not required to first apply for a license with Motorola in order to trigger Motorola’s RAND obligation, and Microsoft had not lost rights to license on RAND terms by filing suit; (4) ITU and IEEE require Motorola to actually grant licenses on RAND terms, not just negotiate in good faith</td>
</tr>
<tr>
<td><strong>In re Google (FTC 2013)</strong></td>
<td>2011</td>
<td>ITU, ETSI and IEEE standards</td>
<td>Motorola (acquired by Google) breached FRAND commitments by seeking injunctions against potentially willing licensees</td>
<td>Settled via consent order prohibiting Google from seeking injunctive relief for infringement of FRAND-committed patents except in limited circumstances</td>
</tr>
<tr>
<td><strong>Huawei v. InterDigital (Del. Ch pending.)</strong></td>
<td>2011</td>
<td><strong>ETSI 3G mobile</strong></td>
<td>InterDigital breached FRAND commitment, by refusing to offer FRAND license to Huawei</td>
<td>Pending</td>
</tr>
<tr>
<td><strong>Realtek Semiconductor v. LSI (N.D. Cal. 2012)</strong></td>
<td>2012</td>
<td><strong>IEEE 802.11 (WiFi)</strong></td>
<td>LSI breached RAND obligations by demanding a royalty exceeding the selling price of Realtek’s products</td>
<td>Denied LSI’s motion to dismiss</td>
</tr>
<tr>
<td><strong>Apple v. Motorola (N.D. Ill, transferred in part from W.D. Wis., 2012)</strong></td>
<td>2012</td>
<td><strong>ETSI GSM, WCDMA, UMTS</strong> (3G mobile)</td>
<td>Motorola’s royalty demand exceeded FRAND rates and constituted breach of contract</td>
<td>Dismissed based on lack of proof of damages</td>
</tr>
<tr>
<td>Case</td>
<td>Year Filed</td>
<td>Standard(s)</td>
<td>Allegation(s)</td>
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<tr>
<td>------------------------------------------</td>
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</tr>
<tr>
<td><strong>In re Innovatio IP Ventures, LLC Patent Litigation (N.D. Ill. 2013)</strong></td>
<td>2012</td>
<td><em>IEEE 802.11</em></td>
<td>Manufacturers alleged that Innovatio’s licensing campaign was a sham because it asserted infringement before offering them a RAND license, offered licenses on terms less favourable than RAND terms, and failed to disclose its RAND obligations</td>
<td>Licensing campaign was not a sham because of the RAND commitments</td>
</tr>
<tr>
<td><strong>In re Robert Bosch (FTC 2013)</strong></td>
<td>2012</td>
<td><em>SAE ACRRR J-2788 &amp; J-2843</em> (vehicular air conditioning refrigerants)</td>
<td>Bosch acquisition target SGV breached FRAND licensing commitments by seeking injunctions against willing licensees</td>
<td>Settled via consent agreement prohibiting Bosch from seeking injunctive relief for infringement of FRAND-committed patents</td>
</tr>
<tr>
<td><strong>Apple v. Samsung (N.D. Cal. 2013, Fed. Cir. pending)</strong></td>
<td>2012</td>
<td><em>ETSI UMTS (2G mobile)</em></td>
<td>Samsung failed to comply with FRAND commitments</td>
<td>Apple’s motion for judgment as a matter of law on FRAND breach of contract claim denied; Jury verdict in favour of Apple</td>
</tr>
<tr>
<td><strong>Samsung v. Ericsson (ITC pending)</strong></td>
<td>2012</td>
<td><em>ETSI LTE (4G mobile)</em></td>
<td>Samsung refuses to pay FRAND royalty rate paid by other Ericsson licensees, and to license its own patents on FRAND rates</td>
<td>Pending</td>
</tr>
</tbody>
</table>

Notes

(1) This Table includes U.S.-based litigation in which a claim was brought regarding the breach or violation of a FRAND commitment. It does not include other standards-related claims such as allegations of deception and failure to disclose essential patents that have been raised, inter alia, in cases such as *Rambus, Inc. v. Infineon Technologies AG*, 318 F.3d 1081 (Fed. Cir. 2003), *cert. denied*, 124 S. Ct. 227 (2003) and *In re Dell Computer Corp.*, 121 F.T.C. 616 (1996).

(2) Multidistrict litigation between the same parties (either within different federal district courts, among federal and state courts, courts and the International Trade Commission and/or foreign courts) are treated as a single “dispute” for purposes of this Table.