

# “FRAND” UNDERTAKINGS IN STANDARDIZATION – A BUSINESS PERSPECTIVE

By Timo Ruikka<sup>1</sup>

Paper presented at the Fordham IP Conference, New York City, March 28, 2008

**Abstract: This paper discusses the business reasoning for the practice whereby standard development organizations (SDOs) require FRAND undertakings in respect of Essential patents as a condition of approving standard specifications. The central business reason for this practice is for the stakeholders to avoid excessive royalty costs that would be possible due to patent holder bargaining power when negotiations are conducted ex post standardization and ex post implementer investment.**

**This paper proposes an ex ante investment analysis (not to be confused with ex ante declaration of licensing terms) and a top down approach for determining reasonable royalties. In order for implementers to determine whether royalties would make it economic to invest in implementations, it is necessary for them to evaluate the total cost of licenses for use of all Essential patents, against their business case in investing to standard implementations. It is argued that licensors should base their offered rates as a justified proportion of such total cost. To improve the predictability of licensing outcomes at FRAND rates, it is recommended to SDOs to expressly require application of the principle of aggregate reasonable terms (ART) and the principle of proportionality.**

1

## INTRODUCTION

There is significant controversy regarding the meaning and legal significance of FRAND undertakings. These undertakings are formal commitments given by patent holders participating in standard development organizations (SDOs) to license their “Essential” patents for interoperability standards on terms that are fair, reasonable and non-discriminatory. For example, the patent policies of both European Telecommunications Standards Institute (ETSI) and American National Standards Institute (ANSI) have similar requirements in this regard. This paper does not attempt to analyse the differences in wording between ETSI and ANSI IPR policies or their legal implications. The premise of this paper is that the underlying business reasons for each of ETSI and ANSI requiring FRAND terms are similar. The assumption here, for sake of my argument, is that these policies are equivalent in this regard.

In this paper, I adopt the perspective of a business person. The focus is on the issue of what “fair and reasonable” should be taken to mean in the financial sense, specifically for establishing the appropriate value of a patent or a technology. The issue of aggregate patent costs is looked at in relation to the standardization objectives and business objectives underlying SDO policy requirements of obtaining FRAND undertakings. I propose that in the light of the objectives discussed, it is a relevant test of reasonableness of royalty levels to establish how much an implementer at most is willing to pay for the needed patents and still invest in the business of implementations. This is called the “ex ante investment” analysis. Theoretically, this is consistent with the method of establishing the patent value by utilizing a comparison of the chosen technology against the next best alternative at the time of standardization<sup>2</sup>.

---

<sup>1</sup> Timo Ruikka is Strategy Advisor, Nokia Corporation (email: [timo.ruikka@nokia.com](mailto:timo.ruikka@nokia.com)) and he has served in several senior positions at Nokia since 1988. He has extensive experience from commercial contracts, intellectual property and licensing, standardization and industry policy issues

<sup>2</sup> This approach and the theoretical basis for it is described by Carl Shapiro et al in several writings, including the 2007 paper “Standard-setting, Patents and Holdup” by J. Farrell, J. Hayes, C. Shapiro and T Sullivan, available at <http://faculty.haas.berkeley.edu/shapiro/standards2007.pdf>

Legal considerations and economic theory are referred to throughout the paper but the focus remains on the business argument. This argument should also be firmly kept in view while legal and economic analysis is brought to bear on the issues. IPR policies and undertakings issued pursuant to those policies are contractual commitments. What their exact legal effect in an actual case is and the extent to which they bind their issuers are important legal considerations which are beyond the scope of this paper. My aspiration is to put the practice of requiring FRAND undertakings into the proper context - the business reasoning of why they are required and what they are intended to achieve.

This paper commences with a description of the underlying problem and proceeds with an analysis of what FRAND undertakings are intended to achieve. The central focus is on the impact of ex post circumstances on patent license negotiations because licenses are as a rule negotiated ex post standard and ex post implementer investment. The argument is that issues related to bargaining power of patent holders and implementers in the licensing negotiations involve a significant risk that royalty rates in licenses occurring in the marketplace may in fact exceed FRAND.

Drawn from this analysis, I put forward recommendations regarding improvement of standards body rules. It is argued that these rules should require offered royalty rates to be expressed as a justified proportion of what the licensor regards as an appropriate total value of all Essential patent licenses. The proposed improvements for adoption by SDOs do not change the substance of existing FRAND undertakings. Adopting the proposed changes would however better ensure the intended outcome. Additionally, in order to deal with the risk of over-declaration of patents as allegedly Essential in respect of standards, SDOs should take measures to have patents declared as Essential reviewed by independent experts in order to improve the quality of information about Essential patents.

As divergence of interests is likely to prevent SDOs from reaching sufficient consensus for improvement of their IPR policies and FRAND undertakings, continuing litigation is foreseen. In the meanwhile, adverse impacts to stakeholders in standardization and to the broader society are likely. This paper is informed, and the argument presented is influenced, by the author's extensive experience from Nokia and its business environment. As a party to multiple litigation actions touching upon the issues discussed in this paper, Nokia is not an impartial stakeholder in this controversy. Therefore, each reader is invited to critically assess my argument and to draw his or her own conclusions.

## 2 WHY ARE REASONABLE ROYALTIES A REQUIREMENT FOR STANDARDS AND WHAT IS THE CONTROVERSY ?

Let's first review the purpose of standardization and the market effects that widely implemented standards bring about. These multiple effects – from now on called “ex post effects” - point towards a significant risk of patent holder opportunism as they have fundamental impact on the bargaining situation between implementers and Essential patent holders.

The meaning of FRAND undertakings should be interpreted in the light of the business considerations that prompt standard-setting organizations to require them to be formally issued. These considerations strongly suggest that royalties must not be left to be set by unregulated price mechanisms as is favored by standard economic theory for most other situations and that FRAND undertakings are required precisely for this reason. Additionally, the presence and likely impact of multiple ex post effects further supports the legal

conclusion put forward elsewhere<sup>3</sup> that FRAND undertakings are intended to remove the availability of injunctive relief to patent holders who have consented for the inclusion of their patented inventions into the standard specification. Indeed, if implementers were to face the risk of injunctive relief, that circumstance would further worsen the already large impact of ex post effects on bargaining power, unjustly favoring patent holders.

The controversy surrounding this issue arises from the divergence of stakeholder interests in the situation where standards body IPR rules do not specify what criteria must be met for royalty rates to be “fair and reasonable”. Further, standards body IPR rules do not deal with the coordination problem arising from multiple patent holders – up to dozens – each licensing their Essential patents independently of each other in most cases<sup>4</sup> and also without proper regard for the totality of all Essential patents. As the ex post effects of standardization fundamentally alter the balance of licensing negotiations, lack of clear rules in these respects leaves room for Essential patent holder opportunism. These gaps should be better addressed by SDOs. As any change would provide gains to some stakeholders and losses to others, the issue (and even its existence) remains hotly contested. Thus chances are remote of major SDOs actually adopting improved rules by consensus.

### **The market impact of successful standards**

Telecommunications, computer and consumer electronics industries create *interoperability standards* setting out what functionalities should be present in software, products and services (*implementations*) from different vendors (or *implementers*) for a given activity or use involving interconnected devices or installations. This paper is primarily concerned with what become market-defining standards because these standards most clearly demonstrate the very material ex post effects of successful standardization. Moreover, the discussion here concentrates on the standardization impact in respect of products (implementations) for which the standard defines a material core set of functionalities. In the case of such standards, the Essential patents likely cover some of the most significant technologies utilized in typical implementations<sup>5</sup>. The issue discussed here is a generic conundrum relevant for the entire information, communications and consumer electronics technology industry, much beyond mobile phones and like devices.

In the networked environment where the capability to interoperate has the most pronounced significance, markets are prone to tip to a dominant design. A successful standard<sup>6</sup> is capable of providing a dominant design that is available for competitive implementation among multiple vendors. These circumstances are relevant for all telecommunications standardization. The benefits of network effects (positive externalities) and the increase in consumer welfare resulting from competitive supply are strong public policy arguments in favor of standards-based interoperability<sup>7</sup>. When a standard becomes prevalent, most and in many cases all market participants include it in their implementations. In fact, it may become irrelevant to offer noncompliant products to the market: Where network effects are

---

<sup>3</sup> See e.g. Patent Holdup and Royalty Stacking by Mark A. Lemley & Carl Shapiro 31 May 2006 and Carl Shapiro, (2006), “Injunctions, Reasonable Royalties, and Patent Licensing,” Working Paper, University of California at Berkeley, which is available at <http://faculty.haas.berkeley.edu/shapiro>.

<sup>4</sup> The main exception being the occasional patent pool

<sup>5</sup> Accordingly, discussion of the many possible reasons for failures of standards to attract wide implementation is not included and neither are battles between competing proposed standards. Also due to this focus, discussion here does not cover marginal valuation methods which might have application in case of standards that are substantially peripheral rather than concerned with the core functionalities of the products in question.

<sup>6</sup> For clarity, while economists may use the expression “standard” when discussing a dominant design also in the case of a proprietary solution, this paper uses the word “standard” to mean a specification available from a standard-setting organization for implementation by any and all vendors.

<sup>7</sup> It follows that there are public policy concerns if behavior is observed that undermines the success of standardization by discouraging investment into implementations or by discouraging participation in standardization. Further, if opportunism leads to lower supply-side externalities, then that is likely also to be against antitrust law.

strong, there may be few if any customers for products that do not support the prevailing standards.

### **The tension between patents and standards; definition of essential patents**

Standards are employed to accomplish a uniformity of implementations regarding those aspects that are critical for interoperability. Patents, on the other hand, confer a legal monopoly to the patent holder to control whether and on what terms others may use the protected implementation choice, also called an invention. Patents amount to a power to exclude others from using the same choice whereas standards amount to a recommendation that everyone should use the same choice for a given purpose. These purposes are clearly opposed to each other, which creates a tension between the two instruments. FRAND undertakings are a widely utilized mechanism permitting parties to make their relevant decisions in relation to this tension – for patentees whether to license the patents involved and for implementers whether to implement standards requiring use of those patents.

FRAND undertakings are given in relation to “Essential” patents<sup>8</sup> – those whose infringement it is not possible to avoid in an implementation complying with the standard specification. The main significance of Essentiality for an implementer is that using Essential patents is, for the standard-compliant implementation, not a matter of choice. For a patentee, the status of “Essential” means that all relevant implementations of the standard utilize, by definition, those Essential patents. These circumstances greatly affect the dynamics of licensing negotiations. FRAND undertakings are required primarily in anticipation of the consequences those dynamics would have unless the patent holders were required to adhere to a royalty level that is “fair and reasonable”.

## 3 FRAND UNDERTAKINGS

### **The undertakings required by ETSI and ANSI IPR policies**

In order to address the tension between Essential patents and standardization, SDOs utilize IPR policies and patent licensing undertakings. This practice supports the wide implementation (market adoption) of the technical specifications produced. Specifically, the purpose is to anticipate the ex post effects of standardization on the licensing negotiations between implementers and holders of Essential patents. A very significant and important part of global standardization relies on FRAND undertakings<sup>9</sup>. Although only ETSI and ANSI have been specifically mentioned, there are several dozen organizations developing hundreds of standard specifications at any given time that rely on FRAND type of patent licensing undertakings.

FRAND undertakings are not strictly obligatory – patent holders are at liberty to decline giving them: Patent holder membership in an SDO does not limit the possibility of that patent holder “opting out” its patent or patents from a given proposed standard<sup>10</sup>. But they are considered necessary: Inability to obtain them is taken to pose severe threats to

---

<sup>8</sup> In practice, such undertakings are issued for a large number of patents that are not, in fact, Essential. Such over-declaration may occur in good faith but it may also be abused which is why we later in this paper support measures to screen declarations of Essential patents.

<sup>9</sup> The issue of fair and reasonable royalty discussed in this paper is not relevant for licensing regimes based on royalty-free undertakings that are utilized in some SDOs. The pros and cons of FRAND and royalty-free undertakings respectively would be another interesting topic that is beyond the ambit of this paper.

<sup>10</sup> It is not possible to include here a discussion of the many possible tradeoffs that a patent holder may have to consider when deciding whether or not to grant a FRAND undertaking for a given patent except to note that the benefits from standardization to patentees must be considerable as decisions to withhold the giving of a FRAND undertaking are rare indeed.

standardization. The necessity of obtaining FRAND undertakings is thus a self-imposed requirement by the SDOs. The IPR rules of the most significant SDOs in the communications field, ETSI<sup>11</sup> and ANSI<sup>12</sup>, operate so that ***existence of Essential patents is not considered to be an issue preventing the adoption of a specification as a standard so long as all known holders of Essential patents in relation to that specification have given FRAND undertakings***. The IPR policies strongly suggest that if such undertakings are not available, the specification must be modified to avoid the unavailable Essential patent or the specification cannot be adopted – or should be abandoned – as a standard. The final decision is left to the standards bodies to take in each case.

A FRAND undertaking requirement is designed to achieve several things. It is designed to prevent blocking of standards by outright refusals to license implementations and by patent holders seeking injunctive relief<sup>13</sup>. More importantly for the present paper, it is described below how the FRAND requirement is designed to ensure licensing not just on any terms (at any price) but specifically to prevent the use by the patent holder of excessive bargaining power ex post standard and ex post implementer investment to extract higher than reasonable royalties from implementers. In order to understand the logic prompting the SDO requirement for these undertakings as a condition for standards adoption, it is necessary to analyze the business risks that would be faced by the standards community in their absence.

### **Absence of detailed rules on what FRAND means**

Within standards body rules, there is no authoritative definition of what “fair and reasonable” means in actual fact and in concrete circumstances. Such definition or elaboration is not found in a licensing undertaking, in the IPR policies or in related SDO documents. Both ETSI IPR policy and ANSI Patent Policy refrain from elaborating what they mean by “fair and reasonable terms” or by “reasonable terms and conditions” respectively. One consequence of this ambiguity is that it is difficult and burdensome to contest an offered royalty rate as not being in compliance with a FRAND undertaking, even if that were the case.

Interpreting the language used in the IPR policy expressions, “fair” and “reasonable” appear to exclude excessive or unbalanced results when applied to contract situations. Reasonableness is an antithesis of extremes. Use of these expressions should be understood to address the risk for excessive rates present in the ex post effects of standards and, specifically, to prohibit patent holders from charging royalties that they, in the absence of those ex post effects, would not achieve.

### **Essential patent licenses are negotiated ex post standard and ex post investment**

Only a small portion of all ICT industry patent licensing deals are conducted in “ex ante” circumstances. The standards context is one where ex ante licensing is truly the exception rather than the norm. The practice of relying on FRAND undertakings may in itself contribute to this phenomenon: Investment prior to obtaining a license may be viewed as less risky regarding patent costs when the SDO has a track record of consistently procuring FRAND undertakings. But there are many other reasons for licensing occurring ex post.

Decisions on the contents of the standard specification – what solutions are prescribed by the standard in order for implementations to be compatible with each other – determine which patents become Essential for the standard. These decisions are made far in advance of

---

<sup>11</sup> Section 8.1 to 8.3 of ETSI IPR Policy

<sup>12</sup> The ANSI Patent Policy forms part of [Essential Requirements: Due process requirements for American National Standards](#)

<sup>13</sup> This paper is concerned with business rather than legal arguments so I will here refrain from putting forward detailed legal analysis supporting this conclusion.

deployment of the standard in products and services, usually by several years. Licenses for the use of Essential patents, on the other hand, are negotiated much later, even years after substantial deployment of the standard. The total time span between a technical selection (producing the Essential status of patents) and actual patent license agreements emerging can easily be from 5 to 10 years.

There are several reasons why licenses are not obtained upfront. Certainly patent licensing does not occur at the time of drafting and debating the specification, involving dozens or hundreds of design choices, leading to decisions affecting the potential “essentiality” of up to hundreds of patents. Many of those patents may at that point still be recent nonpublic applications and the Essential property of a patent may be unknown even to its owner, let alone to others, at an early stage of a standard life cycle. Licensing negotiations are typically lengthy and their commencement may be substantially deferred beyond standard approval and beyond initial deployment due to various reasons including unpredictability of market success of the standard, lack of visibility of which firms become the major implementers of the standard, the poor quality of information about Essential patents etc. The burdensome and inefficient nature of patent licensing as a business process is likely a factor as well.

Further, a standard in many cases evolves for several years after initial issue over multiple successive releases, often progressing from a core functionality set to a broader and further elaborated specification. This means that the technical content of future releases (and thus any information about related Essential patents) is unavailable at the point in time of implementer investment into business in implementations.

The time delay involved in this sequence means that standard implementers most often engage in patent licensing negotiations only after they have made significant investments into standard-compliant products. By that time, there may not be much of a market for comparable products outside the standard. While conforming to a standard, designing around a mandatory specification requirement is unavailable as a means of avoiding a given Essential patent. Implementers additionally face other barriers with regard to switching to alternatives. These circumstances greatly affect the bargaining power of the parties to ex post patent licensing negotiations.

### **Bargaining power in the presence of ex post effects**

Ex post circumstances severely impair the applicability of mainstream valuation theory based on markets and competition and warrant the use by SDOs of binding FRAND undertakings. The effects of these ex post circumstances include patent holdup, absence of markets for noncompliant products, implementer switching costs by individual implementers and the switching costs of the entire ecosystem involved in standard implementation.

The implementer’s ex post negotiation situation is adversely affected by patent holdup: Given that substantial investments into implementation design, manufacturing arrangements, marketing and distribution are already expended, theory suggests that an implementer’s financial decision-making is impacted by the intervening investment: The patent holder can take advantage of the implementer’s sunk costs to demand a higher royalty. An implementer faced with the threat of ceasing its business utilizing the standard is prepared to absorb a higher patent royalty cost than would have been the case if negotiations were conducted ex ante of implementer investment.

Further, in the case of a standard that is broadly utilized, there may be no market outside the standard. Once the standard has become the dominant design supporting consumers’ expectation of compatibility, users will be reluctant to acquire alternative designs. An ad hoc design circumventing a particular Essential patent renders an implementation nonconforming. In a market defined by reference to a standard this alternative – otherwise

potentially available as the next best alternative to a negotiated patent license – is not a valid option.

Even if the possibility of abandoning the standard products and offering a different design were feasible from a market entry perspective, any individual implementer deciding to abandon the standard in favor of another product offering faces considerable switching costs involving duplication of all or part of the investment already incurred. Among those switching costs are the effects of the resulting time delay for market re-entry, which in itself may be sufficient to render switching infeasible as a business proposition.

Finally, even if individual implementers were theoretically able to migrate to another product offering, broader industry inertia related to standard-setting and adoption makes such migration unlikely. Collective switching costs of modifying or replacing already deployed investments, together with concerns over adverse end user reactions, are such that an industry wide rejection of a standard already in substantial deployment is either impossible or imaginable only in exceptional circumstances.

### **Market data likely includes non-FRAND rates**

Combined, the multiple ex post factors boost the bargaining power of the patent holder to one of very strong domination. The purpose of obtaining FRAND commitments is to check the patent holder's excessive bargaining power. If it were acceptable to standardization stakeholders and to society to leave the outcome of licensing negotiations to market forces and competition, FRAND undertakings would not be required. Further, this is why FRAND undertakings must be effective and legally binding or they will not achieve their purpose.

While many Essential patent holders may in fact apply rates that actually are fair and reasonable, others may take advantage of the challenges in determining the compliance of any given licensing proposal with FRAND. As there is doubt and controversy about the precise meaning of FRAND, the ex post effects mean that at least some patent holders may achieve and at least some implementers may accede to royalty rates that are above FRAND. Such excessive rates are above FRAND but not so high as to drive implementers completely out of the market. Ex post effects do not make it possible for the patent holder to raise the royalty rates without limits as implementers will abandon a business leaving them no profits. They do however make it plausible that market participants may enter into license agreements at royalty rates in excess of FRAND, particularly if it is highly challenging for an implementer to prove the non-FRAND character of a given individual offered royalty rate<sup>14</sup>. This is the case in the circumstances of the existing SDO IPR rules. And, if it (contrary to the author's position) were so that FRAND undertakings were short of legally binding and enforceable, we must assume the effect of at least some licensor opportunism in at least some proportion of such agreements.

In these circumstances, it is prudent to conclude that evidence of licenses being concluded and the royalty rates applied under those licenses is not in itself persuasive evidence, let alone proof, that all or even most of the patent licensing for standards meets the requirements of FRAND. Nor can guidance for reasonable rates be drawn from such potentially tainted data. Therefore, data from market transactions can not be used with confidence as indications of royalty levels required by FRAND. Market data may be used only where it is clear that the royalties in question have not been influenced by anticompetitive practices or infringement of FRAND obligations. This may be impossible to establish. Instead, we need to utilize ex ante investment methodology.

---

<sup>14</sup> For the same reasons, existence of licenses is not proof of absence of abuses beyond the scope of this paper, such as discriminatory practices or inappropriate bundling of patent licenses with other commercial offerings

## **FRAND is required in order to preserve business viability of implementations and legal viability of standardization**

Standards are created for wide implementation by many implementers. Given the risks of excessive patent royalties in the absence of FRAND undertakings, a promise to grant “fair and reasonable” or “reasonable” terms including financial terms must mean a royalty rate that should not remove the business viability of investing into standard-compliant implementations and supplying and using them in a competitive market. “Business viability” does not mean a breakeven level or merely positive profits. Investment is economic or viable in the business sense if the attainable profit level, taking the patent royalty cost level into account, is sufficient to justify going ahead with the investment. The business rationale for requiring FRAND undertakings is to ensure that the standard being created will be capable of being economically implemented as far as patent costs are concerned.

Standardization also has competition law significance because it limits both upstream (technology) competition and competition from non-standardized products in the downstream market. For these reasons, it is a requirement of antitrust laws and policy that standards collaboration is conducted in an acceptable manner so that benefits of standardization outweigh its anticompetitive impacts. Standardization is allowed under competition laws provided it leads to efficiencies and provided further that a fair part of these benefits are passed on to consumers. Both Article 81 and 82 apply under EU law: the Essential patent holder must not price unfairly (violation of article 82) nor make licensee operations uneconomic and thereby monopolize the downstream market (an Article 81 violation). The practice of requiring FRAND undertakings is one way of meeting these key antitrust requirements<sup>15</sup> as it directly addresses the risk of overpricing by unreasonable royalty rates. FRAND also supports the antitrust objective that the additional value created by the standard is passed on to consumers and not to holders of essential patents. A further antitrust objective is that FRAND should also prevent the shielding of a downstream business from competition. Thus if the IPR policy of a SDO were not to provide these outcomes, the entire standard-setting activity would be exposed to serious antitrust concerns. For SDO activity to be legally acceptable, the FRAND undertakings must be legally binding and effective.

## **FRAND must form an effective and binding obligation**

Given the very substantial business concerns outlined above as well as the legal requirement of having a suitable patent policy and practice in place to prevent antitrust abuses, it is clear that FRAND undertakings do not achieve their purpose unless they are made effective and binding obligations of the parties issuing them. Given the stakes, one may even have to conclude that standards work should cease until effective and binding arrangements are put in place. These are strong arguments to the effect that FRAND undertakings are legally binding commitments and that they actually do have a specific meaning for the royalty rates that may be charged by holders of Essential patents. However, the current controversy and ongoing lawsuits are evidence of serious claims of patent holder opportunism occurring and of the legal complexity and burden of proving the exact effects of FRAND undertakings in court. It would be in the interest of the entire standards community to alleviate this situation by adopting substantial clarifications to the IPR policies of standards bodies.

---

<sup>15</sup> Including the important requirement of not discriminating between licensees. This aspect is outside the scope of the present paper.

In an ex ante investment situation, an implementer whose options remain open will embrace a business with sufficient possibility for achieving a profit and avoid a business where the achievable returns are not commensurate with the investments and risks that must be assumed. A prohibitively high cost of any major input, including an excessive royalty, will discourage a decision to enter. FRAND undertakings are inherently linked to the purpose of standards which is to encourage the widest possible implementation. This encouragement is achieved by providing for FRAND royalty rates which make implementation feasible (as far as patent royalties are concerned) for all potential implementers. Conversely, a royalty that would make investment uneconomic is in excess of what is “fair and reasonable”. In a true ex ante situation, a patent holder can charge an appropriate royalty but not an excessive one – he will negotiate his offered rate aware that a would-be implementer will abandon the proposed line of business if the patent royalty is too high. This perspective offers the best analytical starting point for assessing what is a reasonable royalty and what is not, despite the fact that this method requires one to analyze a hypothetical situation: Ex ante negotiation of standards-related patent licensing is only rarely carried out in practice, for the reasons described in Section 3.

Today's complex standards are related to large numbers of (allegedly) Essential patents held by numerous patent holders. Therefore, the ex ante perspective cannot be directly applied to determine a royalty rate appropriate for any single patent license. An implementer's investment decision is, after all, not dependent on the cost of any single license but upon the aggregate cost of all of the licenses put together. In the presence of up to several hundred Essential patents the cost of a single license may be almost meaningless for the investment case if it is taken in isolation. Therefore, from an ex ante perspective, one can evaluate the reasonableness of licensing rates for a given patent or group of patents only by first calculating or estimating the aggregate Essential patent cost (in order to determine the feasibility of the entire business in implementations) and then determining what would be an appropriate part of that aggregated royalty that should be paid for the use of the patents of a given patent holder. Applying an ex ante test in order to determine reasonableness thus requires one to utilize a “top down” method. This is the direction SDOs must take.

The proposed method has the advantage that it allows the making of FRAND calculations with limited data – much more limited than a patent by patent evaluation taking into account alternative technologies and other factors. These two methods should yield approximately<sup>16</sup> same rates when they properly account for the existence of FRAND undertakings.

Licensors of Essential patents should be required to justify their offered rates in the context of what they consider to be an appropriate cumulative royalty cost attributable to Essential patents. Licensees, as investors into the business of making implementations, should provide information relevant for determining investment viability, such as information on industry-typical operating margins. Parties to licensing negotiations should each ask and answer the question of what would be the proportionate royalty, out of the cumulative royalty cost, properly attributable to a particular set of Essential patents. As is acknowledged in Section 5, there is a wide variety of arguments that can be brought to bear in any such discussion. Even so, codifying the principle of FRAND royalties requiring a justified proportion of an appropriate cumulative Essential patent cost would have a significant impact on licensing practices.

---

<sup>16</sup> As the variables in both a “top down” assessment and in a patent-by-patent or “bottom up” evaluation are numerous and require estimation of parameters that are difficult to measure, the results are not necessarily exact in either case.

There are at least three areas in which SDOs should take measures in order to ensure that FRAND undertakings given will in fact produce license costs that are compatible with FRAND. These areas are obtaining and screening of Essential patent declarations, recognition of the principle of aggregate reasonable terms and recognition of the principle of proportionality among Essential patent holder royalty rates.

### **Obtaining and screening (certification) of Essential patent declarations**

ETSI requires its members to declare to ETSI the Essential patents they are aware of<sup>17</sup>. In practice, each notification is accompanied with a FRAND undertaking as lack of such an undertaking would trigger other measures under the ETSI IPR policy. Unlike many other SDOs, ETSI maintains a public database of all such declarations of Essential patents. It is appropriate to require members to declare Essential patents as this information helps the standards community to develop an approximate understanding regarding the magnitude of the licensing requirements for a given standard. But requiring declarations is not sufficient. The quality of the declared information may be very poor with the result that the aggregated data are inflated and inconsistent and lead to highly misleading conclusions.

In order to correct abuses caused by over-declaration, Essential patent databases should undergo screening by independent experts capable of assessing Essentiality. Such screening or certification is necessary in the light of results from studies showing drastic divergence between quantities of patents declared Essential and those estimated, based on a *de minimis* review, to more realistically be Essential<sup>18</sup>. Such screening or certification appears necessary as patent holders have multiple incentives to over-declare the allegedly Essential patents they hold. One incentive follows from antitrust considerations under which it may be better to err on the side of declaring too many rather than too few patents. Licensing practices provide another incentive: numbers of patents do matter. Furthermore, upstream firms have an incentive to over-declare more aggressively than vertically integrated firms<sup>19</sup>.

It would be impractical to propose that SDOs would conduct definitive screening – every party to licensing discussions should retain the possibility of obtaining an infringement decision from the competent court. The cost of having definitive technical assessments of whether all patents declared essential are really essential would be very great and would in any event have to be subject to court review. In practice companies make their own assessments, even if they are superficial. However, a reasonable certification system would stop overly inflated declaration practices.

### **Principle of Aggregate Reasonable Terms**

As I have argued in this paper, ex post effects together with ambiguity of what FRAND means in practice involve a risk for opportunistic licensing by essential patent holders. It is proposed that SDOs reduce that ambiguity and risk by anchoring the meaning of FRAND in an ex ante analysis from the implementer perspective. In the case of complex standards involving many patents held by multiple patent holders, an ex ante analysis of any given licensing offer is practically meaningless if it is attempted in isolation of all patents that need to be licensed for the same implementations. This requires the parties to first take a view on what would be the highest acceptable cumulative royalty cost for a given type of business in

---

<sup>17</sup> Sections 4.1 and 4.2 of ETSI IPR Policy

<sup>18</sup> See Goodman, David J. & Myers, Robert A. 2005. 3G Cellular Standards and Patents, Proceedings of IEEE WirelessCom 2005, June 13-16, 2005, <http://www.frlicense.com/wireless2005-b.pdf>

<sup>19</sup> Dewatripont and Legros 2007, Essential Patent Games in Standard Creation available at <http://www.cebr.dk/upload/legros.pdf>

implementations. Thus, in order to enable parties to evaluate licensing offers and whether they are FRAND or not by using an ex ante analysis, SDO IPR rules should suggest that FRAND rates must be compatible with a reasonable cumulative royalty cost or Aggregate Reasonable Terms (ART). It is not proposed that SDOs would have to establish any given ART or cumulative royalty rate. Rather, it is proposed that patentees are required to justify their offered rates by reference to what these patentees consider as an appropriate total cost (and, as described below, their justified share of such cost). Any discussions of appropriate aggregate levels between companies, whether potential licensors or potential licensees or both, would have to be arranged carefully on the basis of legal advice, and perhaps with competition law clearance, to avoid any risk of being accused of illegal price fixing.

### **Principle of Proportionality**

It follows from the top down approach necessary for an ex ante evaluation that one then must derive an appropriate value of a single Essential patent, or of one patent holder's portfolio of Essential patents licensed as a bundle, in relation to the cumulative value of all Essential patents (or ART).

This is not a trivial task. It must be acknowledged that the significance of the technical contributions to standards and thus the contributions of the related Essential patents vary, whether they are estimated by utility to users, by cost advantages or by other effects. Such contributions may be more or less central to the uses of the implementations. Moreover, as patents can be more or less broad in what they cover, this is an area highly prone to divisive argument.

However, even if one points to possible differences in value between individual essential patents, averages are likely to provide a satisfactory approximation of appropriate value when comparing large portfolios of essential patents. Thus in case of substantial portfolios, after adjusting for differences in declaration practices and geographic coverage, quantitative comparisons provide a relevant starting point for proportion-of-value analysis. Qualitative arguments, then, are quite possible based on a multitude of factors and in both directions: that specific patents are more valuable than essential patents on average and that they are less valuable than average. This being the case, the burden of proof should be placed on the party arguing for the higher or lower than average value of any given patent or group of patents under discussion.

Accordingly, it is reasonable to conclude that SDO IPR policies should be codified to convey a clear articulation of the principle that the appropriate FRAND royalty for each Essential patent or a group of Essential patents licensed together should be a proportionate fraction of the ART cumulative royalty cost based on the technical contribution of the licensed patents out of the combined contribution of all Essential patents. However, SDOs should not engage in determination of actual proportionate fractions or indeed any specific rates for specific patents. This should be left, as before, to bilateral licensing negotiations. With the introduction of the ART and proportionality principles in SDO IPR policies, the confidence that negotiated rates actually reflect FRAND would be considerably improved as in the negotiations between patent holders and implementers there would be greater visibility of how FRAND royalty levels should be calculated. Such awareness will assist the parties in achieving more accurate identification of both excessively high and excessively low negotiating positions as well as allowing them to evaluate the probable outcome of arbitration or court proceedings.

Given the divergence of interests around this matter and the possible complexity of applying the proportionality principle in some circumstances, there is reason to be skeptical that improvement proposals for SDO IPR policies would attract the levels of consensus necessary for adoption. There thus is reason to believe there will be more litigation until sufficient court decisions emerge spelling out the exact meaning of FRAND undertakings.

**Failing the adoption of these further measures, standards work requires further clarity by court decisions, regulation or legislation**

SDOs require FRAND undertakings for specific business purposes. As is noted above, this practice also is necessary for standards collaboration to be consistent with competition law. Market transactions are not proof of FRAND licensing actually occurring as the ex post negotiation situation of Essential patent licensing involves significant risks of patent holder opportunism and thus higher than FRAND rates. This is believed to be a serious problem in today's standardization environment. It threatens the very objectives of standardization and the public interest in having interoperable multivendor systems in the information, communication and consumer electronics industries. Unless this risk of patent holder opportunism is reduced or eliminated, there is reason to believe that standardization work is in significant jeopardy both from the business perspective and from the legal perspective.

Action by industry would be the least costly and most rapid way of addressing the issues described in this paper and furthermore a solution which the industry could itself control to a significant extent. As SDOs however are unlikely to achieve sufficient consensus to adopt appropriate additions and clarifications to their IPR policies and/or to the required FRAND undertakings, we instead are likely to see reduced availability of supply from multiple vendors - including reduced feature sets and reduced support for publicly available standards due to patent cost concerns - and/or increased litigation about FRAND compliance by patent holders, or both. We may also see standards fail due to unresolved patent cost issues. While amending SDO rules is not the only available route – patent pools or other multilateral licensing vehicles preferably including implementer involvement in the screening of Essential patents and royalty rate setting are one possibility – litigation around these issues will likely continue until the matter is resolved by clear jurisprudence or government intervention. Appropriate tools for such intervention may be sectoral or industrywide regulatory measures related to standardization, antitrust policy guidance and enforcement and/or legislative initiatives addressing these problems.

(end)