**PATENT ROUNDTABLE**

 ITU Headquarters, Geneva
 10 October 2012

Submitted by: **David J. Teece** (Thomas Tusher Professor of Global Business and Director of the Institute of Business Innovation, Haas School of Business, University of California at Berkeley and Berkeley Research Group)

**Peter C. Grindley** (Berkeley Research Group)

**Edward F. Sherry** (Berkeley Research Group)[[1]](#footnote-1)

**SDO IP Policies in Dynamic Industries**

1. **Abstract and Introduction**

This paper reviews key aspects of the IP policies in standards development organizations (SDOs) and considers possible policy changes in response to the issues raised in the current ITU Patent Roundtable. SDO IP policies and especially interpretations of reasonable and non-discriminatory (RAND) licensing have played a central role in several recent high profile litigations in information and communications technology (ICT) industries. The current paper finds that while there may be a welcome increased awareness of RAND licensing, many of the proposals for change are questionable and risk damaging the balance of interests at the heart of standards setting.

As a preliminary observation, it is not clear that the current levels of litigation are unusually high, given the great importance of standards and IP licensing in industries such as ICT, characterized by extremely high levels of technological change and dynamic competition. Many of the proposals may misread the need for change.

In particular, some proposals take a “theoretical” point of view which overlooks critical practical considerations in standards setting and licensing. They may focus on the short-term concerns of particular groups, such as the manufacturers and implementers of standards related technology, without equivalent focus on the needs and incentives for technology developers and the possible effects on long-term innovation. Some may also focus on the potential for abuse of possible “hold-up” power derived from SEPs, rather than balancing this against the extremely positive role of standards in ICT industries and the cooperative nature of standards setting aimed to define and enable development, create markets and facilitate beneficial competition.

In this context, proposals for changes to IP policies should be considered only after very careful investigation. Recent litigations may be seen primarily as commercial disputes, with a RAND framework affecting some of the patents. These disputes may be most appropriately handled within the current patent and legal system, not by fundamental changes to an SDO IP policy regime that has worked well for many decades to reconcile diverse interests, and which has stood behind the unprecedented growth and competitiveness of ICT industries.

1. **Background to SDO IP Policy**
	1. **Standards Setting**

The authors have each been involved in studying intellectual property, standards setting, licensing and RAND issues for many years. One of us (Grindley) wrote an early (1995) book on standards published by Oxford University Press.[[2]](#footnote-2) He and Teece co-authored an early (1997) article on licensing and cross-licensing in high-technology industries.[[3]](#footnote-3) Two of us (Teece and Sherry) published an article on “Standards Setting and Antitrust” in 2003.[[4]](#footnote-4) We have also been involved as experts in numerous standards-related lawsuits, including a number of the most prominent such disputes, both in the U.S. and elsewhere.[[5]](#footnote-5)

Standards provide benefits to developers, manufacturers, and consumers of products and services. In network industries such as telecommunications and computers, it is crucial that products from different manufacturers be able to interconnect in networks and to interoperate with products from other manufacturers. Mobile handsets from one manufacturer must connect to mobile networks, and work together with handsets made by other manufacturers. Computer memory chips must work in computers from various manufacturers, and printers must work with multiple computers. Compatibility standards allow this interconnection and interoperability to occur.

Formal standard setting at standards development organizations (“SDOs”) such as the ITU-T is a cooperative, consensus-based process aimed at developing technical standards for next-generation products in the relevant technical field (in the case of the ITU-T, the field of telecommunications, including wired and wireless communications). The process involves the cooperative efforts of numerous stakeholders interested in the process and its outcomes. Those stakeholders can have different interests, different business models, and different beliefs.

Because standards are being set for the next generation of products, it is not surprising that SDOs adopt cutting-edge technology into their standards. That technology does not grow on trees; it has to be developed, that development involves significant cost, and (not surprisingly) firms seek to patent their innovations, for both “defensive” and “offensive” reasons. As a result, it is not surprising that many ICT standards incorporate hundreds if not thousands of patented technologies. As such, the scope for potential commercial disagreements between patent holders and those wanting to make, use or sell standards-compliant products is vast.

We are aware that there are arguments that the patent system as a whole is not working well, particularly complaints that patent offices are granting too many “weak” or unwarranted patents, raising concerns about “patent thickets,” “royalty stacking” and “the tragedy of the anticommons.”  Whatever the merits of that claim, it is one directed to the patent system as a whole, not to how well (or poorly) the system of RAND licensing is working.  It is not something that SSOs can do much if anything about.

When considering the relationship between standards and intellectual property, there are two, interrelated but fundamentally different, markets that are at issue. The first is the *product* market: the market for the standards-compliant products themselves. There is also the *technology* market: the market for the technology (patented and unpatented, essential and non-essential) that is used in making standards-compliant products. Transactions in the technology market generally take the form of sales of patents or, more commonly, licenses to use the patented technology. Depending on their situation, firms can participate on either the demand side or the supply side of either of these markets. For the avoidance of doubt, we are using the term “market” here in its broadest acceptation to denote an area of economic activity in which buyers and sellers come together; there may be, and usually are, several economic markets, sometimes across different geographies, for standards-compliant products and the technologies incorporated in such products. That is, there are often multiple “relevant markets” (in the antitrust sense) implicated by standards, especially when there are numerous different types of physical products that comply with a given standard and numerous different patents that read on aspects of a given standard. In addition, based on how these terms are defined here, the technology market is driven by the success of the product market that the technology enables

The use of (patented and unpatented) technology is an input into the production process for making standards-compliant products; in that sense, the technology market is “upstream” from the product market.

One obvious difference between firms is the extent to which they have intellectual property rights (notably, issued patents and pending patent applications, which each raise different issues) that may be incorporated into a proposed standard. Some firms “wear three hats”. As patent holders, they out-license their patented technology to others in order to make standards-compliant products, and as such are “sellers” in the technology market. As manufacturers, they are sellers in the product market. And as manufacturers, they need to have access to others’ standards-essential patented technology, and thus are “buyers” in the technology markets.

Other firms do not fit this “three hat” mold. In particular, pure-play technology firms are sellers in the technology market, but do not participate in the product market. Manufacturers that have no patented technology of their own to contribute or to “barter” for cross-licenses are sellers in the product market and buyers (but not sellers) in the technology market.

From a societal perspective, royalty payments for the use of patented technology are transfer payments: the licensee pays royalties and thus has less money, but the patent holder receives royalties and thus has more money. To a good first approximation (ignoring rent-seeking behavior), the royalty payments are a “wash.” But that is not true from the perspective of particular firms, which naturally are more concerned about their own *private* costs/benefits than with *social* costs/benefits; a royalty payment is a private *cost* to the firm paying the royalties, and a private *benefit* to the patent holder that receives the royalties. In particular, firms may have invested heavily in risky R&D to develop the technology that has enabled the downstream product market, and as rational agents, they want to earn a return on that risky investment.

Because the standard-setting process is voluntary, firms can elect not to participate if they believe that their interests are not being protected and/or refuse to commit to license on terms that are RAND. This “participation constraint” implies that care must be taken to adopt IP policies that strike a “balance” between the interests of different stakeholders. The consensus-based nature of the standards-setting process allows SDOs to take account of this need for balance.

There is a fundamental difference between intangible assets such as standards-essential patent rights that can be used as inputs into the production of standards-compliant products and tangible inputs (such as cellular chipsets) that are also inputs. Once a patent has issued, it is a public document; the patent holder cannot physically withhold from others the ability to use the patented technology, and has to resort to the legal system (and litigation) to seek to compel others either to pay fair compensation for that use or to cease infringing. By contrast, the supplier of a tangible input can refuse to supply the input to those who do not pay for it.

Some argue that there is another difference: intangible inputs are (physically) non-“rival” in use; the fact that I am using some patented technology to make and sell my products does not restrict your ability to use the same patented technology to make and sell your products. This can be overstated: competition between your products and mine affects the economic return that we get from our investments in making and selling such products. In that economic sense, our uses *are* “rival” in use.

This is fundamentally different from tangible inputs such as computer chips, which are rival in use in the physical sense, namely, you and I cannot incorporate the same physical chip into both of our products. This fundamental asymmetry between intangible inputs and tangible inputs is a key factor affecting the need for owners of intangible patented technology to rely on the legal system, rather than on “self-help” mechanisms such as refusal to deliver tangible goods to those who do not pay for them, to protect their interests. This difference needs to be taken into account when one is asked the question whether there is “too much” patent litigation.

Put another way, patent rights are not self-enforcing. Parties can and do disagree in good faith whether one firm is using patented technology belonging to another. Patents may be seen as invalid or as not infringed, or both. There is only some (positive) probability that, if such disputes were litigated, the patent holder would prevail against a putative infringer on validity and infringement grounds.[[6]](#footnote-6) Given the large number of patents declared as being “essential” to some standard, and given the large number of firms making, using or selling standards-compliant products, there is bound to be some level of disagreement on such issues. This factor, too, needs to be taken into account when one is asked the question whether there is “too much” standards-related patent litigation.

Because the patented technology already exists (and the cost of developing it is a “sunk cost”) by the time others get around to using it to make and sell standards-compliant products, some have argued that one should pay more attention to the interests of manufacturers than the interests of patent holders. Others disagree, contending that it is important to respect both of their interests. In our experience, empirical studies of the private and social returns to innovation demonstrate that patent holders generally are undercompensated for others’ use of their patented innovations,[[7]](#footnote-7) so we believe that it is especially important not to allow vocal challenges to royalties and other licensing terms to “tip the balance” in favor of the users of patented technology at the expense of the developers of that technology.

* 1. **Meaning of RAND Commitments**

From an economic perspective, a RAND commitment[[8]](#footnote-8) has four main implications:

1. The patent holder must make licenses available. It cannot keep its technology to itself, refusing to make licenses available (which, absent the RAND commitment, it would otherwise be entitled to do).
2. The patent holder must make licenses widely available to anyone that wishes to make standards-compliant products. It cannot “pick and choose,” agreeing to license some (e.g., its business allies) and refusing to license others (e.g., its rivals). And it cannot make just a limited number of licenses available, “auctioning off” a limited number of licenses to the “highest bidders.”
3. The patent holder must make licenses available on “reasonable terms and conditions,” which may include “terms and conditions” other than royalty rates.
4. The patent holder must make licenses available on a “non-discriminatory” basis.

Many commentators have focused on the third (“fair and reasonable”, or “FR”) and fourth (“non-discrimination,” or “ND”) aspects of a RAND commitment, largely glossing over the first two requirements (that the patent holder must make licenses available to all interested parties), which significantly limits what the patent holder would otherwise be free to do with its patented technology. Yet some SSOs make it clear that it is the requirement that licenses be made available that lies at the core of a RAND regime, as that requirement ensures that holders of SEPs cannot block others from making and selling standards-compliant products and thus cannot block the development of competitive markets for standards-compliant products. Conflicts over the ND and (especially) the FR aspects of RAND, by contrast, are at their core commercial disputes over licensing terms.

Most SSOs leave it to the parties involved in bilateral negotiations to determine what “reasonable terms and conditions” (including what “reasonable” royalty terms) means. The ITU-T patent policy, for example, says that the ITU-T will not get involved in disputes over such “terms and conditions,” saying that they are “left to the parties concerned.”

For many years, some commentators have claimed that the meaning of RAND lacks clarity,[[9]](#footnote-9) and some academics and other scholars have called on SSOs to provide additional details, or have provided their own interpretations of what RAND “should” mean in order to achieve certain goals, or have made proposals for “clarification” as to what RAND means. We will discuss a number of these proposals below.

To take one example, in November 2011, a number of firms made submissions to the European Telecommunications Standards Institute (“ETSI”) as to how (F)RAND “should” be interpreted, each offering differing interpretations.[[10]](#footnote-10)

Some commentators have noted that “reasonable” can be interpreted in two different senses: what is “reasonable” *ex ante*, prior to the standard being adopted, and what is “reasonable” *ex post*, after the standard has been adopted. Two of us (Teece and Sherry) drew this distinction in an academic article we co-authored on “Standards setting and Antitrust” published in 2003.[[11]](#footnote-11) The ITU-T patent policy is silent on this issue, merely saying that “negotiations are left to the parties concerned and are performed outside ITU-T/ITU-R/ISO/IEC” and that the ITU-T does not get involved in resolving disputes between the parties over licensing terms and conditions.

Because such negotiations are almost always conducted *ex post*, one might interpret the ITU-T patent policy as (tacitly) endorsing an “ex post” interpretation of what “reasonable” means; certainly there is nothing in the current ITU-T patent policy that explicitly endorses an *ex ante* approach to determining what is “reasonable.”

In addition, in some cases there will be no licenses specific to a particular standards-related patents that were negotiated on an *ex ante* basis. From an organizational behavior perspective, that is not surprising, as until the standard is formally adopted, the parties will not know precisely what patents will be incorporated in the standard, or the exact value of being able to use the patented technology in connection with standards-compliant products. But this fact makes it difficult to implement an *ex ante* approach to assessing the “reasonableness” of royalty rates by appealing to real-world *ex ante* licensing terms. And almost by definition, patent litigation over standards-compliant products occurs *ex post*, after the standard has been adopted and after firms begin to make standards-compliant products.

* 1. **(F)RAND Principles – “Non Discrimination”**

## Just as with the “(fair and) reasonable” aspect of (F)RAND, most SSOs provide little or nothing in the way of guidance as to how they interpret the “non-discrimination” aspect of RAND.

From an economic and public policy perspective, one can think the “non-discrimination” aspect of RAND as having two different facets, which we will term the “process focus”: and the “outcome focus” respectively in what follows.

Both focuses take as their starting point the proposition that a licensor should treat “similarly situated” licensees (or prospective licensees) similarly. But “similarly” does not necessarily mean “identically.” And the determination of whether two prospective licensees are “similarly situated” raises a host of complicated issues.

The “process focus” acknowledges that the licensing process generally involves back-and-forth negotiations between the prospective licensor and the prospective licensee, in which the parties make trade-offs between various considerations such as the scope of the license (whether restricted to certain products or fields of use or unrestricted), the patents covered, the duration of the license, the form of payment (whether running-royalty or lump-sum), differences including the geographic distribution of the licensee’s production and sales of licensed products, the extent of a cross-license (if any), and a host of other trade-offs that can vary across different prospective licensees and can vary over time depending on market conditions. Prospective licensees may be concerned that the patent holder is “discriminating” against them during the negotiation *process*, treating some prospective licensees more favorably and others less favorably when negotiating different licensing terms that satisfy the licensee’s particular preferences. A “non-discriminatory” licensing *process* would require that the patent holder respond similarly to different prospective licensees, while still allowing different licensees to negotiate terms that suit their particular needs.

By contrast, the “outcome focus” looks at the outcomes of the licensing process, whether in the form of the initial licensing offers or (more commonly) in the form of the terms of the agreed-upon licenses. Using an “outcome focus” approach, there could be (some degree of) “discrimination” if different licensees paid different royalties for similar license rights.

By way of illustration, suppose that two licensees received otherwise-identical license grants (same patents, same geographic territories, same fields of use, *etc*.), but one licensee paid a 4% royalty while another paid a 5% royalty. Looking only at the final *outcome*, one might argue that the result involved “discrimination.” But from a process perspective, the *process* leading up to the different license terms might not have been discriminatory. For example, it is a commonplace in countries in which bargaining or haggling is the norm for different buyers to pay different prices for “the same good” as a result of differences in their bargaining abilities or relative bargaining positions. There may have been no “discrimination” in the negotiation *process* – each party to the negotiation sought to achieve the best deal it could, with offers and counter-offers, and during the back-and-forth negotiation process, it can transpire that some buyers are just “better bargainers” than others. By way of contrast, if the seller resolves that it will treat certain types of buyers differently [*e.g.*, by treating rivals differently than non-rivals, or by treating those who have something valuable to “swap” for a cross-license more favorably than those who do not] during the negotiation *process*, then from a “process focus” perspective the negotiation process may be “discriminatory” even if the *outcomes* of two negotiations might turn out to be the same.

We draw this distinction between an “outcome focus” and “process focus” view of FRAND because it reflects two somewhat different, though in many ways complementary, ways of understanding and interpreting what a FRAND assurance requires. In my opinion, the two approaches should be used in combination when determining whether or not a prospective licensor complied with its FRAND assurance.

We note that *some* sorts of price-setting mechanisms involve situations that clearly are “non-discriminatory” from both an “outcome focus” and “process focus” perspective. The best known is the Western practice for many mass-market products and services, whereby a seller posts a price for a given commodity with fixed features, sells the commodity at that price to anyone that wishes to purchase at that price, and does not negotiate terms with anyone. Such a “take it or leave it” approach to pricing is common in Western societies, as anyone who has shopped in a supermarket can attest.

But such an approach is much less realistic when the non-price “terms and conditions” of the sale vary depending on the customers’ needs. When some prospective licensees want paid-up licenses and others want percentage-based running royalties and still others want cents-per-unit running royalties, or when some prospective licensees are willing to accept narrower license grants (*e.g.*, only to the licensor’s existing patent portfolio, or to a subset of that portfolio) and other prospective licensees want broader license grants (*e.g.,* to include after-acquired patents), or some prospective licensees offer to provide significant other value in return for more favorable licensing terms, using a simple “take it or leave it, fixed terms” negotiation approach can be entirely impracticable.

Because of these differences, it is not uncommon for different licensees to negotiate licenses with different scope and different licensing terms.

Moreover, overemphasis on an “apples-to-apples”-type “outcome focus” comparison of licensing terms is very complicated when license terms or license conditions vary. When determining whether two licenses that call for the licensees to pay different running royalties are examined to determine whether the difference in rates is “discriminatory” in the “outcome focus” sense, there is no clear way to go about weighing into the balance the fact that the other, *non*-royalty terms of those licenses, or the conditions under which the licenses were entered into, may be or may have been different.

We do not mean to suggest that a “uniform” licensing policy, in which all licensees selling comparable products receive the same non-monetary terms and pay the same running royalties (whether percentage-based or cents-per-unit based), would be inconsistent with a RAND assurance. By way of analogy, there does not appear to me to be any “discrimination” when a supermarket posts its prices (*e.g.*, $2.59/box for Cheerios) and charges all customers that same price. But in our opinion, such uniformity is not required, even on an “outcome-focus” basis, in order to comply with a RAND assurance.

It is worth pursuing the supermarket analogy a bit further. It is commonplace that retailers put items “on sale.” Cereal that sold last week for $2.59/box is now on sale for $1.99/box for a limited time. After the sale is over, the price will go back up to $2.59/box. A disgruntled customer who wants to buy when the cereal is *not* “on sale” might argue that he/she is being “discriminated against” because another customer, who bought the cereal while it *was* on sale, paid a lower price for what is otherwise “the same” cereal.

There clearly is a sense in which such limited-time sales are arbitrary. Why should a customer who buys at ten minutes *before* the sale starts pay a different price than a customer who buys the same product ten minutes *after* the sale starts? But a strong argument can be made that there is no “unfair discrimination” here. Both customers have the opportunity to buy the item at the then-prevailing price. The fact that the then-prevailing price *changes* over time does not mean that there is any “unfair discrimination.”

In particular, a patent holder may give more favorable licensing terms to early licensees in an effort to induce others to take licenses and “validate” its licensing program, as firms are naturally reluctant to take licenses (and pay royalties) when their competitors are not paying. In our view, such a situation is not “discriminatory” in any economically meaningful sense.

* 1. **Licensing and Cross-Licensing**

A further important feature of licensing in ICT industries is that licensing, whether of SEPs or other, non-essential patents, typically takes place in the form of broad portfolio licensing and (commonly) cross-licensing. This has implications for understanding many of the proposals for policy change. For example, it may be difficult to separate out the value contribution of individual patents within a portfolio, when these are typically valued and licensed as a group. Cross-licenses are also typically agreed in bilateral market-based negotiations between firms that include a wide range of considerations specific to the individual firms. The cross-licenses may cover a range of technologies and products, and include many other considerations in addition to the essentiality or otherwise of certain patents. Thus the terms and conditions may well differ for each cross-license, and it is often difficult to separate out the various considerations or compare one license with another, making it especially difficult to determine whether different licensees are being treated in a “non-discriminatory” fashion.

Inbound ICT licenses (and cross-licenses) typically cover broad portfolios of patents in a field-of-use. In many cases the licensors may be primarily motivated to obtain "freedom of design" and "patent peace," and royalty earnings may not be a primary objective.[[12]](#footnote-12) In fast moving technology industries such as mobile communications, where many firms are working in similar technology areas, there is a strong likelihood of mutual infringement of each others' patents, often unintentionally. Firms cross-license entire portfolios of patents to be able to develop and use technology without worrying about infringement. This eliminates the costs of designing around one another s patents or searching for possible infringements. Although cross-licenses may identify individual patents, they most often include all of the firm’s patents for application in a field-of-use, as well as new patents granted during the license period. There may be exclusions for particular patents. Since parties may risk infringing both essential and non-essential patents, in many cases the parties' motivation for “patent peace” may lead them to cross-license all patents needed in a given field, not just SEPs.

Although cross-licensing provides freedom to design this does not mean that cross-licenses are typically royalty free. Royalties are typically determined based on the relative value of each company’s technology portfolio. The parties will calculate a balancing payment based on the relative values of the portfolios and each party's expected volume of sales of licensed products. The content, terms and royalty payments for such cross-licenses are determined in bilateral licensing negotiations. These negotiations can allow for the consideration of complex technical issues and the particular circumstances of the firms involved, including the value of the parties’ respective cross-licensed patent portfolios.

For these and other reasons, the typical RAND requirement leaves the terms of such licenses to be decided between the parties, which would normally be via *ex post* bilateral negotiations. This is reflected in the current ITU-T patent policy, which specifies that the ITU-T does not get involved in resolving disputes over license terms.

1. **Effectiveness of RAND-Based Policies**
	1. **RAND Policies Have Worked**

The ITU-T asked about the “effectiveness” of RAND-based patent policies. One way to examine that “effectiveness” is to ask whether disputes over RAND issues have deterred or delayed the adoption of industry standards. Using that criterion, the answer must clearly be “no.” Standards in telecommunications industries have achieved widespread acceptance as technologies have moved “down market” to reach ever-increasing segments of the industry. New innovative standards-compliant products are regularly being introduced at ever-more-attractive quality-adjusted prices. Entry by new firms into developing and making standards-compliant products is common. Entrenched market shares have been eroded by new firms and new products. Licenses to use standards-essential technology are widely available; even though there are occasional disputes over licensing terms, we are not aware of any outright refusals to make licenses available on terms that the patent holder considers FRAND (though the prospective licensee may disagree, arguing that the rates being sought are excessive).

* 1. **Case Study Examples**
		1. **H.264 Standard**

To take one well-known example, the ITU-T’s H.264 video codec standard has become the most widely used video codec, supplanting earlier codec like MPEG-2, H.263, and the MPEG .MOV codec. Tens if not hundreds of millions of H.264-compliant products are available, from thousands of sellers. The H.264 standard has been adopted by numerous broadcast sources.[[13]](#footnote-13) One news article reports that the percentage of videos encoded using the H.264 standard increased from 10% in January 2010 to 80% in December 2011.[[14]](#footnote-14)

In connection with the H.264 standard, the ITU-T website lists several hundred Patent Declarations made by numerous patent holders, offering to make licenses available on RAND terms. Many of those declarations are what might be termed “general” or “blanket” declarations, stating that the patent holder would make licenses available for any of its patents that turned out to be essential in order to practice the standard. Such “blanket” declarations can be contrasted with patent-specific declarations, in which the patent holder listed specific patents and agreed to make licenses available for those specific patents. The fact that many of the declarations are “blanket” declarations, intended to apply to whatever patents the declarant may have that are “essential” to practice the standard, means that it is not possible to determine the number of declared-essential patents.

MPEG LA, a private entity not affiliated with MPEG, has formed an H.264 patent pool, bringing together 29 holders[[15]](#footnote-15) of several hundred H.264-essential patents from numerous countries, making available a “one stop shopping” license to all of the patents in the pool. According to MPEG LA’s website, 1149 firms have taken licenses to the pool’s patents.[[16]](#footnote-16)

We have not seen any empirical evidence that would allow us to confirm or deny the ITU-T’s statement that there has been an “uptick” in SEP-related patent litigation. But even if that assertion were correct, it must be put into context. The number of patents, and the number of standards, and presumably the number of SEP patents, has increased dramatically in recent years. One would expect that a significant part of the suggested increase in SEP-related patent litigation would be just the natural consequence of an increase in the number of patents generally, or the number of standards generally, or the number of SEP patents, or the rapid increase in the dollar and unit volume of standards-related commerce.

We are aware of one empirical article on the “patent litigation explosion” that sought to control for certain factors (notably R&D spending and the total number of patents),[[17]](#footnote-17) but the authors do not control for the increasing role of standards, or the increasing economic importance of standards-compliant products in certain markets, and thus the increasing economic stakes associated with SEP-related litigation. We are not aware of any empirical evidence that litigation related to SEP patents has increased more rapidly than the rate of patent litigation generally, once these factors have been taken into account.

We agree that there are a number of lawsuits related to SEP patents in the ICT space, but there are also numerous lawsuits relating to *non*-essential patents, notably Apple’s lawsuit against Samsung over its “look and feel” “design” patents on the iPhone and iPad, and other non-standards-essential Apple patents, in which Apple recently won a $1.05 billion award against Samsung.[[18]](#footnote-18)The jury rejected Samsung’s claims that Microsoft infringed certain patents that Samsung claimed were essential to practice the UMTS standard. The present litigious atmosphere is not limited to SEP patents, and changes in RAND policies would not affect non-essential patents.

* + 1. **H.264-Related Litigation**

Two H.264-related disputes have received some significant publicity. We are aware that Motorola Mobility sent a letter to Microsoft offering a 2.25% royalty rate for its H.264-related patent portfolio, on which Motorola Mobility had made RAND commitments. We are also aware that Microsoft did not make a counter-offer to Motorola, instead choosing to immediately file suit against Motorola in Federal District Court in Washington State, alleging that Motorola’s offer was inconsistent with Motorola’s RAND commitment and alleging that Motorola was violating U.S. antitrust laws by making the 2.25% offer. We are aware that Motorola was following its usual practice of seeking a 2.25% royalty rate for *any* of its standards-essential patent portfolios when it made the offer, and that Motorola made a similar offer to Microsoft for a (non-cumulative) 2.25% royalty for its 802.11-related patent portfolio.

We note that Google, which recently acquired Motorola Mobility (and its patent portfolio) for some $12.5 billion, has announced that it intends to continue Motorola’s policy of licensing its patents to others, implying that Google believes Motorola’s licensing practices were consistent with its RAND commitments.

We are aware that Microsoft contended both that Motorola’s proposed royalty *rate* (of 2.25%) and its proposed royalty *base* (of the selling price of Microsoft’s accused Xbox products, which had features beyond the H.264 and 802.11 features) were both inconsistent with its RAND commitments. Microsoft contended that it was inherently inconsistent with RAND principles for the royalty base to be the selling price of the entire complex product (the Xbox).

We are aware of other H.264-related patent litigation, notably several lawsuits that Multimedia Patent Trust (“MPT”), an irrevocable trust formed by Lucent to hold and manage certain video codec patents developed at Bell Labs and formerly held by Lucent, against a number of industry participants, including Microsoft (which ultimately settled with MPT) DirecTV, Apple, LG and Canon. Over the years, MPT and Lucent have entered into some 40 patent licenses for their H.264-related patents. MPT is currently seeking “reasonable royalty” damages consistent with the terms of MPT’s licensing program, which asks licensees for a royalty of 0.5% on devices capable of decompressing video files and 1.0% on devices capable of compressing video files, with a $1.50/device minimum. We are also aware of litigation between MPEG LA and MPT, in which MPEG LA contended that MPT had committed to license certain of its compression patents through MPEG LA’s MPEG-2 patent pool.

None of these lawsuits have had any apparent effect on the widespread acceptance of the H.264 standard, which is reported to be the most widely used video codec. That is, though there are commercial disputes between patent holders and implementers of the standard over license terms, and those disputes have occasionally risen to the level of litigation, we have seen no indication that patent holders are refusing to make licenses available, or that they are attempting to block the rollout of the standard, or that industry acceptance of the H.264 standard has been delayed or impaired because of such commercial disputes.

* + 1. **Cellular Communications Standards**

Similar conclusions apply to cellular communications standards such as the GSM, UMTS and LTE standards developed by ETSI, which has a RAND licensing policy similar to the ITU-T policy. There are thousands of SEP patents relating to those standards, and there has been a significant amount of litigation relating to those patents, but the standards have been widely implemented in practice, with rapid market penetration, substantial new entry, rapid technological progress, marked swings in market share as new firms have entered with attractive new products at attractive price points, etc. Other commentators have pointed to the lack of evidence that concerns about RAND have delayed or derailed implementation of telecommunications standards;[[19]](#footnote-19) despite large numbers of comments by interested parties and by academic scholars, the prospect that there are significant pragmatic complications with the way that SSO’s RAND policies have worked out in practice seems to be largely a “non-issue.”

Despite the unsubstantiated criticism, RAND has worked very well in practice. It has been an underpinning of the extremely successful standards collaborations between developers, manufacturers, and users that have been a basis for the enormously successful growth of industries such as telecommunications and computing over several decades. During that period, e.g., for at least twenty years for mobile communications since GSM standards were set around 1990, the basic RAND commitments for the main international SDOs have remained fundamentally unchanged other than relatively minor adjustments.

For example, in 2011 sales of 3G UMTS phones were at all-time highs. From 2004 to 2011 as tracked by IDC, unit shipments of UMTS-compliant phones have increased substantially over this time period from nearly zero in 2004 to nearly 450 million units in the world and over 50 million in the United States in 2011. The dollar value of shipments of 3G UMTS phones has increased to more than $180 billion in 2011 from under $60 billion in 2007 worldwide, and the dollar value of shipments in the United States alone has reached $25 billion in 2011 from $4 billion in 2007.

Much of this growth has been driven in the last year or two by the increase in sales of the most technologically advanced smartphones. Unit shipments of 3G UMTS smartphones were more than 350 million in 2011 worldwide, increasing substantially from under 100 million in 2008. In the United States, unit shipments of smartphones were 40 million in 2011, increasing from 10 million units in 2008. The smartphone dollar value of shipments has increased worldwide from around $50 billion in 2009 to $100 billion in 2010 to more than $160 billion in 2011. The dollar value of shipments related to smartphones in the United States has increased to more than $20 billion in 2011 from $10 billion in 2009.

Another indication of the success of a standard is the number of companies that introduce products that are compliant with that standard. The number of vendors in the United States and the world that offer phones compliant with the 3G UMTS standard has increased from under 15 vendors in 2004 to over 75 vendors in 2011, including over 20 new vendors in just the last 2 years. The number of vendors selling 3G UMTS smartphones shows a similar pattern. In the United States, IDC shows that 18 vendors sold 3G UMTS smartphones in 2011, up from just 2 in 2006. The number of 3G UMTS phone models available tells a similar story. The number of handset models available in the United States that are compliant with 3G UMTS has increased from 3 models in 2006 to 88 models in 2010. Clearly, many companies are investing resources to develop new products that are compliant with the 3G UMTS standard. There is no sign that this process has been slowed down by patent disputes. Put another way, though there are disputes in connection with cellular communications standards (primarily involving competing smartphone operating systems which are not standardized), there is no indication that the current RAND system is causing any significant problems.

* 1. **Litigation in Context**

We have not attempted a formal review of the level of litigation in ICT against the level of economic activity in these industries, but it seems that the volume of litigation is at least commensurate with the large number of patented technologies used to make standards-compliant products (including many technologies that are not standard-essential), the high rates of sales and earnings growth in the industries, and the very high levels of competition. As firms try to introduce progressively advanced technologies and compete with new generations of products, such as in smartphones and tablets, it is hardly surprising that there will be major commercial disputes.

It should also be noted that much of the current litigation involves non-SEPs as well as SEPs. For instance, the headline-grabbing litigation between Apple and Samsung began with Apple accusing Samsung of infringing non-essential IPR related to the “look and feel” of Apple’s products, further indicating that these are primarily commercial disputes with RAND as one potential aspect, rather than indicative of a “RAND problem” *per se*.

Any time that there is as much money at stake as there is in telecommunications, and any time there are many firms accused of using other’s patented technology without taking licenses and without paying for it, there is bound to be some degree of friction, with high-profile litigation attracting much publicity and much attention. But the actual degree of disruption may be seen as small in the overall swing of things.

* 1. **The Evolution of SDO IP Policies**

SDO RAND-based IP policies have stood behind standards setting for many decades, during which time standards have formed the basis for some of the most progressive and competitive technology-based industries. There have been periodic calls for “reform” of the existing RAND-based system, with its (supposed) “lack of clarity.” Yet with few exceptions, most SSOs – meaning the different stakeholders that comprise their membership – have concluded that the existing RAND-based rules have served the varied industries that rely on standardized technologies well and therefore resisted proposals to modify (or “clarify”) those rules.

Two historical examples illustrate the fact that attempts to substantively reform the RAND-based licensing model prevalent amongst most major SSOs are neither desirable nor free of unintended adverse consequences. In 2007, the IEEE sought and received a “Business Review Letter” from the U.S. Department of Justice, in which the DOJ said that it would not oppose an IEEE proposal to change its IP policy to *allow* (but *not* require) those making RAND commitments to specify on an *ex ante* basis the “not-to-exceed” terms and conditions that they would seek in order to license their standards-related patents, and allowing the IEEE members to discuss those disclosures while deliberating proposed standards.[[20]](#footnote-20)The VMEbus International Trade Association (“VITA”), another SSO, received a Business Review Letter in which the DOJ said that it would not oppose a change in VITA’s IP policy under which VITA *required* those making RAND commitments to specify on an *ex ante* basis the “not-to-exceed” terms and conditions that they would seek from potential licensees, but under which VITA was *not* allowed to discuss those commitments when setting standards.[[21]](#footnote-21) Available evidence suggests that at least one firm (Motorola) chose to quit VITA rather than disclose its licensing terms, and available evidence suggests that there has been *almost no* *ex ante* disclosure of “not to exceed” licensing terms to the IEEE. To our knowledge, no other SDOs have followed the lead of either VITA or the IEEE in requiring (or requesting) *ex ante* disclosure of “not-to-exceed” licensing terms.

There have been numerous suggestions for changing (or “clarifying”) different SDO IP policies over the years. These include:

1. Proposals that a RAND commitment be interpreted as effectively waiving the right to seek injunctive relief (or a Section 337 exclusion order in front of the U.S. International Trade Commission) against those making standards-compliant products;
2. Proposals that RAND royalties be subject to what has been termed “capped numerical proportionality” (“CNP”). The “cap” refers to the proposition that the total (cumulative) royalties that should be paid by firms making standards-compliant products be subject to some cumulative cap, often specified as in the 5-10% range. The “numeric proportionality” part of CNP refers to the proposition that the total royalties should be divided up across all holders of standards-essential patents in proportion to their relative shares of all such patents. Thus if the cumulative royalty “cap” for a given standard is (say) 10% of the selling price of the standard-compliant products, and some firm F holds (say) 5% of all of the patents “essential” to that standard, then under a CNP framework firm F would receive royalties amounting to its 5% “share” of the 10% capped royalties, or 0.5%;
3. Proposals that firms whose licensing practices do not comport with CNP principles be deemed to have “violated” their RAND commitments;
4. Proposals that what is “reasonable” should be interpreted in the *ex ante* sense, as what the patented technology would have been able to be licensed for *before* it was incorporated into the standard;
5. Proposals that RAND is inconsistent with percentage-based running royalties on complex products, arguing that royalty base should be some smaller amount, such as based on the selling price of certain components (such as a chipset) said to embody the key functionality, or the selling price of a basic product capable of complying with the standard (as contrasted with the actual selling price of the licensee’s products, which contain the standardized functionality but also have other, non-standardized features). As an illustration of such proposals, in a November 2011 submission to the European Telecommunications Standards Institute (“ETSI”), Apple proposed that royalties for cellphones compatible with the ETSI cellular standards be calculated on what Apple termed a “common royalty base,” which Apple proposed should be “no higher than the industry average sales price for a basic communications device that is capable of both voice and data communications.”[[22]](#footnote-22) Since Apple sells only high-end iPhone “smartphones” that have numerous features, many of which depend upon the standard for their usefulness to the end user, other than “basic communications” and that sell for significantly higher prices than “the industry average sales price for a basic communications device,” (Apple’s prices are on the order of three to four times higher than the proposed “common royalty base”), this effectively amounted to a suggestion that Apple’s interpretation of what “FRAND principles” required would result in Apple paying significantly lower royalties than it would pay if it paid on a royalty base equal to the selling prices of its *own* standards-compliant products;
6. Proposals that RAND licenses have to be made available on a patent-by-patent, country-by-country basis, with the prospective licensee free to take licenses only to those patents that it chooses to license, effectively forcing the patent holder to have to sue on the unlicensed patents if it believes that the licensee is using other unlicensed patents without paying for them.

We will address each of these suggestions in turn, below. But before doing so, we think it is important to draw a distinction between “clarifying” existing rules or policies and adopting new substantive policies on a going-forward basis.

Rules can be “unclear” for a number of different reasons. A new situation may have arisen, one which was not contemplated when the original rule was adopted, and the issue becomes how to resolve the (newly-emerged) uncertainty. Or the situation may have been just as unclear when the current rules were adopted as they are now. As two of us (Teece and Sherry) wrote in our 2003 article,

“Many if not most SSOs do not get involved in determining whether proposed license terms are ‘reasonable.’ Indeed, most SSOs do not require the patent holder to announce its proposed license terms in advance of adopting the standard, but merely require a statement that the patent holder is willing to license on ‘reasonable and non-discriminatory’ terms. Instead, royalty rates are left to the parties for negotiation.

“There are four likely reasons that SSOs avoid addressing the reasonableness of licensing terms. First, determining whether a particular rate is ‘reasonable’ often goes beyond the competence and/or expertise of the SSO or its participants. The ‘reasonableness’ of royalty rates is an economic or business issue, not a technical one. The SSO representatives, generally chosen for their technical knowledge of the technology being standardized, frequently have little or no experience or expertise in negotiating royalty rates or determining what an appropriate rate should be.

“Second, trying to determine an appropriate royalty rate is often difficult when technology is changing rapidly, as is often the case in the context of standards for the next generation of products. From an economic standpoint, patent holders are naturally reluctant to quote a royalty rate for their patents in advance. This is especially true because of the asymmetric (one-way) nature of the commitment. Asking the patent holder to commit to a royalty rate prior to the standard’s adoption would, presumably, be binding on the patent holder, in the sense that the patent holder could not increase the rate, though it could always agree to accept a lower royalty. But the rate would not be binding on the prospective licensees. They would have made no commitment to take a license, to agree to pay royalties. Not surprisingly, patent holders are reluctant to constrain their future negotiating position in such an asymmetric fashion.

“Third, there are potential antitrust issues that might arise if the SSO (or its members, as potential licensees of the patent) were to try to determine whether a proposed rate was ‘reasonable.” Antitrust issues clearly would arise if the SSO explicitly conditioned its acceptance (or rejection) of a proposed standard implicating a patent on the asked-for royalty rates. Indeed, even asking the patent holder to announce its proposed rates in advance, and then having the SSO determine whether or not to adopt the standard in light of the announced rates, may be problematic from an antitrust standpoint.

“Fourth, SSOs are aware that the issue of royalty rates pits the interests of some participants (the patent holders) against those of other participants (the prospective licensees), and the SSOs do not want to ‘take sides’ in such matters.”[[23]](#footnote-23)

Concerns or disputes about what “reasonable” means in practice have been facing SSOs since at least the 1970s, when SSO IP policies began to be adopted. We know of no reason why the current situation raises any “new issues” that were not anticipated long ago. The assertion in the ITU-T’s Press Release that “the definition of what constitutes ‘reasonable’ … [is] now emerging as [a] major point of contention” strikes us as incorrect. First, it seems to us that the “point of contention” is not about “the definition of what constitutes ‘reasonable’”, but about the very use of the “reasonableness” standard to determine licensing terms for standardized technology. But legal systems rely on “reasonableness” standards when addressing complex and various relationships in which any more “precise” a formula or rule of thumb would inevitably fit in some cases, and not in others. Second, the “point of contention” has been there all along, and the ITU-T maintained the current policy in place for many years, presumably because (like the situation facing many other SSOs) the ITU-T operates by consensus, and there never was any “consensus” over a need to change the RAND-based IP policy rules, nor any consensus as to how to “clarify” them without undermining the flexibility inherent in the “reasonable” portion of the RAND commitment, fundamentally altering the balance of interests struck by those RAND-based policies, and pitting the commercial interests of some participants against those of other participants. Sometimes a degree of ambiguity (or a lack of clarity) is needed in order to achieve consensus and socially desirable outcomes.

1. **Review of Some Current Proposals**
	1. **RAND Commitments and Injunctive Relief**

As a general rule, patent holders have the right to *seek* injunctive relief when others make and sell infringing products, though (under US law at least) patent holders are not “entitled” to such relief; they must satisfy a four-factor test laid out in the Supreme Court’s 2006 *eBay* decision.[[24]](#footnote-24) Proposals that making a RAND commitment is inconsistent with seeking injunctive relief amount to the suggestion that, by making RAND commitment, a patent holder has *waived* the right (that it otherwise would have) to seek injunctive relief. We do not purport to render legal opinions, but we understand that the general principle is that waivers of rights must be unambiguous and are not to be inferred lightly. More importantly, SSOs have consistently decided that a RAND undertaking does not require a waiver of ordinary patent law remedies by SEP holders. We understand that, under the four-factor test under eBay, the courts consider (a) whether there is “irreparable injury,” (b) whether legal remedies are adequate, (c) the balance of harm, and (d) the public interest in deciding whether to grant injunctive relief, and the fact that a patent holder has made a RAND commitment may be relevant to each of these factors and may thus affect whether a court would grant injunctive relief. But the proposals that RAND commitments are inconsistent with even *seeking* injunctive relief bypass such considerations in favor of a blanket conclusion that RAND commitments are incompatible with injunctive relief.

Such a proposal, if accepted, would significantly shift the balance of interests away from patent holders and towards manufacturers of standards-compliant products. It would fundamentally take away the strongest bargaining chip that the patent holder has to induce implementers to come to the bargaining table and negotiate licenses. It could (effectively) substitute a court-ordered “compulsory license” at court-determined “reasonable royalty” patent infringement damages terms for a negotiated license. It would deprive the patent holder of the ability (that it otherwise would have) to negotiate cross-licenses with infringers. It would put the patent holder at the disadvantage of having to litigate on a country-by-country, patent-by-patent basis, rather than negotiating a worldwide portfolio license. In sum, it would alter the balance of interests of innovators and implementers and threaten the longer term viability of standardization and incentives to innovate.

* 1. **RAND Commitments and Capped Numerical Proportionality**

To our knowledge, no one has suggested that the current ITU-T patent policy amounts to imposing a CNP regime on RAND royalties. And we are not aware of any explicit CNP proposals that have been made to the ITU-T.[[25]](#footnote-25)

Conceptually, there are a number of major problems with CNP proposals. First, there is no a priori reason why cumulative royalties should be capped at any particular level. Patented technology can account for a relatively small fraction, or a relatively high fraction, of the total economic value of standards-compliant products. In fast-paced cutting edge technological fields such as ICT, patented technology may account for a significant fraction of the increased value of standards-compliant products over older generations of products, as anyone familiar with the technological advances of today’s cellphones over earlier-generation cellphones can readily attest. In some technological fields (such as pharmaceuticals), patent protection accounts for a very high fraction (often approaching 90%) of the commercial value of patented products, as shown by the fact that, once patent protection expires and a drug goes “off patent,” others can make and sell unpatented “generic” versions of the drug that regularly sell for prices on the order of 10% of the pre-patent-expiration price of the “brand name” drug. In rapidly-changing technology areas (such as ICT), where innovation is fierce and where (on a quality-adjusted basis) product prices have been falling significantly over time, there is no *a priori* reason why any particular cap – and certainly not one in the 5-10% range – is economically appropriate.

Second, there is no reason to believe that the value of different patents (or portfolios of patents) is proportional to the number of patents in the portfolio, even for “essential” patents. Empirical studies show that the distribution of patent values is highly “skewed,” with most patents worth little or nothing, and with a relatively small fraction of patents having high values.

Some patents, covering fundamental technologies are clearly worth more than other patents on less fundamental but nonetheless “essential” features of a standard. The “numeric proportionality” aspect of CNP proposals is widely admitted to be a major weakness; its proponents justify it in practice only because it is cheap and easy and (relatively) uncontroversial to administer. Counting patents and allocating revenues on a “numeric proportionality” basis is easier than doing the hard digging necessary to examine different patents and determine their relative values.

Again, if the ITU-T were to interpret its current patent policy and current RAND commitments as effectively amounting to adopting a CNP approach to assessing whether particular patent holders were seeking “excessive” royalties, that would amount to a wholesale rewriting of that policy.

It would be one thing for the ITU-T to explicitly adopt a CNP approach toward RAND on a going-forward basis, as patent holders would have a clear understanding of what they would be getting into. Patent holders who thought that a CNP approach would undercompensate them for others’ use of their technology could elect not to participate in the ITU-T, or could refuse to make CNP-based RAND commitments. It would be quite another thing to try to apply a CNP approach retrospectively to RAND commitments made at a time when there was no suggestion whatsoever that the ITU-T would rewrite its policy to adopt such an interpretation of RAND. And we see nothing in the current ITU-T policy that can even remotely be construed as adopting a CNP interpretation of what RAND means or requires.

* 1. **RAND Royalties as “*Ex Ante*” Royalties**

Some commentators have proposed that “reasonable” royalties in the RAND sense be interpreted in the sense of *ex ante* reasonable: what would have been negotiated *ex ante* (before the standard was set) had negotiations occurred then.

One obvious difficulty with making this approach realistic is that, in practice, most licensing negotiations for standards-essential patent licenses (other than broad portfolio-wide licenses, which can be entered into at any time) take place *ex post*, after the standard has been set and after the parties have some basis for determining which patents are standards-essential and which are not. Before the standard is finalized, that issue is still “up in the air.” We do not intend to suggest that finalizing the standard eliminates all disputes about whether particular patents are or are not “essential” in order to practice the standard; as noted above, such disputes usually persist until they are resolved by litigation of the asserted claims to the patents in suit, when patent claims are interpreted (construed) by a court and disputes over validity and infringement are litigated (to a jury in the US). (Note that such litigation, of only the asserted claims of the patents in suit, does not resolve disputes about other, unlitigated patents and/or claims.)

Consequently, there are typically no “benchmark” *ex ante* negotiated rates against which to compare the rates that patent holders are seeking, to determine whether they satisfy the “*ex ante* reasonable” test.

This does not eliminate the possibility of using the *ex ante* approach as a *hypothetical construct*. [[26]](#footnote-26) In patent litigation, US courts often appeal to a “hypothetical negotiation” that is supposed to have occurred at or around the date of first infringement, despite the fact that no such negotiations may actually have taken place. In the “hypothetical negotiation,” the parties are assumed to agree that the Patents in Suit are valid and infringed, thereby taking away one of the main real-world reasons why parties do not actually come to an agreement about license terms.

Swanson and Baumol[[27]](#footnote-27) have proposed that RAND royalties should be interpreted as the rates that would have been agreed to if the SSO had conducted an *ex ante* auction, with different firms “bidding” to have their technology incorporated in the standard, with the “bids” being a combination of the technology itself and the royalty rate that the patent holder proposes to charge if its technology is incorporated into the standard. Ignoring for now both the pragmatic difficulties in setting up and running such an *ex ante* auction and determining what the “winning” bids are, and the limited information that patent holders would have available to them to decide what rates to “bid” (making it unlikely that the outcome of any such auction would have economically-desirable properties like equilibrium behavior or economic efficiency), the fact is that no SSO operates that way. The closest are the efforts by VITA and the IEEE to get patent holders to reveal their “not-to-exceed” royalty rates, but neither is the economic equivalent of the Swanson-Baumol “auction” process.[[28]](#footnote-28) In practice, as noted above, the IEEE process has been almost completely unsuccessful in terms of actually eliciting “not to exceed” royalty rates. And announced “not to exceed” rates may not provide much information about the rates that would have resulted had there been actual *ex ante* negotiations.

Lemley and Shapiro[[29]](#footnote-29) have proposed using an *ex ante* approach to determining whether proposed royalty rates are “reasonable,” contending that allowing the patent holder to charge royalties that are *ex post* reasonable results in significant “hold-up” problems and excessive royalties. Their analysis and conclusions have been criticized by others, notably Elhauge[[30]](#footnote-30) and Sidak.[[31]](#footnote-31) Our point is that there is no reason to believe that the historical ITU-T RAND policy adopted the *ex ante* value of SEPs to be what is “reasonable.” Adopting such a policy (especially if applied retroactively to previously-made RAND commitments) would result in a significant *change* in the relative positions of holders of SEPs and manufacturers seeking to make standards-compliant products.

* 1. **Proposals for a Narrow RAND Royalty Base**

As noted above, we are aware of some proposals (notably Apple’s “common royalty base” proposal) that RAND requires that the royalty base on which RAND royalties are to be calculated should be something less than the full selling price of the licensed products. Such proposals are sometimes made on the basis that, in some countries, it is not legally appropriate to calculate “reasonable royalty” patent infringement damages on the selling price of the entire product unless certain conditions are met. In particular, in the US, there is a legal doctrine called the “entire market value rule,” which provides (to oversimplify a complex topic somewhat) that, in awarding “reasonable royalty” damages for infringement of some patent that reads only on one feature of a complex product, it is not legally appropriate to use as the patent *damages* base the entire selling price of an entire complex product unless the patented feature is “the basis for” consumer demand for the entire product.

There are a number of points worth making here. First, to the extent that RAND-reasonable should be interpreted as “commercially reasonable” – i.e., consistent with common industry practice – the fact is that percentage-based royalty rates in negotiated licenses often use as the royalty base the licensee’s “net sales” of the licensed products, typically defined as gross sales minus certain deductions (e.g., returns, certain shipping costs, etc.). The practice of calculating royalties due based on the selling price of some other commodity occasionally does happen, but in our experience (having reviewed hundreds of licenses) it is extremely rare.

Second, despite the fact that both “reasonable royalty” patent infringement damages awards and a “reasonable royalty” in the RAND sense appeal to the “reasonable-ness” concept, we are not aware of any suggestion that, in interpreting what is RAND-reasonable, any SSO has indicated that it intends its RAND policies to be interpreted as being synonymous with what is deemed “reasonable” under patent infringement damages law. Simply put, there are a number of restrictions on what constitutes “reasonable royalties” under patent damages law that do not appear to have any analogue in what is “commercially reasonable” in a patent licensing context.

Third, we are not aware of any previous suggestion made to or by the ITU-T that what it interprets as being consistent with RAND-reasonable is tied in such a fashion to particular countries’ patent damages laws.

Fourth, for the ITU-T now to suggest that RAND-“reasonable” is to be interpreted in accordance with the vagaries of different countries’ patent-infringement-damages law would make what is and what is not RAND-reasonable different from country to country. That would add confusion, not clarity, to the ITU-T RAND policy.

Fifth, we are not aware of any indication that the ITU-T RAND policy should be interpreted in a way consistent with Apple’s proposed “common royalty base” approach. Again, adopting such an interpretation would seem to us more a rewriting of the ITU-T policy than a “clarification” of that policy, one that would benefit some firms (those that make products that sell at prices higher than the “industry average”) and harming others (patent holders and those who make products that sell at prices lower than the “industry average”).

Sixth, from an economic perspective, the royalty rate and the royalty base should be commensurate with one another. To take a simple example, it makes no sense to say “apples sell for $2” without specifying the units to which that price is to be applied. Is that $2 per apple? Or $2 per pound? Or $2 per kilo? Or $2 per bushel? Or $2 per bag (and, if so, what size bag?) Similarly, it makes no economic sense to say “the royalty rate is 2%” without specifying the royalty *base* to which that rate applies. Consider a $10 component that is built into a $100 subassembly that is incorporated in a $1,000 end product. If one believes that a $1/unit royalty is appropriate, one can calculate that royalty several different ways: as a fixed $1/unit royalty; as a 10% royalty on the $10 component (10% of $10 = $1); as a 1% royalty on the $100 subassembly (1% of $100 = $1); or as a 0.1% royalty on the $1,000 end product (0.1% of $1,000 = $1). All of these are mathematically equivalent (in this simple fixed-proportions example).

In such a situation, it may be administratively easier (and therefore “commercially reasonable”) to charge a percentage-based royalty on the selling price of the end product, as that may be the way that the licensee keeps its books (and the selling prices of the component and subassembly may be subject to manipulation if they are not commonly sold separately in commercially-appreciable quantities). As long as the rate is commensurate with the base, it should not matter. The problems arise when people propose to set the two independently of one another.

If one proposes that the RAND-reasonable royalty base should be something less than the full selling price of the licensed product, then one would expect that the royalty *rate* should be adjusted to *offset* that change in the royalty *base*.

* 1. **Patent-by-Patent, Country-by-Country Licensing**

As for the proposal that RAND commitments require the patent holder to make separate licenses available on a patent-by-patent, country-by-country basis, with the implementer free to “pick and choose” which licenses to take and which to reject, there are a number of problems with that proposal from an economic and public-policy perspective.

First, it is not consistent with industry licensing practice, which is to enter into portfolio licenses, often on a worldwide basis. As such it is not “reasonable” in the “commercially reasonable” sense.

Second, such an approach is likely to lead to disputes between the parties as to whether or not the licensee is using the “unlicensed” patents without paying for them. This is especially likely when the parties disagree as to whether particular patents are “essential” in order to practice the standard. Suppose that the patent holder has three patents (A, B and C), and believes that A and B are technically “essential” to make a standards-compliant product, and that C, while not technically “essential” to the standard, is “commercially necessary” in order to make a commercially viable standards-compliant product.

Suppose the prospective licensee agrees that patent A is essential, but denies that patents B and C are and denies that it is using them. So the licensee offers to take a license for A but refuses to take a license for B and C. Naturally, the patent holder disagrees, believing that B is “essential” in the “technically necessary” sense and that C is being used in the “commercially necessary” sense and therefore that the licensee is using those patents (whether it admits it or not). Resolving such disputes means having to resolve the question whether B and C are being used; that would typically require litigating that dispute, which is antithetical to the desire for “patent peace” that typically goes with trying to license patents.

Moreover, the patent holder may believe that licenses for all of its patents are necessary (whether in the “technically essential” or the “commercially necessary” sense), and may not have separately priced them, instead setting a single rate for its patent portfolio. Requiring the patent holder to individually license its patents on a patent-by-patent, country-by-country basis would require the patent holder to adopt a very different, *a la carte* structure for pricing its portfolio. In order to be able to extract the full value for others’ use of its patent portfolio, a patent holder would likely have to resort to litigation across multiple jurisdictions and against most implementers. In other words, rewriting the rules to impose this type of *à la carte* licensing would diminish the incentives for implementers to negotiate portfolio licenses, increase litigation, impose unnecessary additional transaction costs on patent holders, and ultimately diminish returns on innovation and incentives for patent holders to participate in standard-setting.

Third, we are not aware of any SSO that has stated that RAND commitments are to be interpreted as requiring licensing on a patent-by-patent, country-by-country basis. We have seen nothing in the ITU-T IP policy that is tantamount to such an interpretation.

1. **Conclusions**

SDO IP policies and the RAND commitments have stood behind major standards setting activity now for around 40 years, since at least the first formal IP policies of ANSI in the mid 1970s and codes of conduct for international SDOs dating from about the same time. During this time RAND policies have been critical in ensuring a balance of interests between developers, implementers and users that has allowed the various participants to work together in a consensus. Standards in industries such as ICT – which rely centrally on anticipatory standards to ensure that products from different firms can work together in networks – have been a basis for successive generations of new products. They have underpinned enormous success of these industries in terms of economic growth and technological change.

During this time there have been only relatively minor adjustments to SDO IP policies. Current suggestions for IP policy modifications risk damaging this balance of interests and should be considered very cautiously and from as broad a viewpoint as possible. The discussion here illustrates some of the particular concerns.

We also suspect that there is no clear evidence that the system is failing in any fundamental way. Although the current level of litigation has been well-publicized and may look high, and has certainly brought standards-related disputes a far higher profile than might have been thought possible some years ago, this must be seen in the context of the size and growth rates of ICT industries, the high rate of technological change there and the extreme focus on dynamic competition. Also, this litigation is not limited to SEPs, some of the most strongly defended patents are not cited in standards but derive value from their commercial importance.

In network industries such as ICT, standards setting is part of the framework of competition. Firms cooperate and compete during standards setting to have their technologies included in one standard and also in competing standards. These standards can then form a foundation for further development and allow for competition in the market place between competing standards and between competing products that comply with one or more such standards. RAND is a critical part of this, aimed to assure SDO members that the technologies incorporated in the standard will be made available to implementers, and that the firms who own those technologies will not be able to obtain an inappropriate competitive advantage if their proprietary technology is included in the standard and adopted by others. This is an ongoing process, since other firms may develop new technologies and applications following on from the standard technology, both to develop enhanced applications of the standard and to develop new generations of standards.

In this context, RAND may be seen essentially as a contractual commitment. The recent litigations may be seen primarily as commercial disputes, with the RAND framework affecting some but not all of the patents involved. From the discussion above these disputes may be most appropriately dealt with within the current system, not by a fundamental change to an SDO IP policy regime that has worked well to reconcile diverse interests.

Efforts to “clarify” RAND policies should only be undertaken carefully, so as to avoid favoring some stakeholders at the expense of others.

1. The authors received financial support from Qualcomm in preparing this submission. The opinions expressed here are those of the authors, and do not necessarily reflect the opinions of Qualcomm or any other organization. [↑](#footnote-ref-1)
2. Peter Grindley, *Standards, Strategy and Policy: Cases and Stories* (Oxford Univ. Press, 1995) [↑](#footnote-ref-2)
3. Peter Grindley and David Teece, “Managing Intellectual Capital: Licensing and Cross-Licensing in Semiconductors and Electronics,” *California Management Review*, vol. 39.2, 1-34 (1997). [↑](#footnote-ref-3)
4. David Teece and Ed Sherry, “Standards Setting and Antitrust,” 87 *Minnesota Law Review* 1913-1994 (2003). [↑](#footnote-ref-4)
5. Our opinions are our own, and should not be attributed to any of the entities that retained us in those disputes. [↑](#footnote-ref-5)
6. Mark Lemley and Carl Shapiro, “Probabilistic Patents,” 19 *Journal of Economic Perspectives* 75-98 (2005). [↑](#footnote-ref-6)
7. For a survey of the economic literature, see Hall, Bronwyn, Jacques Mairesse & Pierre Mohnen, 2010, Measuring the Returns to R&D, in: Hall, B. and Rosenberg, N, Handbook of the Economics of Innovation, Elsevier, Amsterdam, pp. 1034-1076. [↑](#footnote-ref-7)
8. As noted above, the term “RAND” is more commonly used by US-based SSOs; the term “FRAND” is more commonly used by European-based SSOs. We are not aware of any suggestion that FRAND differs from RAND in any significant way, and the terms are used interchangeably in the literature. In this paper, we use the RAND acronym. [↑](#footnote-ref-8)
9. See., e.g., Mark Lemley, “Intellectual Property Rights and Standards Setting Organizations,” 90 Calif. Law Review 1889-1980 (2002). [↑](#footnote-ref-9)
10. Guest Post: The February of FRAND, Jorge L. Contreras, March 6, 2012, PatentlyO law blog, <http://www.patentlyo.com/patent/2012/03/february-of-frand.html> [↑](#footnote-ref-10)
11. David Teece and Ed Sherry, “Standards Setting and Antitrust,” 87 *Minnesota Law Review* 1913-1994, 1956-67 (2003). [↑](#footnote-ref-11)
12. See Peter Grindley and David Teece (1997), "Managing Intellectual Capital: Licensing and Cross-Licensing in Semiconductors and Electronics," *California Management Review*, Vol. 39.2. pp. 1-34. [↑](#footnote-ref-12)
13. <http://en.wikipedia.org/wiki/List_of_video_services_using_H.264/MPEG-4_AVC> [↑](#footnote-ref-13)
14. <http://gigaom.com/video/h264-80-percent-of-videos/> [↑](#footnote-ref-14)
15. <http://www.mpegla.com/main/programs/AVC/Pages/Licensors.aspx> The licensors include firms such as Apple, Cisco, the Fraunhofer Institute, France Telecom, Samsung, LG, Sony and others. A list of the patents included in the pool is available at <http://www.mpegla.com/main/programs/avc/Documents/avc-att1.pdf> [↑](#footnote-ref-15)
16. <http://www.mpegla.com/main/programs/AVC/Pages/Licensees.aspx> [↑](#footnote-ref-16)
17. James Besen and Michael Meurer (2005), “The Patent Litigation Explosion,” Boston Univ. School of Law. Working paper 05-18, available at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=831685> [↑](#footnote-ref-17)
18. <http://www.nytimes.com/2012/08/25/technology/jury-reaches-decision-in-apple-samsung-patent-trial.html?_r=0> [↑](#footnote-ref-18)
19. See Damien Geradin, Anne Layne-Farrar and Jorge Padilla, “The Complements Problem within Standards Setting: Assessing the Evidence on Royalty Stacking,” available at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=949599> [↑](#footnote-ref-19)
20. The IEEE business review letter can be found at <http://www.justice.gov/atr/public/busreview/222978.pdf> [↑](#footnote-ref-20)
21. The VITA business review letter can be found at <http://www.justice.gov/atr/public/busreview/219380.htm> [↑](#footnote-ref-21)
22. Available at <http://www.scribd.com/doc/80899178/11-11-11-Apple-Letter-to-ETSI-on-FRAND> [↑](#footnote-ref-22)
23. David Teece and Ed Sherry, “Standards Setting and Antitrust,” 87 *Minnesota Law Review* 1913-1994 at 1958-59 (2003) (footnotes omitted; emphasis in original). [↑](#footnote-ref-23)
24. eBay v. MercExchange, L.L.C., 547 U.S. 388 (2006) [↑](#footnote-ref-24)
25. For a discussion of some earlier proposals for patent policy and standards, including possible ETSI policy, see Tim Frain (2006), “Patents in Standards & Interoperability,” World Intellectual Property Organization, 29 November 2006. http://www.internationalmusicregistry.org/export/sites/www/meetings/en/2006/patent\_colloquia/11/pdf/frain\_paper.pdf [↑](#footnote-ref-25)
26. Alternatively, if *ex ante* license agreements do exist they might be used to help validate the value of the patents. [↑](#footnote-ref-26)
27. Daniel G. Swanson and William J. Baumol, “Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power,” *Antitrust Law Journal*, Vol. 73, Issue 1, 2005, pp. 1-58. [↑](#footnote-ref-27)
28. For an evaluation of the *ex ante* auction process, see Anne Layne-Ferrar, Damien Geradin and Jorge Padilla, “The *Ex Ante* Auction Model for the Control of Market Power in Standard Setting Organizations,” available at <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=979393> [↑](#footnote-ref-28)
29. Mark Lemley and Carl Shapiro, “Patent Holdup and Royalty Stacking,” 85 *Texas Las Review* 1991 (2007). [↑](#footnote-ref-29)
30. Einer Elhauge, “Do Patent Holdup and Royalty Stacking Lead to Systematically Excessive Royalties?” 4 *J. Competition Law and Economics* 535-570 (2008). [↑](#footnote-ref-30)
31. Gregory Sidak, “Holdup, Royalty Stacking, and the Presumption of Injunctive Relief for Patent Infringement: A Reply to Lemley and Shapiro,” 92 *Minnesota Law Review* 712-748 (2008). [↑](#footnote-ref-31)