Looking for FRAND: Patent Owners, Standard-Setting Organizations, and the Courts

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Standard setting organizations (SSOs) have adopted policies that ostensibly limit the ability of owners of standard-essential patents (SEPs) to charge royalties in excess of fair, reasonable, and non-discriminatory (FRAND) levels. These policies typically require patent owners that participate in the activities of SSOs to disclose which of their patented technologies might "read on" a standard that is being developed and, once the standard is established, to commit to charging FRAND royalties when their patents are declared to be standard-essential. The purpose of such requirements is to increase the appeal of an SSO's standards to implementers and consumers by limiting the costs and prices of standardized products. As I show in this Article, however, owners of patented technologies that are either included in standards or candidates for inclusion have resisted efforts by SSOs to limit the royalties that they charge for the use of their SEPs, adopt a consistent method for calculating the value of a FRAND royalty, or even articulate a precise definition of the meaning of FRAND. Constraints on the royalties that SEP owners may charge may also have been undermined by several recent court decisions. These developments increase the likelihood that potential licensors and licensees will form differing expectations of the royalties that should be paid by makers of products that adhere to industry standards and that owners of standard-essential patents will be able to extract excessive royalties from product makers when the latter develop and sell standardized products. The possibility of such outcomes may discourage product makers from investing in the development of products that are compliant with industry standards, thus defeating SSOs' goals of maximizing the acceptance of their standards and consumers' interests in being able to choose from as wide a variety of competing standardized products as possible. For these reasons, it has become increasingly important for SSOs to make meaningful the FRAND commitments that are made by patent owners that participate in their activities. As currently structured, however, many SSOs are unsuited to this responsibility. This is because patent holders can exercise significant control over SSO policies.

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I. INTRODUCTION

The existence of compatibility standards—the technical specifications that enable consumers and producers to purchase inputs from different manufacturers in the knowledge that they will "work together"—has important economic consequences.[1] Some of these compatibility standards, so called *de facto* standards, emerge from the free play of market forces as consumers or producers choose among incompatible products with one or more emerging as "the" standard,[2] while others emerge when the technologies were created and their corresponding standards were adopted widely before potential alternatives were developed.[3] Other standards, what are sometimes called *de jure* standards, are the result of decisions taken by government agencies.[4] Finally, some standards, those that are the subject of this Article, result from decisions taken by standard setting organizations (SSOs).[5]

SSOs are voluntary and typically private organizations where the producers of final and intermediate products and the developers or owners of patented technologies meet to develop and set the compatibility

1. Examples are mobile telephones made by different manufacturers and cellular base station equipment made by different manufacturers that work on the same network.

2. Examples are the color television and television scrambling standards in the United States. *See generally* STANLEY M. BESEN & LELAND JOHNSON, COMPATIBILITY STANDARDS, COMPETITION, AND INNOVATION IN THE BROADCASTING INDUSTRY (Rand Corp. 1986).

3. An example is the QWERTY typewriter keyboard.

4. For example, the Federal Highway Administration in the United States has established maximum width and length limits for commercial motor vehicles that are driven on the nation's Interstate and National Network of highways. U.S. DEP'T OF TRANSP. FED. HIGHWAY ADMIN., FEDERAL SIZE REGULATIONS FOR COMMERCIAL MOTOR VEHICLES (2004), https://ops.fhwa.dot.gov/freight/publications/size_regs_final_rpt/size_regs_final_rpt.pdf [https://perma.cc/SC46-CNZ9].

5. Standard setting organizations (SSOs) are sometimes referred to as standards development organizations (SDOs).

standards to which the participants in an industry will conform.[6] In this Article, I refer to the former as implementers or practicing entities and the latter as patent owners or holders. The incentives of patent owners and implementers differ. Although both groups seek to develop standards that allow for the production and sale of products that will be demanded by large numbers of users, patent owners aim to set royalties that maximize the profits from their innovative activities or investments, while implementers desire to pay less for such royalties. These divergent interests are the subject of this Article.

Modern technical compatibility standards, such as those for personal or local area networks, wireless voice and data communications, and various aspects of computing are comprised of numerous complementary technologies.[7] When specifying the technologies that are to be included in a standard, an SSO generally must choose between several alternatives. As a result, initial, perhaps robust, competition among patent owners to have their technologies included in the standard will be transformed into a situation where only those technologies selected for inclusion in the standard may be used to produce the standardized products.

Individual implementers have little choice but to practice the interoperability standards to which other implementers adhere. Products that fail to use one or more of the "standard-essential" technologies would, at least to some extent, be incompatible with standard-compliant products. Devices such as cellular telephones, tablets, and personal computers derive considerable value from being used to communicate with other devices. Therefore, device suppliers know the demand for their products would be significantly reduced if they choose not to employ the standard-essential technologies.

For any given aspect of a standard, an SSO may choose among patented technologies and, when available, technologies that are in the public domain. When the technologies selected are patented and the standard has been adopted widely by consumers and implementers, the effect is to endow the patent holders with monopoly power over "their" aspects of the standard.[8] Absent contractual or legal constraints to the

6. Some participants may be both patent owners and manufacturers of the products that implement these technologies and some may be producers of both final and intermediate products.

7. In the language of economics, technologies are "complements" when they are used together. In contrast, technologies are "substitutes" when an implementer will use more of one and less of another when the price of the first technology is increased relative to that of the second.

8. Economists would instead say that the patent holders would achieve and exercise market power under these circumstances. This distinction is of no consequence. *See* Thomas G. Krattenmaker et al., *Monopoly Power and Market Power in Antitrust Law*, 76 GEO. L.J. 241, 246

contrary, each such patent owner could demand, and obtain supracompetitive royalties from implementers who made irreversible investments to develop or otherwise participate in the production and sale of standard-compatible products. Since, by definition, any producer of products that adhere to a standard, which are technologically "essential" to that standard, implementers who refuse to pay such royalties could be subjected to litigation. Patent owners may then seek patent damages or injunctions, which could prevent implementers from selling products that conform to the standard.[9]

When confronted with such risks, implementers may thus be willing to pay the demanded royalties to avoid such risks.[10] More generally, implementers could avoid these potential costs by agreeing to pay royalties less than or, at most, equal to these expected costs. These royalties, however, are more than what the same patents could have commanded before the standard was adopted. The economic theory of bargaining predicts that the actual magnitude of the royalties will depend on, among other things, the opportunity costs that each side faces if no licensing agreement is reached. Here, the party that stands to lose the most has less "bargaining leverage."[11]

SSOs generally adopt policies that may, in principle, limit the abilities of owners the given technologies included in their standards to extract monopoly rents by engaging in hold-up. These policies typically require patent owners that participate in SSOs to disclose which of their patented technologies might "read on" an aspect of a standard that is being

(1987) ("[M]arket power and monopoly power are qualitatively identical concepts—both terms refer to anticompetitive economic power that ultimately can compromise consumer welfare.").

9. Commonly referred to as "hold-up," this situation appears "when a gap between economic commitments and subsequent commercial negotiations enables one party to capture part of the fruits of another's investment." Joseph Farrell et al., *Standard Setting, Patents, and Hold-up: A Troublesome Mix*, 74 ANTITRUST L.J. 603 (2007).

10. The concept of "hold-up" is most clearly illustrated in the case where a SEP holder can seek injunctions that prevent the implementer from producing or selling standard-compatible products. This confronts the implementer with the possibility that it will not be able to recoup its up-front costs of product development, or to earn profits going forward from the sale of such products. To avoid these outcomes, the implementer would be willing to pay supracompetitive royalties. *See, e.g.*, Carl Shapiro, *Injunctions, Hold-Up, and Patent Royalties*, 12 AM. L. & ECON. REV. 280, 307 (2010). The same principle applies when the expected cost of not accepting the patent holder's demanded royalty is costly litigation.

11. *See generally* Aviv Nevo, Deputy Assistant Att'y Gen., U.S. Dep't of Just., Mergers that Increase Bargaining Leverage, Remarks as Prepared for the Stanford Institute for Economic Policy Research and Cornerstone Research Conference on Antitrust in Highly Innovative Industries at 3-5 (Jan. 22, 2014), https://www.justice.gov/atr/file/517781/download [https://perma.cc/VT29-TDMD] (distinguishing the concepts of "bargaining leverage" and "bargaining power").

developed. Once the standard is set, such patent owners then must commit to charging "fair, reasonable and nondiscriminatory" (FRAND) royalties to implementers that produce products that employ the standard.[12]

Daniel Swanson and William Baumol have proposed that SSOs employ "an appropriately designed auction-like process intended to yield detailed RAND commitments by IP holders."[13] Under their proposal, patent owners would state the royalties that they would charge if their technologies were included in a standard. Then implementers would, for each aspect of the standard, select among bidders based on the proposed royalties and the features of the various technologies. This would permit competition among alternative technologies to determine the royalties to be paid for the right to practice each standard-essential patent.

Although the auction process proposed by Swanson and Baumol would overcome the hold-up problem, I am not aware of any SSO that has adopted this proposed arrangement. This is not surprising. Patent owners are unlikely to support an arrangement that would encourage competition amongst themselves before a standard is adopted, as such competition would pressure them to accept lower royalties. Moreover, this arrangement would impose well-defined limits on the license fees that the patent owners could charge after their technologies had been included in a standard. Indeed, as I discuss below, patent owners have resisted the adoption of SSO policies that would place even more modest limits on their ability to engage in hold-up.

Importantly, patent holders that currently participate in the activities of SSOs are not, as in the Swanson-Baumol proposal, limited to *proposing* technologies for inclusion in a standard. Rather, patent holders, along with implementers, play a role in *determining* the technical characteristics of the standards that are adopted. By contrast, under the Swanson-Baumol proposal, patent owners would only be able to "decline to participate in the [SSO] altogether, or withdraw from consideration of a particular standard in which they have an interest."[14]

In a survey of the organization and behavior of SSOs conducted on behalf of the European Commission, Justus Baron, Jorge Contreras,

12. *See* Daniel G. Swanson & Willian J. Baumol, *Reasonable and Nondiscriminatory (Rand) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1, 5 (2005).

13. *Id*. at 18 (footnote omitted); *see also* Harold Demsetz, *Why Regulate Utilities?*, 11 J.L. & ECON. 493, 503 (1978) ("A franchise system that awarded the franchise to that company which seemed to offer the best price-quality package would be one that allowed market competition between bidding rivals to determine that package.").

14. Swanson & Baumol, *supra* note 12, at 17 (footnote omitted).

Martin Husovec, and Pierre Larouche (Baron et al.) distinguish between "firms that generally seek to derive significant revenue from the licensing of SEPs (patent-centric firms)" and "firms that participate in standardization activities but derive their principal revenue from the sale of standardized products and do not seek to derive significant revenue from the licensing of SEPs (product-centric firms)."[15] They find that:

> Most Product-Centric firms stated that it would be beneficial to have more guidance from SDOs [standard development organizations] regarding the meaning of licensing commitments, . . . more guidance regarding the specific obligations arising out of a FRAND commitment, . . . SDO participation in the formation of patent pools covering standards, . . . and SDO determination of the aggregate royalty rates applicable to particular standards . . . .[16] but that, in contrast, "[p]atent-centric firms on average did not support these measures . . . .[17]

Some argue that incentives to develop innovative technologies and to submit them to SSOs, for consideration for inclusion in their standards, would be adversely affected if SSOs were to adopt policies that limited patent holders' abilities to profit from their innovations.[18] They claim, for example, that such policies could reduce profits by mandating royalty-free licensing, limiting the ability of patent holders to take legal actions against putative infringers, or requiring FRAND royalties that approximate those that would emerge from the Swanson-Baumol auction process.[19]

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15. Joint Research Centre, *Making the Rules: The Governance of Standard Development Organizations and Their Policies on Intellectual Property Rights*, at 37, JRC115004 (2019), https://data.europa.eu/doi/10.2760/48536 [https://perma.cc/UV7P-WE55].

16. *Id*. at 133.

17. *Id*.

18. *See*, *e.g*., J. Gregory Sidak, *The Meaning of FRAND, Part I: Royalties*, 9 J. COMPETITION L. & ECON. 931, 978 (2013) ("The firm's investment decision will directly reflect its expectations about the value of these innovations. As the expected revenues from a FRAND royalty fall, investment will fall for any SSO participant that expects to be a net licensor of SEPs *ceteris paribus*.") *and* Makan Delrahim, Assistant Att'y Gen., U.S. Dep't of Just., "Broke . . . but Not No More": Opening Remarks: Innovation Policy and the Role of Standards, IP, and Antitrust (Sept. 10, 2020), https://www.justice.gov/opa/speech/file/1316251/download [https://perma.cc/9ZJ9-3W59] ("Standards processes can be susceptible to capture by specialized interests . . . . [t]he Antitrust Division will act where a preference for certain stakeholders' interests tend to result in diminished innovation and worse consumer experiences.").

19. Other commentators have claimed that innovation would suffer if patent holders were unable to obtain injunctions against implementers that resist paying what they consider to be excessive SEP royalties. *See, e.g*., Joshua D. Wright, *SSOs, FRAND, and Antitrust: Lessons from the Economics of Incomplete Contracts*, 21(4) GEO. MASON L. REV. 791 (2014) (footnote omitted)

Even if this claim were correct, implementers might nonetheless prefer a situation where the pace of innovation was slowed but the royalty payments to patent owners were reduced. This would occur if implementers anticipated that this cost reduction would exceed the increased sales revenues of standardized products that embody more rapid innovations. Such an outcome would be averse to the interests of consumers if the effect caused the quality of implementers' products to be less than what would be socially optimal. However, even final consumers might ultimately benefit to the extent that lower patent royalties would result in lower product prices.

Moreover, it is not obvious that an SSO's policies, which restrict the monopoly power of technology sponsors (i.e., developers of new technologies), result in slower innovative activity. Chiao, Lerner, and Tirole (Chiao et al.) term such SSO conduct, which redounds to the benefit of practicing entities, as "user friendliness."[20] In their empirical analysis, Chiao et al. estimate the weight attached to sponsor "benefits" by an SSO—"the weighting factor"—is the "opposite of user friendliness."[21] They find a positive correlation between this weighting factor and "the maturity level of standards in a technological field."[22] Since they interpret maturity as a measure of the "attractiveness" of the standard to technology users (i.e., practicing entities), they conclude that there is "a positive correlation between the sponsor friendliness of the selected SSO and the quality of the standard."[23]

One interpretation of this finding is that SSO policies favoring the interests of patent owners encourages innovation because innovation within the standard presumably increases the standard's "attractiveness" to practicing entities. However, this interpretation fails to account for the fact that:

("Ex post interpretation of F/RAND commitments to preclude injunctive relief can deprive the parties of the benefit of their bargain, undercompensate patent holders relative to ex ante expectations, and reduce incentives for innovation and the commercialization of innovation.").

20. Benjamin Chiao et al., *The Rules of Standard-Setting Organizations: An Empirical Analysis*, 38(4) RAND J. OF ECON. 905, 906 (2007).

21. Chiao et al. assume that the SSO's objective is to maximize $U + \alpha\pi$, where U is "the utility of the users of the technology considered by the SSO," π is the patent owner's profit, and α is the "weighting factor." In this model, α is assumed to represent the importance to the SSO of the patent owner's profits, *id*. at 3. The utility of technology users is assumed to depend linearly on measures of (i) the strength of the proposed standard, (ii) the quality of the patent from users' perspective, and (iii) the extent of concessions made to users, such as SSO rules that require the patent holder to license IP that is critical to the standard, *id*. at 910.

22. *Id*. at 927.

23. *Id*. at 905.

> Technology maturity refers to where on the evolutionary curve a given technology is . . . . a mature technology is . . . [indicated by] a reduction in the rate of new breakthrough advances related to it—whereas inventions related to a (popular) immature technology are usually rapid and diverse, and may change the whole use paradigm—advances to a mature technology are usually incremental improvements only.[24]

Here, technological "maturity" is a measure of the *slowness* with which the technologies that are incorporated into the standards of an SSO are improving. In that case, one would conclude that SSOs where technology owners' interests are given large weights tend to be ones in which the technologies in their standards are "old," while in comparison, implementer-friendly SSOs would exhibit more rapid technological progress.

In wireless telecommunications and other markets where standards are important, innovation has been rapid without the implementation of rules that place limits on standard-essential patent (SEP) royalties. This suggests to some that hold-up by SEP owners is not a significant problem in these markets.[25] However, because lower patent royalties translate into lower costs to practicing entities, economic analysis predicts that SEP owners' incentives to invest in new product development and the adoption of these products by users would have been even greater under these circumstances.

In any event, SSOs commonly require owners of the technologies that are included in an SSOs' standards to commit to charging FRAND royalties.[26] However, despite a broad, although not unanimous, consensus among economists and others that FRAND royalty rates should reflect the *ex ante* competition among technologies, controversy exists among jurists

24. *Technological Maturity*, IT LAW WIKI, https://itlaw.wikia.org/wiki/Technology_maturity (last visited on Oct. 3, 2022) [https://perma.cc/P9HD-5R5K].

25. *See*, *e.g.*, Richard S. Taffet & Hill B. Wellford, *Questioning the FTC's Incremental Value Test and Claims of Widespread Hold-up in Technology Standards*, 57 ANTITRUST BULL. 161 (2012).

26. A number of industry consortia that administer standards are reported to require patent owners to license their technically essential patents on a royalty-free basis (as opposed to on a FRAND basis, which generally speaking gives rise to positive royalties). *See* Brad Biddle et al., *How Many Standards in a Laptop? (And Other Empirical Questions)*, PROC. 2010 ITU-T KALEIDOSCOPE ACAD. CONF. 123, 124 (2010) (listing, among other things, consortia requiring royalty-free licensing of essential patents).

and other interested parties regarding how to translate that commitment into a specific royalty rate in for a particular situation.[27]

In this Article, I argue that owners of patented technologies that are either candidates for inclusion in standards or are already included in standards exert significant influence on the decisions made by SSOs. This exerted influence then contributes to royalties for the use of those technologies that exceed competitive, or FRAND, rates. Specifically, patent owners strongly resist efforts by other members of SSOs to limit the royalties that may be charged for the use of the technologies that are incorporated into a standard, i.e., SEPs.

Patent owners have a common interest in this regard because their profits are higher when their royalties exceed levels corresponding to the results of *ex ante* competition, although such conduct can benefit SEP holders in other ways.[28] SEP holders who are vertically integrated into the sale of standardized products will not, as a matter of economics, charge royalties to their downstream practicing-entity units that are in excess of competitive levels. On the other hand, by charging *supra*competitive royalties to practicing entities that do not own SEPs, vertically integrated SEP holders can raise the marginal costs of these downstream rivals. This permits the vertically integrated SEP holders to increase their profits from sales of standardized products. Because their higher marginal costs force other practicing entities to charge higher prices, the effect is that consumers purchase less of the rivals' products. Further, consumers may be driven to purchase more of those offered by the SEP holder, which, potentially, permits the SEP holder to charge higher prices for its own devices. Meanwhile, these vertically integrated SEP holders can avoid paying supracompetitive royalties for other SEPs by engaging in cross-licenses with other SEP owners.

Patent owners, both individually and collectively, have an incentive to attempt to obtain royalties for SEPs that exceed the *ex ante* incremental values of the underlying technologies. However, it could be argued that there are significant constraints on a patents owner's ability to obtain such

27. *See* Swanson & Baumol, *supra* note 12 at 10-11 ("[T]he concept of a 'reasonable' royalty for purposes of RAND licensing must be defined and implemented by reference to *ex ante* competition, i.e., competition in advance of standard selection."); *see* Mark A. Lemley & Carl Shapiro, *A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents*, 28 BERKELEY TECH. L.J. 1135 (2013) ("The incremental value of the patented technology over and above the next-best alternative serves as an upper bound to the reasonable royalties.").

28. Although SEP holders as a group would maximize their profits by charging royalties greater than competitive rates but lower than they would charge independently (that is, without regard to the complementarities among their various SEPs), they still have a common interest in having royalties exceed those that would prevail under *ex ante* competition.

royalties. One such constraint may be the patent owner's commitment if the patent owner participates in the activities of SSOs to accept FRAND royalties as payments while their patents are incorporated into a standard. Another constraint derives from the fact that implementers may seek redress from the courts if the implementers believe that the royalties requested exceed FRAND levels. Generally, however, these constraints are insufficient to prevent SEP holders from demanding royalties in excess of the *ex ante* incremental values of their patents.

When deciding which technologies to include in a new or updated standard, the participants in an SSO will likely have access to the information required to estimate the incremental values of each selected technology. The participants would know, for example, which alternative technologies exist and the relative merits of each technology. Moreover, such participants would have reached conclusions as to the "best" technologies, placing them in the best position to estimate the extent to which the "best" technologies are "better" than their next-best alternatives.

The same cannot be said for the courts. Speaking generally, judges and juries are not technologists. Moreover, judges and juries may reach their conclusions only after significant time has passed since the standardization process, terminating the competition among technologies. As a result, judges and juries are forced to employ imperfect alternatives when adjudicating royalty disputes for SEPs.[29]

Moreover, SSOs generally do not specify with any precision the method by which FRAND royalties are to be calculated.[30] Under these circumstances, SSOs impose no specific limits on the royalties that the owners of SEPs may demand. Finally, and importantly, technology sponsors have strongly resisted efforts to give greater precision to the concept. As Lee and Melamed have noted, "most SSOs require their members to commit to license any SEPs they hold on fair, reasonable, and nondiscriminatory (FRAND) terms."[31] This likely reflects the significant influence patent owners wield over SSO decision-making. Further, as Lee and Melamed observe, because of this lack of specificity, "[c]ourts have struggled to make such calculations, and no two courts have taken the same approach."[32]

29. *See* Stanley M. Besen, *Why Royalties for Standard Essential Patents Should Not Be Set by the Courts*, 15 CHI.-KENT J. INTELL. PROP. 19, 48 (2016).

30. William F. Lee & A. Douglas Melamed, *Breaking the Vicious Cycle of Patent Damages*, 101 CORNELL L. REV. 425, 430 (2016).

31. *Id.* at 429-30 (footnote omitted).

32. *Id.* at 430 (footnote omitted).

In a recent proposal, the European Commission attempts to address what it identifies as one of the "key problems" in SEP licensing—"[l]ack of transparency on the FRAND royalty rate"[33]—and provides for a "conciliator" that "shall assist the parties in an independent and impartial manner in their endeavour to reach a determination of FRAND terms and conditions."[34] Under the proposal, "[t]he FRAND determination must be initiated by the SEP holder or implementer before initiating respective court proceedings in the EU."[35] However, under the proposal, "[i]f the parties do not settle at the end of the procedure, the conciliator will terminate the procedure and issue a report on the determination of FRAND terms and conditions."[36] The Commission goes on to note that "[t]he report would thus have a dual purpose to encourage the parties to settle and to provide transparency as to the process and the recommended FRAND terms in cases of disagreement."[37] However, the terms and conditions proposed by the conciliator would not be binding.

In an adjudicatory setting, patent owners are provided an opportunity to seek and to obtain SEP royalties in excess of what many economists would consider to be FRAND levels. Among the ways in which patent owners may seek such supra-FRAND royalties are: (1) claiming that their patents are more essential to the standard than is, in fact, the case;[38] (2) stating their royalty demands as a percentage of the price of the final product instead of as a percentage of the price of the component of the product in which the patented technology is actually practiced;[39] (3) refusing to license entities in the supply chain other than to those that

33. *Commission Proposal for a Regulation of the European Parliament and of the Council on Standard Essential Patents and Amending Regulation (EU) 2017/1001*, at 6, COM (2023) 232 final (Apr. 27, 2023).

34. *Id.* at 50.

35. *Id.* at 13.

36. *Id.*

37. *Id.* at 23.

38. *See, e.g.*, Unwired Planet Int'l Ltd v. Huawei Techs. Co. Ltd, [2018] EWCA (Civ) 2344, [2018] R.P.C. 20, 791 ("Over-declaration is a substantial problem . . . .") *and* TCL Communication Technology Holdings, Ltd. v. Telefonaktiebolaget LM Ericsson, No. SACV 14–341 JVS, 2017 WL 6611635, at n.10 (C.D. Cal. Dec. 14, 2020) ("ETSI's process does not assess whether declared patents actually are essential. This leads to a substantial over-declaration of patents.").

39. *See, e.g.*, Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1338 (Fed. Cir. 2009) (**"**The district court implicitly recognized that any damages computation based on the value of the entire computer using common royalty rates (e.g., 1-5%) would be excessive") *and* LaserDynamics Inc. v. Quanta Comput. USA, Inc., 694 F.3d 51, 52 (Fed. Cir. 2012) ("Where small elements of multi-component products are accused of infringement, calculating a royalty on the entire product carries a considerable risk that the patentee will be improperly compensated for non-infringing components of that product . . . .").

produce the final product in which their technologies are embedded;[40] and (4) threatening to impose costs on implementers that refuse to pay excessive royalties, such as through the costs of litigation over patent damages or through the imposition of injunctions.[41] These tactics are discussed in some detail below.

II. STANDARD-SETTING ORGANIZATIONS DO NOT EFFECTIVELY LIMIT SEP ROYALTIES

Most SSOs have articulated policies that require participating patent owners to commit to charging FRAND royalties. Despite their widespread use of the term, SSOs generally fail to provide a method by which those rates are to be determined. Anne Layne-Farrar noted, for example, that "[n]o SSO . . . explains precisely what it means by 'reasonable and non-discriminatory' licensing."[42] Similarly, Jorge Contreras observed that "[n]o SDO defines, even broadly, how to calculate royalty rates that are FRAND."[43] Damien Geradin and Michael Rato noted that "[d]espite its prevalence in the IPR policies of the majority of SSOs, virtually no such policies define the FRAND commitment as specifying or dictating a particular licensing result."[44] Similarly, the Competition Committee of the Directorate for Financial and Enterprise Affairs of the OECD has observed that "[w]hile many SSO policies require a FRAND commitment, those policies often provide little guidance as to what this entails, leaving the details to be worked out through bilateral arms-length negotiations."[45] Indeed, at least one major

40. *See* FTC's Complaint for Equitable Relief at ¶ 6, Federal Trade Commission v. Qualcomm Inc., 411 F.Supp.3d 658 (N.D. Cal. 2019) (No. 17-CV-00220). The lower court decision in favor of the FTC was reversed by the Court of Appeals for the Ninth Circuit. FTC v. Qualcomm Inc., 969 F.3d 974 (9th Cir. 2020) ("Qualcomm's refusal to license its competitors bolsters its ability to maintain elevated royalties and other unreasonable license terms. Qualcomm's competitors, unlike its customers, do not depend on Qualcomm for baseband processor supply, and would be better positioned than customers to negotiate licenses on FRAND terms.").

41. FTC's Complaint for Equitable Relief, *supra* note 35, at ¶ 2.

42. Anne Layne-Farrar, *How to Avoid Antitrust Trouble in Standard-Setting: A Practical Approach*, 23 ANTITRUST 42, 43 (2009).

43. Jorge L. Contreras, *Global Rate Setting: A Solution for Standards-Essential Patents?*, 94 WASH. L. REV. 701, 705 (2019) (footnote omitted).

44. Damien Geradin & Michael P.L. Rato, *Can Standard-Setting Lead to Exploitative Abuse? A Dissonant View on Patent Hold-Up, Royalty Stacking and the Meaning of FRAND*, 3(1) EUR. COMP. J. 101, 112 (2007) (footnote omitted).

45. Organisation for Economic Co-operation and Development [OECD], *Intellectual Property and Standard Setting: Note by BIAC*, OECD DAF/COMP/WD(2014)128 (Dec. 10,

SSO (the European Telecommunications Standards Institute), which requires technology sponsors to declare their patents as standard-essential and to license them at FRAND rates, has specifically refused to define FRAND.[46]

In 2012, the Deputy Assistant Attorney General in the Antitrust Division of the United States Department of Justice (DOJ), Renata Hesse, observed that "standards bodies, and their members, have long-recognized the inherent ambiguity of a commitment to license patents essential to a standard on reasonable and non-discriminatory terms—after all, what do 'reasonable' and 'non-discriminatory' actually mean?"[47] Finally, Andy Updegrove, asked rhetorically, "[w]hy don't companies simply agree on a definition for FRAND when they form a consortium, the way they do with so many other complex elements of a typical IPR policy?," and observed that "[f]or the last twenty-five years, I have tried to interest my consortium clients in addressing this issue head on, and have virtually never been successful in persuading them to even incrementally add to the definition of what FRAND should mean."[48]

Relatedly, SSOs have avoided calculating FRAND royalties or using the results of such calculations when deciding whether to include a patent holder's technology in their standards.[49] Some have expressed a concern that setting FRAND rates would add further delays to an already time-consuming standard setting process.[50] Others have attributed the reluctance of SSOs to become more engaged in the rate-setting process to SSOs' desire to avoid possible antitrust liability if such behavior were

2014), https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/WD(2014)128&doclanguage=en [https://perma.cc/H3LS-KADK].

46. *See Statement Regarding IPR*, ETSI, https://www.etsi.org/about/legal (last visited Oct. 3, 2022) [https://perma.cc/QSL5-QWQF].

47. *Renata Hesse*, *U.S. Dept. of Just*., *Six 'Small' Proposals for SSOs Before Lunch* (2012), https://www.justice.gov/atr/file/518951/download [https://perma.cc/Z8C5-HA25].

48. Andy Updegrove, *Judge Robart's Opinion in Motorola vs. Microsoft and the Future of FRAND*, CONSORTIUMINFO (Apr. 29, 2013), https://www.consortiuminfo.org/standardsblog/article.php? story=20130429084333251 [https://perma.cc/8JBR-355E].

49. *See* Lemley & Shapiro, *A Simple Approach to Setting Reasonable Royalties*, *supra* note 27, at 1148.

50. *See*, *e.g.*, *Guide on Intellectual Property Rights, (IPRs) Version Adopted by Board #133*, ETSI 72 (June 10, 2021) [hereinafter *Guide on Intellectual Property Rights*], https://www.etsi.org/images/files/IPR/etsi-guide-on-ipr.pdf [https://perma.cc/LXY6-G5YV] ("Specific licensing terms and negotiations are commercial issues between the companies and shall not be addressed within ETSI. Technical Bodies do not have the competence to deal with commercial issues.").

seen as anticompetitive.[51] Alternatively, some have argued that the failure to determine FRAND rates is simply an inevitable result of the inherent incompleteness of existing contracts between patent owners and SSOs. For example, Joanna Tsai and Joshua Wright have argued that "[t]he efficiency rationale for incomplete contracts identifies an intuitive tradeoff between more complete contracts, which may generate benefits in the form of reducing the expected value of holdup costs, and the additional costs of precision, both in terms of additional negotiation and rigidity of court enforcement as compared to self-enforcement."[52] Of course, these complexities are even more difficult to address by third parties, such as courts, who inevitably have less information and expertise than do the members of SSOs concerning the relevant factors.

Finally, it has been argued that it is difficult to compute *ex ante* incremental values for individual SEPs.[53]

In this Article, I focus on a more straightforward explanation: patent owners that participate in SSOs resist having the SSOs become involved in rate-setting in order to increase their bargaining leverage in royalty negotiations with implementers after a standard is adopted.[54] This explanation is consistent with the results of Chiao et al., who found "a negative relationship between the SSOs' orientation toward sponsors and

51. *See* Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting*, 1 INNOVATION POL'Y ECON. 119, 128 (2021) ("[M]any standard setting organizations are wary of sanctioning any specific agreement regarding the magnitude of licensing terms for fear of antitrust liability, as such agreements might be construed as price fixing."). Interestingly, the then-Chairman of the Federal Trade Commission, Deborah P. Majoras argued that allowing patent owners to state their intended royalty rates before a standard is adopted or allowing SSO members to engage in "joint *ex ante* royalty discussions" would not necessarily raise antitrust concerns. Deborah Platt Majoras, *Recognizing the Procompetitive Potential of Royalty Discussions in Standard Setting*, FTC at 6 (Sept. 23, 2005) (footnote omitted), https://www.ftc.gov/sites/default/files/documents/public_statements/recognizing-procompetitive-potential-royalty-discussions-standard-setting/050923stanford.pdf [https://perma.cc/N7LE-KMUN].

52. Joanna Tsai & Joshua D. Wright, *Standard Setting, Intellectual Property Rights, and the Role of Antitrust in Regulating Incomplete Contracts*, 80 ANTITRUST L.J. 157, 164 (2015) (footnote omitted).

53. Sidak, *supra* note 18, at 953 ("Standard-essential patents can be viewed only in terms of their combinatorial value—not their incremental value . . . . Once a patent is essential to the standard, the hypothetical-negotiation framework used to determine the royalties for implementation patents does not apply.").

54. Richard Li & Richard L. Wang, *Reforming and Specifying Intellectual Property Rights Policies of Standard-Setting Organizations: Towards Fair and Efficient Licensing and Dispute Resolution*, 2017 J.L. TECH.& POL'Y 1, 5 (2017) (SSOs "avoid specifying license terms" that there exist "conflicts of interest among SSO members."). The "conflict," of course, is that developers desire higher patent royalty rates than do implementers.

the strength of the concessions they demand."[55] In other words, Chiao et al. determined that the *larger* the influence of technology sponsors (that is, owners of potential SEPs) in an SSO, the *weaker* the concessions that the SSO will demand from those sponsors.[56] The remainder of this section describes the activities of a number of major SSOs that are generally consistent with the ability of patent owners to exercise significant influence on SSO policies regarding the royalties that are charged for licensing standard-essential patents.

A. The 3rd Generation Partnership Project

The 3rd Generation Partnership Project (3GPP) is a consortium of seven telecommunications standard development organizations from around the world that develops standards for cellular telecommunications technologies, including radio access, core network, and service capabilities.[57] Under 3GPP's rules, members of the various standards development organizations are expected to declare any intellectual property rights "believe[d] to be essential, or potentially essential, to any work being conducted within 3GPP"[58] and "to make licenses [to their technologies] available to all third parties, whether or not they are 3GPP Individual Members, under fair, reasonable and non-discriminatory (FRAND) terms."[59] According to 3GPP, "[i]t is the responsibility of each manufacturer / system implementor to seek and obtain its own licenses from the individual IPR holders."[60] Thus, 3GPP plays no role in determining whether a proposed royalty is FRAND, nor does it provide any guidance as to how such a royalty might be calculated.

55. Chiao et al., *supra* note 20, at 906.

56. *Id.*

57. The members include The Association of Radio Industries and Businesses (ARIB), The Alliance for Telecommunications Industry Solutions (ATIS), China Communications Standards Association (CCSA), European Telecommunications Standards Institute (ETSI), Telecommunications Standards Development, India (TSDSI), Telecommunications Technology Association (TTA), and the Telecommunication Technology Committee (TTC). *Partners*, 3RD GENERATION PARTNERSHIP PROJECT [3GPP], https://www.3gpp.org/about-3gpp/partners (last visited Oct. 3, 2022) [https://perma.cc/8FY5-XKDR].

58. *Legal Matters*, 3GPP, https://www.3gpp.org/about-3gpp/legal-matters (last visited Oct. 3, 2022) [https://perma.cc/6CTW-RC6T].

59. *3GPP FAQ's*, 3GPP, https://www.3gpp.org/contact/3gpp-faqs (last visited Oct. 3, 2022) [https://perma.cc/ZR85-BDGX].

60. *Id.*

B. European Telecommunications Standards Institute

Beginning operations in 1988, the European Telecommunications Standards Institute (ETSI) is "the recognized [European] regional standards body dealing with telecommunications, broadcasting and other electronic communications networks and services."[61] ETSI's "standards are now used the world over."[62] Its three "leading principles" have been described as (1) the acceleration of the development of European telecommunications standards; (2) the use of a system of weighted voting when consensus cannot be obtained among its members regarding a proposed standard; and (3) the broadening of its membership beyond telecommunications administrations to include network operators, equipment manufacturers, service providers, and users.[63] Of ETSI's founding 212 members, twenty-seven were national administrations, twenty-seven were public network operators, 131 were manufacturers, twenty-one were users and private service providers, and six were research bodies.[64] Today, ETSI's membership has grown to more than 900 members, including Ericsson, Huawei, Intel, LG Electronics, Motorola, Nokia, Qualcomm, Samsung, and ZTE. Such firms represent the firms comprising the most significant holdings of telecommunications patents in the world.[65] Clearly, these firms, and other patent owners, have strong interests in having their technologies included in ETSI standards.

ETSI requires technology sponsors to license at FRAND rates if a sponsor declares their patents as technologically essential to practice an ETSI standard.[66] However, ETSI has declined to take any position as to the meaning of its intellectual property rights policies generally or FRAND requirements in particular. Rather, ETSI states that it:

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61. *About Us*, EUROPEAN TELECOMMUNICATIONS STANDARDS INSTITUTE [ETSI], https://www.etsi.org/about/about-us (last visited Oct. 3, 2022) [https://perma.cc/8RHL-43NU]; *see also Ofcom at the European Telecommunications Standards Institute (ETSI)*, OFCOM, https://www.ofcom.org.uk/about-ofcom/international/spectrum/etsi (last visited Oct. 3, 2022) [https://perma.cc/26YF-369F]. At the time of this writing, however, it appears that this SSO refers to itself only as ETSI.

62. *See* Chiao et al., *supra* note 20.

63. *See* Stanley M. Besen, *The European Telecommunications Institute, A Preliminary Analysis*, 14(6) TELECOMM. POL'Y 521, 522 (1990) (describing the ETSI in its early years).

64. *Id.*

65. *ETSI Directives*, ETSI at 55 (Feb. 2, 2020), https://portal.etsi.org/directives/41_directives_feb_2020.pdf [https://perma.cc/MU6E-4AKC]; *see* IAM, *Who is Leading the 5G Patent Race? July 2019 Update—Part One, for Relatively Recent Data on 5G Patent Declarations*, LEXOLOGY (July 24, 2019), https://www.lexology.com/library/detail.aspx?g=e1dc4072-1695-4279-b7fa-3fe3e19982b8 [https://perma.cc/7NMV-FENT].

66. *See Guide on Intellectual Property Rights, supra* note 50.

> [D]oes not take any position regarding the correct interpretation of its IPR policy and its IPR Guide . . . . It is reiterated that specific licensing terms and negotiations are commercial matters between the companies and shall not be addressed within ETSI. The basic principle of the ETSI IPR regime remains FRAND with no specific preference for any licensing model.[67]

However, if FRAND commitments are to have any meaning, they must limit the set of "licensing models" available to SEP owners. These limits would replace unrestricted, arms-length bargaining between SEP owners and potential licensees, including the royalties that would emerge from such negotiations, with a regime that would limit the royalties that SEP owners may charge.

ETSI's refusal to "take any position" or to "address specific licensing term" means that ETSI would never act against SEP owners that breached their FRAND commitments (however ill-defined), or even opine on behalf of practicing entities that allege that SEP owners had violated their FRAND commitments.[68] Instead, ETSI's stated approach favors SEP owners, who are then free to define FRAND in whatever manner is most favorable to them (e.g., as the highest royalty they can negotiate after the standard is established). SEP owners may take the position that their FRAND undertakings are to ETSI, pointing to ETSI's refusal to define FRAND to show that they cannot have violated these FRAND undertakings.[69]

Moreover, although ETSI members "are *encouraged* to make general IPR undertakings/licensing declarations" to make available licenses under FRAND terms,[70] ETSI members "do NOT have a duty to conduct IPR searches [or] disclose within the Technical Body the commercial terms for licenses for which they have undertaken to grant licenses under FRAND terms and conditions."[71] Thus, although ETSI participants may know of the existence of a *general* FRAND commitment by a patent holder at the time that a standard is being considered for

67. *Statement Regarding IPR*, ETSI, *supra* note 46; *see ETSI Directives*, ETSI, *supra* note 60, at 55 ("The basic principle of the ETSI IPR regime remains FRAND with no specific preference for any licensing model.").

68. *ETSI Directives*, ETSI, *supra* note 60, at 39.

69. *See also* Jorge L. Contreras, *Technical Standards and "Ex Ante" Disclosure: Results and Empirical Study*, 53(2) JURIMETRICS 163, 177-78 (2013).

70. *Guide on Intellectual Property Rights*, *supra* note 50, at ¶ 2.1.1 (emphasis added).

71. *Id.* ¶ 2.2; *see also* Martin Schiessl & Corien Prins, *The New European Standards Institute Policy: Conflicts Between Standardisation and Intellectual Property Rights*, 15(8) EUR. INTELL. PROP. REV. 263 (1993).

adoption, ETSI participants generally do not know the *specific* royalty rates (and other commercial terms) that the patent holder would demand if a standard that incorporated its technologies were adopted by ETSI.

C. VMEbus International Trade Association

The VMEbus International Trade Association (VITA) Standards Organization brings together vendors and users that "hav[e] a common market interest in real-time, modular embedded computing systems."[72] VITA has developed a variety of standards including "key computer bus, board, and system standards."[73] Notably, VITA has taken a different path as compared to ETSI or 3GPP with regard to the treatment of FRAND royalties. VITA notes its revolutionary actions, "becoming the first standards developer in the world to receive guidance for 'ex ante' procedures from any legal authority."[74] The VITA Standards Organization (VSO) policy contains two essential features in this regard.

First, the members of VITA working groups "*shall* disclose . . . the existence of all patents and patent applications owned, controlled, or licensed by the VITA member company."[75] Here, the use of the word "shall" contrasts with the use of the word "may" in the disclosure requirements of some other SSOs. In particular, this represents a "change from a voluntary system to a mandatory system of disclosing of essential patents and patent applications."[76]

Second, each VSO working group member must represent "that it will grant to any WG [working group] member, VITA Member Company, or third party a nonexclusive, worldwide . . . perpetual patent license . . . on fair, reasonable and non-discriminatory terms" and, significantly, it "*must* declare the maximum royalty rate for all patent claims that the VITA Member Company . . . owns or controls and that

72. *VITA*, https://www.vita.com (last visited Oct. 3, 2022) [https://perma.cc/WX3U-SGGC].

73. *Id.* ("Since VITA's inception in 1984, over 100 working groups have been formed to develop specifications and standards important to designers of critical and intelligent embedded systems around the world. Systems from medical imaging to space launch control, semiconductor processing to defense, depend on products based on VITA Technologies.").

74. *Id.*

75. *VITA Standards Organization (VSO) Policies and Procedures*, VITA § 14.1.1 (July 2022), https://www.vita.com/resources/Documents/Policies/VITA%20Standards%20Policies%20and%20Procedures%20%20Revision%203.1%20July%202022.pdf [https://perma.cc/2E9E-U68L].

76. *Disclosure and Licensing of Patents in Standards*, VITA, https://www.vita.com/Disclosure/vita-patent-policy-section-10-draft.pdf/ (last visited Oct. 3, 2022) [https://perma.cc/R8CR-6998].

may become essential to implement the VSO Draft Proposed Standard."[77] This contrasts with the situation at many other SSOs, which, at most, require patent owners to commit to FRAND licensing, but do not provide any detail about what the royalty rates would be nor even how they might be calculated.

The United States DOJ, Antitrust Division, has described the VSO policy as "a sensible effort by VITA to address a problem that is created by the standard-setting process itself. Implementation of the policy should preserve, not restrict, competition among patent holders."[78] The VSO patent disclosure and licensing policy is still in effect.

D. Institute of Electrical and Electronic Engineers Standards Association

The Institute of Electrical and Electronic Engineers Standards Association (IEEE-SA) has attempted to clarify the meaning of FRAND and otherwise increase the likelihood of competitive SEP royalties. IEEE-SA develops standards for the computer and electronics industries.[79] Moreover, IEEE-SA describes itself as "a consensus building organization," bringing together "a broad range of individuals and organizations from a wide range of technical and geographic points of origin to facilitate standards development and standards related collaboration."[80] In order to address the "inherent vagueness" of the FRAND commitments by patent holders during the standard-setting process, IEEE-SA adopted a policy in 2007 that *expressly* permitted a patent holder to disclose its proposed maximum royalty rates and other terms in a Letter of Assurance (LOA).[81] Contreras reports that:

> [B]y the mid-2000s IEEE members were becoming dissatisfied with the vagueness of the organization's FRAND licensing commitment and their inability to compare cost factors when debating the merits of multiple proposed technologies for inclusion in a standard. Thus,

77. *VITA Standards Organization (VSO) Policies and Procedures*, VITA, *supra* note 75, §§ 14.2.1-2.

78. Letter from Thomas O, Barnett, Assistant Att'y Gen., Dep't of Just., to Robert A. Skitol, Drunker, Biddle & Reath, LLP, Business Review Letter re Proposed Patent Policy 4 (Oct. 30, 2006) [hereinafter Letter from Thomas O. Barnett]., https://www.justice.gov/sites/default/files/atr/legacy/2006/10/31/219380.pdf [https://perma.cc/JH6Q-TX92].

79. *About Us*, IEEE-SA., https://standards.ieee.org/about/ (last visited Oct. 3, 2022) [https://perma.cc/YR4B-5DQJ].

80. *Id.*

81. *See generally* Contreras, *Technical Standards and "Ex Ante" Disclosure*, *supra* note 69.

> in early 2005, IEEE members proposed further revisions to IEEE's patent policy that, among other things, would require ex ante disclosure of maximum royalty rates and other licensing terms . . . .

Like VITA, IEEE-SA requested a business review from the DOJ and, on April 30, 2007, the DOJ responded positively to IEEE-SA's proposed ex ante policy. The DOJ recognized that IEEE-SA working group members would be able to make "better informed decisions" by considering the cost of competing technologies along with their technical merits.[82]

Thus, whereas VITA *required* the disclosure of the maximum royalty that a patent holder would charge if its technologies were included in a standard, the IEEE-SA *permitted* such disclosures.[83] As a result, the members of the IEEE-SA know *either* the maximum royalty that a patent holder would charge *or* that the patent holder had declined to make such a disclosure. Significantly, of the approximately forty Letters of Assurance that IEEE-SA received that disclosed proposed license terms during the period when this policy was in force, only two disclosed the maximum royalty rates that the patent holder would demand.[84]

Subsequently, the IEEE-SA proposed a revision of the policy, the purpose of which was "to provide greater clarity on issues that have divided SEP owners and standards developers in recent years."[85] Specifically, the policy defined a reasonable rate as one that provided "appropriate compensation to the patent holder for the practice of an Essential Patent Claim excluding the value, if any, resulting from the inclusion of that Essential Patent Claim's technology in the IEEE Standard."[86] In addition, "the policy provide[d] three factors that should be considered . . . in determining a reasonable rate."[87] These factors were: (1) the contribution of the patent to the value of the "smallest saleable Compliant Implementation" that practices the patent; (2) the contribution of the patent to the smallest saleable Compliant Implementation "in light of the value contributed by all Essential Patent Claims for the same IEEE

82. JORGE L. CONTREREAS, NAT'L INST. OF STANDARDS AND TECH., GCR 11-934, AN EMPIRICAL STUDY OF THE EFFECTS OF EX ANTE LICENSING DISCLOSURE POLICIES ON THE DEVELOPMENT OF VOLUNTARY TECHNICAL STANDARDS at 11 (2011) (footnotes omitted).

83. *Id.* at 26.

84. Letter from Michael A. Lindsay, Esq., Dorsey & Whitney LLP, to Hon. William J. Baer, Assistant Att'y Gen., U.S. Dept. of Just. at 10 (Sept. 30, 2014) [hereinafter Letter from Michael A. Lindsay], https://www.justice.gov/sites/default/files/atr/legacy/2015/02/17/311483.pdf [https://perma.cc/MW8U-2PSG].

85. *Id.* at 15.

86. *Standards Board Bylaws Clause 6-8*, IEEE-SA, 3, § 6.1, https://standards.ieee.org/about/policies/bylaws/sect6-7/ (last visited Oct. 3, 2022) [https://perma.cc/6W8A-6MA6].

87. Letter from Michael A. Lindsay, *supra* note 87, at 15.

Standard practiced in that Compliant Implementation"; and (3) the "[e]xisting licenses covering use of the same Essential Patent Claim," provided they are "comparable" and were not obtained under the "threat of a Prohibitive Order."[88] Significantly, although the definition of a "reasonable rate" would apply to all essential patent claims for which the IEEE-SA had accepted a letter of assurance, a patent holder would be able to avoid a FRAND commitment and still participate in the standard-setting activities of IEEE-SA even if it did not submit an LOA.[89]

Although the policy did not prescribe a specific methodology for calculating FRAND royalties for SEPs, it nonetheless proved to be highly controversial. For example, InterDigital expressed concern about "the negative impact [that the change] would have on patent holders and on the IEEE standard-development process itself."[90] Similarly, Qualcomm wrote that "a host of technological contributors to IEEE standards have warned that the changes would negatively affect their willingness to contribute technology to IEEE standards and make them wary about participating in the IEEE standards-development process."[91]

Such adverse reactions by SEP holders to the IEEE-SA rules are consistent with the view that these rules would "greatly devalue SEPs," i.e., that the rules would limit the royalties that SEP holders may charge under their FRAND obligations.[92] Among the IEEE-SA requirements singled out as having such effects are the limitation on injunctions and the specification of royalties.[93] Presumably, IEEE-SA's constraints on injunctions would "devalue SEPs" because such constraints reduce SEP holders' bargaining leverage during licensing negotiations with implementers. Likewise, the rule requiring a SEP royalty base to be the value of the "smallest saleable compliant implementation" who practices

88. *Id.* at 16.

89. *Id.* at 15-16.

90. *See InterDigital and IEEE*, INTERDIGITAL, INC., https://www.interdigital.com/page/interdigital-and-ieee, (last visited Oct. 3, 2022) [https://perma.cc/YA8N-SQG2].

91. Rick Nelson, *Qualcomm Responds to Updated IEEE Standards-Related Patent Policy*, ELEC. DESIGN (Feb. 11, 2015), https://www.evaluationengineering.com/industries/communications/wireless-5g-wlan-bluetooth-etc/article/13010984/qualcomm-responds-to-updated-ieee-standardsrelated-patent-policy [https://perma.cc/WXD7-CD39].

92. Alden Abbott, *IEEE Patent Policy Change Would Undermine Property Rights and Innovation*, TRUTH ON THE MARKET (Feb. 4, 2015), https://truthonthemarket.com/2015/02/04/ieee-patent-policy-change-would-undermine-property-rights-and-innovation/ [https://perma.cc/DU7X-KW4B].

93. *Id.*

the SEP apparently would "devalue SEPs" because this would lead to substantially lower royalty payments to SEP holders.[94]

In principle, any given royalty payment can be determined using an infinite number of combinations of royalty bases and percentage royalty rates, such as small royalty bases together with high royalty percentages or large royalty bases together with low royalty percentages.[95] However, it has been, at least implicitly, argued by SEP holders and others that setting the royalty base equal to the value of completed products, rather than what is generally the much smaller value of the smallest saleable compliant unit, permits IP sponsors to obtain higher royalty payments.[96] This has been rationalized as being necessary to permit patent holders to obtain what they consider to be a fair return on their innovations.[97]

Notwithstanding the objections raised by patent holders, the new IEEE-SA patent policy was adopted in 2015. Kirti Gupta and Georgios Effraimidis studied the response by patent holders to the policy by the extent of submissions of LOAs to IEEE-SA by patent holders.[98] They found that: (1) the number of new "positive" LOAs declined by 91% and

94. Letter from Michael A. Lindsay, *supra* note 79 at 16; Abbot, *supra* note 87, at 1. Similarly, the Fair Standards Alliance (FSA) agrees that setting the royalty base at the value of completed products increases the royalties collected by the SEP holders. *Fair Standards Alliance: An Introduction*, FAIR STANDARDS ALL. [FSA] 3 (Nov. 12, 2015), https://fair-standards.org/wp-content/uploads/2016/08/FSA-POSITION-PAPER-June2016.pdf [https://perma.cc/R5UW-44GA]. The FSA also contends that by setting the royalty base equal to the value of completed products, SEP holders become able capture not only the economic values of their SEPs, but also of others' technologies, *id*.

95. *See*, *e.g.*, *LTE/WiMax Patent Licensing Statement*, QUALCOMM TECHS., INC. at 1-2 (Dec. 2008), https://www.qualcomm.com/content/dam/qcomm-martech/dm-assets/documents/lte-wimax-patent-licensing-statement_1.pdf [https://perma.cc/QBS4-87PW] ("Qualcomm expects that it will charge royalties for a license under its standards essential LTE patents and/or standards essential WiMax patents for complete, end user subscriber devices that implement LTE and/or WiMax standards . . . .").

96. *See id*. ("Qualcomm [a major SEP holder in mobile telecommunications] has had a long standing policy of broadly offering to license its standards essential patents for CDMA-based telecommunications standards on terms and conditions that are fair, reasonable, and free from unfair discrimination (FRAND), subject to reciprocity.").

97. *See id*. ("Unlike vertically-integrated companies that obtain a return on their R&D investments by profits from sales of products and equipment . . . Qualcomm relies heavily upon licensing revenues to obtain a fair return on its enabling innovations and to fuel its industry-leading R&D investments . . . .").

98. Kirti Gupta & Georgios Effraimidis, *IEEE Patent Policy Revisions: An Empirical Examination of Impact*, QUALCOMM TECHS., INC. at 1 (Mar. 2018), https://wwws.law.northwestern.edu/research-faculty/clbe/events/roundtable/documents/effraimidis_gupta.pdf [https://perma.cc/62QP-2VDQ].

(2) the number of "negative" LOAs reached an all-time high.[99] Put another way, the owners of significant numbers of SEPs for IEEE-SA standards chose *not* to provide positive assurances concerning their licensing intentions.

This outcome followed the implementation of IEEE-SA policies that, at least potentially, imposed a more effective constraint on the royalties that SEP holders can charge. Gupta and Effraimidis interpreted the unwillingness of SEP owners to make LOA submissions as:

> [H]av[ing] a potential adverse impact on the standards development process. The uncertainty on the SEP implementers' side will increase, as it will not be clear to them whether the SEPs at issue should be licensed under the new or old policy. As a consequence, the licensing negotiations between SEP holders and implementers will be distorted resulting in a highly inefficient negotiation process.[100]

It would be surprising if SSOs and implementers failed to recognize that they could incur a similar fate going forward if SSOs were to adopt similar policies into the future. Nevertheless, IEEE-SA's policies remain in effect.

Shortly before the end of the Trump administration, the United States DOJ, Antitrust Division, sent a letter to the IEEE-SA.[101] In that letter, the Department noted that it, "would encourage IEEE to consider whether changes to its Policy may now be warranted . . . . emphasiz[ing] the need for an open, balanced, and transparent process for standards development, which is critical to innovation."[102] Although the letter stated that the updated policy "should encourage good-faith bilateral licensing negotiation by both patent holders *and* implementers," it provided no indication as to how the desired "balance" might be achieved.[103] Indeed, although the letter claimed that "there is no single correct way to calculate

99. *Id.* at 7. Positive LoAs were defined as documents outlining the declaration of patents potentially essential to a standard and the terms under which the submitter was willing to license its SEPs. Negative LoAs were defined as documents in which "the submitter explicitly declines to give any assurance regarding its licensing intentions," *id*.

100. *Id.* at 28.

101. Letter from Makan Delrahim, Assistant Att'y Gen., Antitrust Div., Dep't of Just., to Sophia A. Muirhead, Gen. Couns. and Chief Compliance Off., IEEE SA (Sept. 10, 2020) [hereinafter Letter from Makan Delrahim], https://www.justice.gov/atr/page/file/1315291/download [https://perma.cc/4PAU-6465].

102. *Id.* at 9-10.

103. *Id.* at 9.

a reasonable royalty in the FRAND context," it provided no guidance as to what form *any* correct way would take.[104]

This approach was consistent with then-Assistant Attorney General for Antitrust, Makan Delrahim's view that above-FRAND royalty demands by SEP holders should not be viewed as an anticompetitive exercise of market power in violation of the antitrust laws.[105] By defining the obligations of SEP holders so vaguely and arguing that FRAND has no specific meaning, the 2020 DOJ letter may be viewed as support for SEP holders who charge supracompetitive royalties and argue that their royalty demands are nevertheless FRAND.

However, the United States Patent & Trademark Office (PTO), the National Institute of Standards and Technology (NIST), and the U.S. DOJ, Antitrust Division, issued a draft policy statement regarding licensing negotiations for SEPs that are subject to FRAND commitments.[106] In the statement, the agencies noted that they "support the development of SDO IPR policies that promote good-faith negotiation and facilitate voluntary F/RAND licensing both domestically and abroad."[107] Significantly, the agencies stated that "[w]here a potential licensee is willing to license and is able to compensate a SEP holder for past infringement and future use of SEPs subject to a voluntary F/RAND commitment, seeking injunctive relief in lieu of good-faith negotiation is inconsistent with the goals of the F/RAND commitment."[108]

Subsequently, the agencies withdrew the 2019 policy statement concluding that "withdrawal best serves the interests of innovation and competition."[109] However, they did not adopt a new policy statement.

104. *Id.* at 8.

105. Makan Delrahim, Assistant Att'y Gen., Antitrust Div., Dep't of Just., Remarks at IAM's Patent Licensing Conference: Antitrust Law and Patent Licensing in the New Wild West, (Sept. 18, 2018), https://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-iam-s-patent-licensing [https://perma.cc/7TNZ-BV8Y] ("[A]ntitrust law should not be used as a tool to police FRAND commitments that patent-holders unilaterally make to standard setting organizations.").

106. U.S. PAT. & TRADEMARK OFF., NAT'L INST. OF STANDARDS & TECH. & U.S. DEP'T OF JUST., DRAFT POLICY STATEMENT ON LICENSING NEGOTIATIONS AND REMEDIES FOR STANDARDS-ESSENTIAL PATENTS SUBJECT TO VOLUNTARY F/RAND COMMITMENTS (2021) [hereinafter DRAFT POLICY STATEMENT], https://www.justice.gov/atr/page/file/1453471/download [https://perma.cc/J88B-DJ48].

107. *Id.* at 6.

108. *Id.* at 4.

109. U.S. PAT. & TRADEMARK OFF., NAT'L INST. OF STANDARDS & TECH. & U.S. DEP'T OF JUST., WITHDRAWAL OF 2019 POLICY STATEMENT ON REMEDIES FOR STANDARDS-ESSENTIAL PATENTS SUBJECT TO VOLUNTARY F/RAND COMMITMENTS (2022) [hereinafter WITHDRAWAL

Instead, they noted that "[i]n exercising its law enforcement role, DOJ will review conduct by SEP holders or standards implementers on a case-by-case basis to determine if either party is engaging in practices that result in the anticompetitive use of market power or other abusive processes that harm competition."[110]

Recently, however, the IEEE-SA announced that it was amending its bylaws regarding standard-essential patents.[111] The amendments contain two main features.[112] First, they strike language that would have limited the ability of patent holders to employ injunctions against implementers during royalty negotiations. Second, they supplement the language that would have based royalties on the value contributed by a patent, "to the smallest saleable [unit]" by adding "or to another appropriate value level."[113] Although the IEEE-SA announcement states that "[t]hese updates are intended to improve the clarity of IEEE's standards processes related to patented technologies, while offering more options for stakeholders," their clear objective is to permit patent holders to increase the royalties that they can obtain from their SEPs.[114]

III. OVER-DECLARATION OF STANDARD-ESSENTIAL PATENTS

Many courts have observed that patent holders have an incentive to declare more of their patents to be essential to practicing a standard than is, in fact, the case. For example, in *Unwired Planet International Ltd v. Huawei Technologies Co. Ltd*, the court noted that "[o]ver-declaration is a substantial problem as illustrated by the [lower court] judge's assessment that up to 72% of declared SEPs are not truly essential."[115] Similarly, in *TCL Communication Technology Holdings, Ltd. v. Telefonaktiebolaget LM Ericsson*, the court noted that, "ETSI's process

OF 2019 POLICY STATEMENT], https://www.uspto.gov/sites/default/files/documents/SEP2019-Withdrawal.pdf [https://perma.cc/3J5G-DKBR].

110. *Id.* at 2.

111. *IEEE Announces Decision on Its Standards-Related Patent Policy*, IEEE (Sept. 30, 2022), https://www.ieee.org/about/news/2022/ieee-announces-decision-on-its-standards-related-patent-policy.html [https://perma.cc/963V-7ZH4].

112. *See IEEE SA Standards Board Bylaws*, IEEE (Sept. 2022), https://standards.ieee.org/wp-content/uploads/import/governance/bog/resolutions/september2022-updates-sasb-bylaws.pdf [https://perma.cc/L8AN-LLS4].

113. *Id.*

114. *IEEE Announces Decision on Its Standards-Related Patent Policy*, *supra* note 111.

115. Unwired Planet Int'l Ltd v. Huawei Techs. (UK) Co. Ltd [2018] EWCA (Civ) 2344, [2018] R.P.C. 20, 24.

does not assess whether declared patents actually are essential, [which] leads to a substantial over-declaration of patents."[116]

According to Rudi Bekkers and Joel West, in *Nokia v. InterDigital*, Interdigital dropped essentiality claims for twenty-six of the thirty-one patents that it had previously declared to be essential prior to trial.[117] Similarly, a study by the Cyber Creative Institute of LTE patents declared to ETSI found that:

> [t]he percentage of those scored "A," i.e., truly essential for the standards, is 56.0%. Although all patents studied have been declared to be essential by each company, a certain portion of them are evaluated to be "B" or "C." The main reason for this is considered to lie in the difference in each company's criteria for judging essentiality and its declaration policy.[118]

Cody Akins observed that "[o]verdeclaration of SEPs is rampant. Studies by . . . an intellectual-property consulting firm[] evaluated the essentiality of patents declared essential to major wireless-communication standards and found that *less than half* of the declared SEPs were actually essential or 'probably essential.'"[119] Akins concluded that, "overdeclaration artificially inflates royalty rates in license negotiations and skews courts' reasonable-royalty analyses."[120] Likewise, RPX Corporation (RPX) has noted that:

> [t]o support high valuations, patent owners and brokers often tout the essentiality of patents when marketing those patents for sale. If a patent is essential to a widely adopted standard, practice of the technology claimed by the patent is also widespread. Further, once essentiality to a standard is established, proving infringement by those using the standard is straightforward. But simply declaring or alleging that a patent is standard essential does not make it so, which

116. TCL Comm. Tech. Holdings, Ltd. v. Telefonaktiebolaget LM Ericsson, No. SACV 14–341 JVS, 2017 WL 6611635, at *11 (C.D. Cal. Dec. 14, 2020).

117. Rudi Bekkers & Joel West, *The Limits to IPR Standardization Policies as Evidenced by Strategic Patenting in UMTS*, 33 TELECOMMS. POL'Y 80, 92 n.10 (2009).

118. *Evaluation of LTE Essential Patents Declared to ETSI*, CYBER CREATIVE INST. (June 2013), https://www.cybersoken.com/file/lte03EN.pdf [https://perma.cc/T5WX-TAAL].

119. Cody Akins, *Overdeclaration of Standard-Essential Patents*, 98 TEX. L. REV. 579, 582 (2020).

120. *Id.* at 587.

> raises the question of how many Alleged and Declared SEPs really are essential.[121]

RPX went on to note that "Overall, Alleged and Declared SEPs were relatively unlikely to succeed [when asserted in litigation and] [p]laintiffs won on slightly more than a quarter of Alleged and Declared SEPs on a Unique Patent Basis across district court and ITC proceedings."[122] This conclusion is echoed by Mark Lemley and Timothy Simcoe who studied the outcomes of a large number of legal proceedings and found that "despite their name, SEPs don't seem to be all that essential [and] [a]t least, they aren't often found infringed."[123]

In a study prepared for the European Commission, Tim Pohlmann and Knut Blind observed that:

> SSOs disclose lists of patents that have been declared, by standard participants, as standard essential. However, simply counting the number of declared patents, as listed, is not a reliable measure. Firstly, SSO's lists of SEPs contain multiple patents that share a common priority, such as provisional applications, divisional applications, or applications to other countries. Secondly, companies can declare essential patents at their discretion. SSOs do not confirm or deny whether the declared patents are actually essential or not.[124]

They concluded that "current declaration practices do not convey reliable information on the essentiality of declared patents."[125]

In another study, Cooper, Dwyer, and Haimovich (Cooper et al.) reported the results from an analysis of a sample of 200 non-Ericsson patent families drawn from a census of disclosures to ETSI in connection

121. *Standard Essential Patents: How Do They Fare?*, RPX CORP. at 2 (2014), http://www.rpxcorp.com/wp-content/uploads/2014/01/Standard-Essential-Patents-How-Do-They-Fare.pdf [https://perma.cc/3T4C-PGZ7].

122. *Id.* at 4.

123. Mark A. Lemley & Timothy S. Simcoe, *How Essential Are Standard-Essential Patents?*, 104 CORNELL L. REV. 607, 628-632 (2019).

124. Tim Pohlmann & Knut Blind, *Landscaping Study on Standard Essential Patents (SEPs)*, IPLYTICS GMBH (2016), https://www.iplytics.com/wp-content/uploads/2017/04/Pohlmann_IPlytics_2017_EU-report_landscaping-SEPs.pdf [https://perma.cc/S5DS-N54B] (emphasis added).

125. *Id.* at 3. The authors base this conclusion on the fact that some patents are declared essential even before they have been granted, which they may not be, and, "available evidence of an over-declaration issue at ETSI," *id.*

with the cellular 5G standard.[126] They reported that sixteen, or only about 8%, were found to be "likely essential."[127]

Finally, in a recent complaint, Lenovo alleged that InterDigital (which it refers to as "IDC") declared:

> [T]housands of its patents as essential to the Cellular Standards without regard to whether those patents are actually—or reasonably may become—essential, thereby creating a thicket of alleged SEPs intended to raise the costs and complexity, as a practical matter, for potential licensees to assess fully those claims of essentiality. In doing so, IDC tilts negotiations improperly in its favor through a massive and disproportionate imposition of transaction costs upon implementers of the Cellular Standards that seek to license Cellular SEPs on FRAND terms. IDC, thereby, has obtained the power to extract supra-FRAND terms and conditions from implementers that are based not on the value of any SEPs that IDC may hold, but rather on transaction costs imposed by the asserted size of its SEP portfolio and the threat of unending, serial litigation and potential exclusion. IDC thus uses its artificially inflated portfolio of declared SEPs—which in prior disputes has been shown to include many valueless and non-essential patents—to impose added costs on implementers, all to the harm of competition within the market for cellular technology.[128]

For Lenovo to prove its claims, these increased costs would have two effects that favor technology owners at the expense of implementers.

First, as already noted, by over-declaring patents, a technology owner increases the number of claims it may bring in litigation.[129] This permits the patent holder to bring lawsuits with larger numbers of counts, or multiple lawsuits, each with several infringement claims. It also increases the costs to an implementer of defending against these claims, irrespective of whether the patents at issue are valid and enforceable.

Second, by declaring inessential patents as standard-essential, a patent owner confronts an implementer with the risk that a court will erroneously find the inessential patents to be true SEPs, creating a presumption of infringement.[130] Thus, this would expose the implementer

126. David Edward Cooper et al., *Survey of Mobile Cellular 5G Essentiality Rate*, 56 LES NOUVELLES: J. LICENSING EXEC. SOC'Y 11 (2021).

127. *Id.* at 17-18.

128. Complaint of Lenovo (United States) Inc. and Motorola Mobility LLC, Lenovo Inc. v. InterDigital Tech. Corp., No. 20-493, at 5 ¶ 10 (D. Del. Mar. 24, 2021) (emphasis added).

129. *Id.* ¶ 67.

130. *See id.*

to damages claims and possibly injunctions or exclusion orders, forcing the implementer to cease producing standard-compliant products. In both cases, the potential costs arising from the prospect of litigation increases the patent owner's bargaining leverage in negotiations with implementers. As explained earlier, implementers will respond by agreeing to pay higher royalties than otherwise.[131]

IV. USE OF AN INFLATED ROYALTY BASE

Patent royalties are commonly stated as a percentage of a royalty base. At a glance, this appears to be a reasonable approach because the amount of any royalty payment *in dollars* can result from a potentially infinite number of combinations of royalty *percentage* and royalty *base*.[132] Despite this, patent holders "consistently advocate" for employing a royalty base that is the price of the final product covered by the standard rather than a base that is the price of a component of the final product.[133] Scholars have explained that this can cause fact-finders to apply what they consider to be a reasonable royalty *rate* to the value of the finished product, leading to higher *dollar* royalties than would reasonably be justified.[134]

Case law is in accordance with this conclusion. In *Power Integrations v. Fairfield Semiconductor*, the United States Court of Appeals for the Federal Circuit explained how the choice of the royalty base can affect the amount of patent royalties.[135] Specifically, the court noted that it had "cautioned against reliance on use of the entire market value of a multi-component product that includes a patented component because it 'cannot help but skew the damages horizon for the jury, regardless of the contribution of the patented component to this revenue.'"[136] In another case, the Federal Circuit concluded that "[w]here

131. *See id*.

132. Michael P. Akemann et al., *Patent Enforcement in an Uncertain World: Widespread Infringement and the Paradox of Value for Patented Technologies*, 1 CRITERION J. INNOVATION 861, 866 (2016) ("Setting aside risk-sharing considerations, the parties will often be indifferent between (1) a higher rate calculated on a narrower base, and (2) a lower rate calculated on a broader base, so long as each yields approximately the same expected total payment.").

133. Joseph Kattan, *The Next FRAND Battle: Why the Royalty Base Matters*, 15(1) CPI ANTITRUST CHRON. 1, 3 (2015).

134. *See, e.g.*, Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, TEX. L. REV. 85, 2021 (2007); Fiona M. Scott Morton & Carl Shapiro, *Strategic Patent Acquisitions*, 79 ANTITRUST L. J. 463, 471 (2014) (emphasis added).

135. Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc., 894 F.3d 1258, 1270 (Fed. Cir. 2018).

136. *Id.*

small elements of multi-component products are accused of infringement, calculating a royalty on the entire product carries a considerable risk that the patentee will be improperly compensated for non-infringing components of that product."[137] Further, admitted evidence of the entire market value would "only serve[s] to make a patentee's proffered damages amount appear modest by comparison, and to artificially inflate the jury's damages calculation beyond that which is 'adequate to compensate for the infringement.'"[138] In short, courts have concluded that the choice of the royalty base affects perceptions about the reasonableness of a royalty award and that the use of price of the final product as the base can lead to inflated royalties.[139]

Finally, Joseph Kattan noted that:

> the revealed preferences of market participants suggest that the royalty base does matter. SEP holders with patent monetization businesses consistently seek to base royalties (and justify royalty levels) for SEPs that read at the component level on the price of the complete systems that incorporate those components . . . Moreover, many monetizing SEP holders avoid licensing component manufacturers at all, even when the standard-compliant component manufacturers are far fewer than the final product manufacturers that use their components, such that licensing component makers offers very substantial transaction cost efficiencies. This suggests that SEP holders expect to earn greater net revenues by basing royalties on final products' prices, even though it is virtually certain that they will

137. Laserdynamics, Inc. v. Quanta Comput., Inc., 694 F.3d 51, 67 (Fed. Cir. 2012).

138. *Id.* at 68 (quoting 35 U.S.C. § 284).

139. Interestingly, Avanci, a patent pool for technologies that are used in wireless connected devices, charges fixed dollar amounts for the use of its member's technologies within each of several categories of applications used in motor vehicles, irrespective of the price (i.e., the entire market value) of the vehicle itself. Its license fees are $3 per vehicle for emergency calling applications, $9 per vehicle for applications that use the 3G wireless standard (including 2G and emergency calling), and $15 per vehicle for applications that use the 4G standard (including 2G/3G and emergency calling). *Marketplace*, AVANCI, https://www.avanci.com/marketplace/ [https://perma.cc/33FG-QHAS] (last visited Oct. 3, 2022). Avanci states that "[r]oyalties will vary from one type of device to the next based on the value the technology brings to the device, not its sales price" and asserts that this is part of its, "commitment with the IoT ecosystem to make the latest standard wireless technology available in a way that is fair, reasonable and non-discriminatory (FRAND)," *id*. To be clear, I am not suggesting that the magnitudes of the license fees charged by Avanci are FRAND. Instead, this highlights only that Avanci has chosen to charge royalties stated in dollar terms rather than as a percentage of the sales price of completed products.

> collect royalties on fewer products because of the transaction costs of reaching the larger universe of device manufacturers.[140]

What Kattan refers to as the "revealed preference" of patent holders is an indication that patent holders believe that using the final product price as the royalty base results in higher fees than if the base were the price of the component that included the patented technology.[141] Thus, the strong resistance of patent holders to the use of a smaller royalty base is clear evidence that such patent holders expect royalties to be larger as a result. Taken together with the strong opposition by patent holders to giving greater precision to the meaning of FRAND commitments, there is strong evidence that patent holders believe that they can make themselves better off by manipulating the meaning and methods of computing FRAND.

V. WHO IS ENTITLED TO A LICENSE?

The question of who may obtain a SEP license is also related to the issue of the appropriate base for the calculation of SEP royalties. A report published by the National Academies Press noted that "[i]n 11 of the 12 SSOs, a commitment to license under whatever terms applies to any and all implementers, underlining the basic interest of SSOs in disseminating their standards into wide use."[142] While the language of most SSOs' policies do not seem to place limits on the identities of the licensees that are entitled to FRAND royalties, SEP holders have strongly opposed efforts which require them to grant licenses to participants at "early" points in the supply chain.[143]

For example, Qualcomm is a major supplier of chipsets used in mobile devices and a licensor of SEPs for such devices.[144] The FTC has noted that "Qualcomm has committed to standard-setting organizations

140. Kattan, *supra* note 128, at 3 (discussing various ways in which the choice of the royalty base can affect the amount of royalties that are awarded).

141. *Id.* at 9.

142. NAT'L RSCH COUN. NAT'L ACADS., PATENT CHALLENGES FOR STANDARD-SETTING IN THE GLOBAL ECONOMY: LESSONS FROM INFORMATION AND COMMUNICATIONS TECHNOLOGY 45 (Keith Maskus & Stephen A. Merrill eds., 2013).

143. *Id.*

144. According to the Federal Trade Commission, Qualcomm was, as of 2017, "a dominant supplier of baseband processors." FTC's Complaint for Equitable Relief, *supra* note 35, ¶ 2, Federal Trade Commission v. Qualcomm Inc., 411 F. Supp. 3d 658, ¶ 2 (N.D. Cal. 2019) (No. 17-CV-00220). As of the third calendar quarter of 2020, Qualcomm accounted for 29 percent of global sales of smartphone chipsets, and 39 percent of 5G chipsets used in smartphones. Ankit Malhotra, *MediaTek Becomes Biggest Smartphone Chipset Vendor for First Time in Q3 2020*, COUNTERPOINT: PRESS RELEASES (Dec. 24, 2020), https://www.counterpointresearch.com/mediatek-biggest-smartphone-chipset-vendor-q3-2020/ [https://perma.cc/8WYS-3CLA].

to license standard-essential patents to all applicants on fair, reasonable, and non-discriminatory ("FRAND") terms."[145] However, the FTC also noted that "Qualcomm has consistently refused to license its cellular standard-essential patents to its [chipset] competitors, in violation of Qualcomm's FRAND commitments."[146] Thus, Qualcomm has refused to grant licenses for its SEPs to other manufacturers of computer chips, insisting instead that it is obligated to license only to manufacturers of the completed mobile devices, such as smartphones, in which those chips are employed.[147]

A number of courts have opined on this issue. In *Innovatio IP Ventures LLC*, Judge Holderman held that a SEP licensor "cannot discriminate between licensees on the basis of their position on the market."[148] In *FTC v. Qualcomm*, Judge Koh found that:

> Qualcomm stopped licensing rival modem chip suppliers not because Qualcomm's view of FRAND changed, but rather because Qualcomm determined that it was far more lucrative to license only OEMs[. . . [and that Qualcomm]] . . . refuses to license [to these] rivals in violation of its FRAND commitments . . . .[149]

These decisions stand for the proposition that a SEP owner must license to anyone that commits to paying the FRAND rate regardless of its position in the market and whether or not it is a rival of the SEP owner.

In a similar vein, Karl Heinz Rosenbrock, the former director-general of ETSI, has written that "a promise to license SEPs on FRAND terms, under the ETSI IPR Policy, allows every company that requests a license to obtain one, regardless of where the prospective licensee is in the chain of production and regardless of whether the prospective licensee is active upstream or downstream."[150]

Despite this, patent owners such as Qualcomm insist on licensing only to entities that are "late" in the supply chain with the result that the

145. *Id.* (emphasis added).

146. *Id.* ¶ 3c.

147. *Id.* ¶ 77 ("Qualcomm has continued to calculate royalties as a percentage of a handset's price, even though handsets today offer a number of features . . . other than cellular connectivity."); *id.* ¶ 77b.

148. In re Innovatio IP Ventures, LLC, 956 F.Supp.2d 925, ¶ 74 (N.D. Ill. 2013) (emphasis added).

149. FTC v. Qualcomm Inc., Findings of Facts and Conclusions of Law, Northern District of California, San Jose Division, Case No. 17-CV-00220-LHK, May 21, 2019, p. 128, 190 (emphasis added); *see* FTC v. Qualcomm Inc., 969 F.3d 974 (9th Cir. 2020).

150. Karl Heinz Rosenbrock, *Licensing at All Levels Is the Rule Under the ETSI IPR Policy: A Response to Dr. Bertram Huber* at 17 (Nov. 3, 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3064894.

royalty base is larger than if "early" entities were the licensees.[151] Moreover, as discussed in some detail below, some courts have sided with patent owners in this regard. What is truly remarkable is that the issue continues to be contentious. The explanation for this is clearly that SEP holders benefit both from uncertainty about whether they must license entities "early" in the supply chain and their unwillingness, based in part on this uncertainty, to license those entities.

VI. TREATMENT BY THE COURTS

Clearly, the strong, if not dominant, influence that patent owners have in determining the behavior and performance of SSOs can lead to demands for royalties for SEPs significantly in excess of those that would result from competition among technologies *ex ante* (i.e., *ex ante* incremental value). Courts have recognized, however, that *ex ante* incremental value is the valid benchmark for FRAND royalties. In *Apple v. Motorola*, for example, Judge Posner explained that:

> [T]he proper method of computing a FRAND royalty starts with what the cost to the licensee would have been of obtaining, just before the patented invention was declared essential to compliance with the industry standard, a license for the function performed by the patent. That cost would be a measure of the value of the patent qua patent. But once a patent becomes essential to a standard, the patentee's bargaining power surges because a prospective licensee has no alternative to licensing the patent; he is at the patentee's mercy. The purpose of the FRAND requirements . . . is to confine the patentee's royalty demand to the value conferred by the patent itself as distinct from the additional value—the hold-up value—conferred by the patent's being designated as standard-essential.[152]

Put differently, Judge Posner concluded that the FRAND royalty for a given SEP is the royalty it would have achieved in competition with alternatives prior to standardization—the *ex ante* incremental value of the patent.[153]

Similarly, in *Microsoft v. Motorola*, Judge Robart acknowledged the value of the *ex ante* incremental value approach, albeit with less enthusiasm, finding that:

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151. *Id.* at 16.

152. Apple, Inc. v. Motorola, Inc., 869 F. Supp. 2d 901, 918 (N.D. Ill. 2012) (emphasis added).

153. Indeed, Judge Posner cites the Swanson and Baumol paper in support of the quoted passage. *id*. at 913.

> *ex ante* examination of the incremental contribution of the patented technology to the standard can be helpful in determining a RAND rate in the context of a dispute over a RAND royalty rate . . . [and that] comparison of the patented technology to the alternatives that the SSO could have written into the standard is a consideration in determining a RAND royalty.[154]

Despite this finding, Judge Robart noted that it is difficult to compute *ex ante* incremental values for individual patents.[155] In *Ericsson v. D-Link*, Judge O'Malley held that,

> [T]he governing rule is that the ultimate combination of royalty base and royalty rate must reflect the value attributable to the infringing features of the [standardized] product, and no more . . . . The essential requirement is that the ultimate reasonable royalty award must be based on the incremental value that the patented invention adds to the end product.[156]

Judge O'Malley explained, moreover, that, "[w]hen dealing with SEPs . . . [it is] necessary to ensure that the royalty award is based on the incremental value that the patented *invention* adds to the product, not any value added by the standardization of that technology.[157] This is, again, consistent with the economic motivation for the *ex ante* incremental value approach to FRAND royalty determination.

Courts are called upon to adjudicate FRAND royalties long after standards are finalized and SEPs have been declared. This hinders the abilities of judges and juries to determine which alternative technologies were, at the time the standard was established, the next-best options for technologies that were selected by the SSO. Beyond this, courts may lack the technical and market expertise required to assess the values of these next-best options, or to otherwise calculate *ex ante* incremental value as defined by economic theory. The alternative is to rely on approximations, based on, e.g., conventional apportionment methodologies and the principle that, as Judge O'Malley and others have correctly noted, a FRAND royalty must reflect only the contribution of the patent itself to the standardized technology and not include any portion of the value created by the process of standardization.[158]

154. Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 WL 2111217 at *12-13 (W.D. Wash. Apr. 25, 2013).

155. *Id.*

156. 773 F.3d 1201, 1226 (Fed. Cir. 2014) (emphasis added).

157. *Id.* at 1232.

158. *See id.*

Judges and juries have relied upon a number of such approaches to determine FRAND royalties for SEPs.[159] Indeed, some implementers have, as a result, been successful in obtaining legal judgments for lower royalties than those that they were initially asked to pay.[160] However, the fact that courts have used a variety of different approaches in resolving FRAND disputes increases the uncertainty that is faced by litigants, which presumably acts as a deterrent to their seeking relief through the courts when faced with what they believe are excessive, i.e., supra-FRAND, royalty demands.[161] Moreover, a number of additional factors make such behavior both costly and risky.

First, although there are limits on the ability of a SEP holder to obtain injunctions against putative infringers-implementers that refuse to pay the royalty demanded by a patent holder-as Fiona Scott Morton and Carol Shapiro observe, "[t]he risk of injunctions appears to be quite low, but it is not zero. Risk averse business executives may be willing to pay significantly higher royalties rather than accept even a small risk of an exclusion order."[162]

Moreover, the risk of injunctions may be somewhat greater than it was when that was written. In 2019, the United States DOJ, Antitrust Division, PTO, and NIST stated that, "a patent owner's promise to license a patent on F/RAND terms is not a bar to obtaining any particular remedy, including injunctive relief."[163] These agencies also have made asserted that "no special set of legal rules" apply to SEPs, and the courts, the U.S. International Trade Commission, and other decision makers are able to assess appropriate remedies based on current law and relevant facts.[164] According to their 2019 statement, "[t]he particular F/RAND

159. In a recent Court of Appeals decision, a SEP owner was successful in overturning the decision by a Federal District judge on the grounds that it was entitled to a jury trial to determine SEP royalties. TCL Commc'n Tech. Holdings Ltd. v. Telefonaktiebolaget LM Ericsson, 943 F.3d 1360 (Fed. Cir. 2019). In my view, if this decision is upheld, the outcome would be even worse than if royalties were determined by judges since juries are even less likely than judges to be able to apply this basic principle.

160. *See, e.g.*, Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 WL 2111217 (W.D. Wash. Apr. 25, 2013).

161. *See generally* Anne Layne-Farrar & Koren W. Wong-Ervin, *Methodologies for Calculating FRAND Damages: An Economic and Comparative Analysis of the Case Law from China, the European Union, India, and the United States*, 8(2) JINDAL GLOBAL L. REV. 127 (2017).

162. Scott Morton & Shapiro, *Strategic Patent Acquisitions*, *supra* note 129, at 473.

163. Press Release, DOJ, DOJ, USPTO, and NIST Announce Joint Policy Statement on Remedies for Standard-Essential Patents (Dec. 19, 2019), https://www.justice.gov/opa/pr/department-justice-united-states-patent-and-trademark-office-and-national-institute-standards [https://perma.cc/U446-TEHX].

164. *Id.*

commitment made by a patent owner, the [standard development organization's] intellectual property policies, and the individual circumstances of licensing negotiations between patent owners and implementers all may be relevant in determining remedies for infringing a standards-essential patent, depending on the circumstances of each case."[165]

Second, a number of recent developments weigh in favor of patent owners. In keeping with other Trump administration guidance, the United States DOJ filed a statement of interest in a lawsuit brought by implementers against a patent holder, where the DOJ argued that,"[e]ven if InterDigital disregarded its FRAND commitment post-standardization, that does not suggest that the standards-development process itself was 'biased' or anticompetitive."[166]

Similarly, in a recent case, the German Court of Justice concluded in *SISVEL International SA v. Haier Deutschland GmbH* that:

1) detailed technical or legal explanations of the infringement allegation are not required; the infringer must only be enabled to form a picture of the justification of the patent infringement allegation . . . .; (para. 85)

2) the infringer . . . must clearly and unequivocally declare his willingness to conclude a licence agreement with the patent proprietor on reasonable and non-discriminatory terms and must also subsequently participate in the licence agreement negotiations in a target oriented manner; (para.83)

3) . . . the dominant patentee is not in principle obliged to grant licenses in the manner of a 'uniform tariff' which grants equal conditions to all users; (para. 81)

4) the owner of a standard essential patent . . . is not absolutely prohibited from enforcing his patent on the product market by asserting injunctive and other claims . . . ."; (para. 69) and

5) [t]he assertion of a claim for damages due to patent infringement does not . . . in principle constitute an abuse of

165. *Id.*

166. Statement of Interest, *Lenovo Inc. v. InterDigital Tech. Corp.*, No. 20-493, 2021 WL 1123101, at *18 (D. Del. Mar. 24, 2021).

> the patentee's dominant position even in the case of a standard essential patent . . . .[167]

Together, these findings weaken the position of implementers in their negotiations with the owners of standard-essential patents.

Likewise, a German court ruled in favor of an innovator, Nokia, in its patent dispute with Daimler, an implementer, on the grounds that, "neither the defendant nor the interveners were seriously prepared or willing to conclude a license agreement with the plaintiff on FRAND terms."[168] Similarly, another German court found that it:

> is not able to establish that the defendant [Daimler] was and is outwardly recognizably willing to enter into a licence agreement with the plaintiff [Sharp] on "whatever terms are in fact FRAND." In any case, the Defendant did not submit a clear declaration of willingness to take a licence in time. Rather, in the opinion of the Chamber, the defendant was wrong to take the view that it was not they, but their suppliers, who should be licensed directly.[169]

Both the views of United States government agencies and courts in other countries do not, in themselves, have any precedential bearing on how U.S. courts will consider these issues. However, in reversing the lower court's ruling in *Federal Trade Commission v. Qualcomm*, a panel of the Court of Appeals for the Ninth Circuit reached a significant decision.[170] The panel held that Qualcomm's policy of licensing its standard-essential patents to original equipment manufacturers, (that is makers of downstream products but not to rival chip manufacturers, "[was] not an anticompetitive violation of the Sherman Act."[171] Further, the court held that "[t]o the extent [that] Qualcomm . . . breached . . . its FRAND commitments, . . . the remedy for such a breach lies in contract and patent law."[172]

Similarly, in *Commonwealth Science and Industry Research Organization (CSIRO) v. Cisco Systems*, the Federal Circuit concluded that

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167. Bundesgerichtshof [BGH] [Federal Court of Justice] May 5, 2020, KZR 36/17, 1, 18 (Ger.).

168. Landgericht Mannheim, Entscheidung im Rechtsstreit Nokia ./. Daimler (Aug. 18, 2020), https://landgericht-mannheim.justiz-bw.de/pb/,Lde/7164078/?LISTPAGE=1167835 [https://perma.cc/H3BM-Y3CS].

169. Landgericht [LG] [Munich Regional Court] Sept. 10 2020, 7 O 8818/19, 1, 3 (Ger.).

170. 969 F.3d 974 (9th Cir. 2020).

171. *Id.* at 995.

172. *Id.* at 1005.

> the rule Cisco advances—which would require all damages models to begin with the smallest salable patent-practicing unit—is untenable. It conflicts with our prior approvals of a methodology that values the asserted patent based on comparable licenses . . . . adopting Cisco's position would necessitate exclusion of comparable license valuations that—at least in some cases—may be the most effective method of estimating the asserted patent's value.[173]

Likewise, a United States District Court determined that "[a]n SEP holder may choose to contractually limit its right to license the SEP through a FRAND obligation, but a violation of this contractual obligation is not an antitrust violation."[174] At issue was whether Avanci violated its FRAND obligation by refusing to license Continental, a producer and supplier of telematics control units for vehicles, and instead licensing only car manufacturers.[175]

Third, in *Unwired Planet v. Huawei*, the UK Supreme Court recently held: (1) the possibility of SEP holders to obtain injunctions, "ensures that an implementer has a strong incentive to negotiate and accept FRAND terms for use of the owner's SEP portfolio" and (2) the fair aspect of FRAND is not a "hard-edged" commitment but simply, "gives colour to the whole and provides significant guidance as to its meaning."[176]

Fourth, again as observed by Scott Morton and Shapiro, "[i]f the PAE [patent assertion entity, i.e., a firm whose business model is to "monetize" patents rather than developing technologies for use in its own products] has developed a reputation for seeking high royalties, obtaining injunctions, or obtaining large awards in litigation, then threats to do so in the current negotiation are more credible to the potential licensee."[177] In the same regard, David Arsego refers to the "unappealing . . . prospect of a company that holds relatively low-value SEPs extracting a high royalty rate, simply by having dominant negotiating power."[178]

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173. 809 F.3d 1, 14-15 (Fed. Cir. 2015).

174. Cont'l Auto. Sys., Inc. v. Avanci, LLC, 485 F. Supp. 3d 712, 734 (N.D. Tex. 2020).

175. *Id.* at 723

176. Unwired Planet Int'l Ltd v. Huawei Techs. (UK) Co. Ltd [2020] UKSC 37, ¶ 61, ¶ 114 (appeals taken from Eng.).

177. Scott Morton & Shapiro, *Strategic Patent Acquisitions*, *supra* note 129, at 478.

178. David Arsego, *The Problem with Frand: How the Licensing Commitments of Standard-Setting Organizations Result in the Misvaluing of Patents*, 41 BROOK. J. INT'L L. 257, 260-61 (2015) (footnote omitted).

Fifth, as suggested earlier, even in the absence of the threat of an injunction, an implementer will rationally accept what it understands to be an above-FRAND royalty offer if there is some probability that the patent holder will demand, and a court might impose, an even higher royalty in litigation.[179] Scott Morton and Shapiro provide an example in which a risk-neutral licensee facing a demand of $400 million, and whose own view was that a $1.2 million is a reasonable royalty, would accept a royalty of $6 million in negotiations to avoid even a 1.2 percent chance of losing in court.[180]

Sixth, litigation is costly. Implementers will have incentives to avoid these costs by agreeing to pay above-FRAND royalty rates. Even when an implementer considers itself very likely to succeed in obtaining FRAND royalties by suing a SEP holder, its expected costs of achieving this result may exceed the resulting benefits to that implementer. This is especially likely to be the case if the implementer is one of many users of the SEP since, in such cases, a large share of the benefits of successful litigation would accrue to other firms, including rivals of the successful litigant.[181] By the same token, a patent holder has an incentive to spend more on litigation than what it gains from any single implementer since it can use an award by a court as a basis for the royalties imposed on other implementers.[182]

Seventh, if a SEP holder can obtain a supra-FRAND royalty from an "early" licensee, it is likely to attempt to use it as a basis for the royalties that it demands from "later" ones.[183] This can occur in the course of negotiation, where the SEP holder can point to the payments that it has obtained from others as "reasonable."[184] Perhaps more importantly, the holder can point to the royalty as a "comparable" if the licensee seeks redress from the courts.[185] For that reason, the licensee is likely to feel pressure to accede to the licensor's demand, especially since it may have

179. Scott Morton & Shapiro, *Strategic Patent Acquisitions*, *supra* note 129, at 471.

180. *Id.* at 471-72. Interestingly, in *Commonwealth Science & Industries Research Organizations v. Cisco Systems, Inc*., the court found that the royalty rates in the plaintiff's damages calculation were higher than those that had previously been offered to the defendant. No. 6:11-CV-343, 2014 WL 3805817, at *6-7 (E.D. Tex. July 23, 2014).

181. Scott Morton & Shapiro, *Strategic Patent Acquisitions*, *supra* note 129, at 471-72.

182. *Id.*

183. *Id.*

184. *Id.*

185. *Id.*

to explain to a court why it has rejected an offer that others have accepted if it were to seek judicial redress.[186]

Finally, a recent court decision and a petition by a patent holder, if granted, are likely to add further to the uncertainty faced by an implementer that wishes to challenge a proposed patent royalty. In *Godo Kaisha IP Bridge 1 v. TCL Communication Technology Holdings Limited et al*, the Federal Circuit concluded that "[w]here, as here, there are material disputes of fact regarding whether asserted claims are in fact essential to all implementations of an industry standard, the question of essentiality must be resolved by the trier of fact in the context of an infringement trial."[187] In *TCL Communication Technology Holdings Limited v. Ericsson, Inc. et al*, TCL, a patent holder, argued that "[i]t is now beyond dispute that patentees seeking damages for patent infringement have a Seventh Amendment right to a jury trial."[188] Lay jurors are likely to be less able than judges to assess the technical arguments raised in FRAND disputes. In any event, the reasoning used by lay juries to reach their decisions will not be available as precedents in challenges to later patent royalty demands.[189]

VII. NATIONAL COURTS AND GLOBAL ROYALTIES

If the problem of determining FRAND royalties were not difficult enough, it has been made vastly more complex by the fact that many patented technologies are employed worldwide. Specifically, when a standard-essential patented technology is implemented in different countries and a FRAND royalty dispute occurs, the question naturally arises as to *which* national court system or systems are to resolve the dispute and whether the resolution will be respected in *other* countries. As Contreras has observed, "[t]he application of specific national laws and modes of legal interpretation to already complex SDO policies has

186. In *Apple v. Motorola*, the Court of Appeals addressed the use by Motorola of licenses that it had negotiated with other licensees as comparable, concluding that "whether these licenses are sufficiently comparable such that Motorola's calculation is a reasonable royalty goes to the weight of the evidence, not its admissibility." 757 F.3d 1286, 1326 (Fed. Cir. 2014) (citation omitted). The focus of the court therefore seemed to be on whether the licenses that were proffered as comparable covered the same or similar patents, not on whether the licenses met a FRAND standard.

187. Godo Kaisha IP Bridge 1 v. TCL Commc'n Tech. Holdings Ltd., 141 S. Ct. 1380, 1385 (2021).

188. Brief in Opposition at 1, *TCL Commc'n Tech. Holdings, Ltd. v. Ericsson, Inc.*, 141 S. Ct. 239 (No. 19-1269).

189. *Id.* at 252.

introduced an additional level of unpredictability to the interpretation of SDO policies, particularly surrounding FRAND commitments."[190]

Moreover, this problem is not merely theoretical. National courts in a number of countries have recently sought to determine global FRAND royalty rates. In a case in which the issue of the appropriate geographic scope of a FRAND license arose in the United Kingdom, Justice Birss began by asking "what sort of licence for Unwired Planet's portfolio would be FRAND in terms of its geographical scope when applied to a multinational licensee like Huawei?"[191] In particular, Justice Birss indicated that he would "start by asking what a willing licensor and a willing licensee with more or less global sales would do."[192] Then Justice Birrs went on to determine a royalty that was intended to apply to Huawei's use of Unwired Planet's patented technology regardless of where in the world it was used.[193]

Justice Birss' decision was subsequently upheld by the Supreme Court of the United Kingdom. Specifically, the Court held that:

> [T]he [ETSI] IPR Policy encourages parties to reach agreement on the terms of a licence and avoid litigation which might involve injunctions that would exclude an implementer from a national market, thereby undermining the effect of what is intended to be an international standard. It recognises that if there are disputes about the validity or infringement of patents which require to be resolved, the parties must resolve them by invoking the jurisdiction of national courts or by arbitration. The possibility of the grant of an injunction by a national court is a necessary component of the balance which the IPR Policy seeks to strike, in that it is this which ensures that an implementer has a strong incentive to negotiate and accept FRAND terms for use of the owner's SEP portfolio.[194]

The United Kingdom Supreme Court went on to note that:

> The IPR Policy is intended to have international effect . . . ETSI appears to be attempting to mirror commercial practice in the telecommunications industry . . . the IPR Policy envisages that

190. Jorge L. Contreras, *Private Law, Conflict of Laws, and a "Lex Mercatoria" of Standards-Development Organizations*, 27(2) EUR. REV. PRIV. L. 245, 253 (2019) (emphasis added).

191. Unwired Planet Int'l Ltd. v. Huawei Techs. Co. [2017] EWHC (Pat) 711 § 543 (Eng.).

192. *Id.*

193. *Id.*

194. Unwired Planet Int'l Ltd V. Huawei Techs. (UK) Co. Ltd [2020] UKSC 37 ¶ 61 (appeals taken from Eng.).

> courts may determine whether or not the terms of an offered licence are FRAND when they are asked to rule upon the contractual obligation of a SEP owner which has made the irrevocable undertaking required under the IPR Policy. It is to be expected that commercial practice in the relevant market is likely to be highly relevant to an assessment of what terms are fair and reasonable for these purposes.[195]

Of course, even if the United Kingdom courts are correct that a FRAND license must be global in scope and that the terms of the license can be determined by a national court, that does not answer the question of *which* national court should make the determination.[196] Indeed, courts in other countries have taken the same approach as the English courts in determining what they claim to be global FRAND royalty rates.

For example, the Intellectual Property Tribunal of the Supreme People's Court of China affirmed the decision of a lower Chinese court that had set global licensing rates for 3G and 4G standard-essential patents.[197] These patents were held by Japan-based Sharp Corporation, but were being used by, among others, a Chinese handset manufacturer, Oppo Mobile Telecommunications Corporation Ltd., whose products were distributed worldwide.[198] Similarly, a German court upheld a lower court decision that had established the patent royalty rate that could be charged by the Sisvel patent pool to Chinese consumer electronics manufacturer Haier.[199] Clearly, the decision of the German courts had implications that extended far beyond the borders of the country in which the decision was made.[200]

Even accepting Justice Birss' argument about the efficiency of a worldwide license, it does not automatically follow that the global royalty

195. *Id.* ¶ 62.

196. The English courts did not claim that the global FRAND rate can be determined in *any* country but only that the country must be one in which the technology at issue has been patented. Of course, that is unlikely to place a significant limit on the number of alternatives. *See* Contreras, *Global Rate Setting*, supra note 38, at 723-24 (2019) ("If courts in the United Kingdom and the United States can set global royalty rates, then why not courts in Germany, France, Canada, India, Korea, Japan, and China as well?").

197. Sharp Corp. v. OPPO Guangdong Mobile Telecommunications Co. (Sup. People's Ct. Aug. 19, 2021) (China).

198. *Id.* at 2.

199. Bundesgerichtshof [BGH] [Federal Court of Justice] May 5, 2020, KZR 36/17, 1 (Ger.).

200. *See* HAIER, https://www.haier.com/global/?spm=cn.29408_pad.country_20191012.1 (last visited Oct. 3, 2022) [https://perma.cc/6EZK-Q5NQ]; *see LTE/LTE-A High Performance for Mobile Communications*, SISVEL, https://www.sisvel.com/licensing-programs/legacy-programs/lte-lte-a/introduction (last visited Oct. 3, 2022) [https://perma.cc/WP7E-AATN].

rate for a standard-essential patent should be set by the court in a single country. Such an outcome raises at least two issues. First, since the legal regimes in which the rate would be determined will differ among countries, the rate will be affected by which country takes the "lead," adding to the lack of clarity as to meaning of a FRAND rate. Second, under such a regime, there is nothing to prevent courts in more than one country from determining FRAND rates for *different* patented technologies for the *same* standard.

Finally, as Contreras has pointed out, such a system will induce each of the parties in a patent dispute to seek to have the royalty rate determined in a country whose regime is most favorable to them, with patent holders seeking to have the rate determined where relatively high rates are established, a "race to the top," and implementers seeking to have the rate determined where relatively low rates are established, a "race to the bottom."[201]

As a possible solution to the twin problems of the inconsistency in the way in which courts in different countries determine FRAND royalties and whether determinations in one country will be respected by courts in other countries, Contreras has proposed "the establishment of a single international, non-governmental rate-setting tribunal for FRAND royalties."[202] Along similar lines, the Supreme Court of the United Kingdom has noted that

> The participants in the relevant industry, which have pragmatically resolved many disputes over SEPs by the practice of agreeing to worldwide or international licences, can devise methods by which the terms of a FRAND licence may be settled, either by amending the terms of the policies of the relevant SSOs to provide for an international tribunal or by identifying respected national IP courts or tribunals to which they agree to refer such a determination.[203]

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201. Contreras, *Global Rate Setting*, *supra* note 38, at 724-27 (footnote omitted). An interesting recent development involves the withdrawal by the Chinese telephone company Oppos from the German market in order to avoid being subject to jurisdiction by German courts in its standard-essential patent royalty dispute with Nokia. Dani Kass, *'You Can't Fire Me, I Quit' Is Now A FRAND Strategy*, LAW360 (Aug. 23, 2022, 7:25 PM) (footnote omitted), https://www.law360.com/ip/articles/1520741/-you-can-t-fire-me-i-quit-is-now-a-frand-strategy-?nl_pk=c4c1e7ac-d085-4675-aab3-2e56a9349f80&utm_source=newsletter&utm_medium=email&utm_campaign=ip&utm_content=2022-08-24 ."). *See also* Maximilian Haedicke, *Anti-Suit Injunctions, FRAND Policies and the Conflict Between Overlapping Jurisdictions*, 71(2) GRUR INT'L 101 (2022).

202. *Id.* at 737 (footnote omitted); *see* Contreras, *"Lex Mercatoria" of Standards-Development Organizations*, *supra* note 185 (discussing the composition of the membership of the tribunal and the range of issues that it would be authorized to consider).

203. Unwired Planet Int'l Ltd. v. Huawei Techs. Co. [2017] EWHC (Pat) 711 ¶ 90 (Eng.).

Although I have long favored having SSOs play a much larger role in setting FRAND royalties to reduce or eliminate the role played by courts, by responding to what appears to be the increasing fragmentation and inconsistency in the way where global SEP royalties are currently being determined, offer an interesting "second best" approach to this problem.[204]

VIII. CONCLUSION

For a concept as central to the licensing of SEPs, especially as longstanding is FRAND, it is remarkable that so many of its dimensions remain controversial. A recent report accurately observes that

> [C]urrent litigation on SEPs shows that many issues such as who will have to get a license, the OEM (Original Equipment Manufacturer) or the supplier, will the license be based on a component or a final product and will the license be a fixed rate or a percentage of the component or on the final product's net selling price, are still open for discussion.[205]

Although there are many reasons for this, probably the most important one, is that there is a significant gap between the interests of patent owners and implementers. This gap prevents SSOs, in which both groups participate, from providing greater clarity about the meaning, and most importantly the implementation of, fair reasonable and non-discriminatory royalties for SEPs. Recent legal decisions, including the Ninth Circuit's ruling in *FTC v. Qualcomm* and the German Federal Court of Justice's judgment in *SISVEL International SA v. Haier*, conflict with the principle that FRAND commitments must prevent the exercise of monopoly power and the social harms this exercise of market power creates. Ultimately, this increases the need for SSOs to provide greater clarity about the meaning of FRAND.

204. Besen, *Why Royalties for Standard Essential Patents Should Not Be Set by the Courts*, *supra* note 29.

205. Tim Pohlmann & Knut Blind, *Fact Finding Study on Patents Declared to the 5G Standard*, IPLYTICS GMBH (Jan. 2020), https://www.iplytics.com/wp-content/uploads/2020/02/5G-patent-study_TU-Berlin_IPlytics-2020.pdf [https://perma.cc/QU6D-5G4J].