

How to Create a Smoother SEP Licensing Ecosystem for IoT

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I. STANDARDIZATION AND STANDARD ESSENTIAL PATENTS (SEPS)

We may not always realize that we live in a world where standardized devices and services are ubiquitous. We use them both professionally and privately, and our activities would largely come to a halt if these devices and services would not be available. Many high-volume products and services use one or more standardized technologies. Products like PCs, TV sets, DVD/Blu-ray Disc players, and streaming services like Netflix and Amazon Prime use various audio and video compression standards, and smartphones, probably the highest-selling tech device of all time, use several connectivity and audio and video compression standards.

The market success of these products is to a large extent determined by the interoperability that standards provide between products and systems of different suppliers, ensuring customers that they can buy and use products from different vendors, that all will operate in the same way in combination with other parts of the system, and that consumers can enjoy the same services on products from different vendors. A person can use their smartphone, tablet, or laptop of whatever brand to view content on the networks of different operators.

Standardization can be considered as one of the most successful examples of precompetitive open innovation, where commercial entities of different sizes, research institutes, universities, nonprofit organizations, and government bodies collaborate in standards developing organizations (SDOs) or ad hoc consortia to create technical standards that meet the needs of the market in a specific domain. Participants invest in the development of relevant technologies to which they are willing to contribute and from which the best technical solutions are selected to be incorporated into the standard. The SDOs (and consortia) set these standards with the aim to have them used as widely as possible.

Entities participating in standard-setting and making technical contributions often file patents on inventive elements in their proposals. When these proposals

are adopted into the standard, these patents may become standard-essential patents (SEPs), which are necessarily infringed when implementing a standard. Participants need to be incentivized to invest in research and development to develop the technologies and contribute these to standards so SDOs can develop the best possible standards from a technical perspective on a continuing basis. Licensing their SEPs to implementers of standards provides technology contributors with such an incentive. SDOs have developed intellectual property rights (IP rights) policies for how to deal with SEPs. These policies seek to balance, on the one hand, the interest of SDOs in stimulating the widespread use of standards, and on the other hand, the interest of technology contributors in securing an appropriate return for making their technologies available for incorporation into standards.

The standards likely to be most widely used in the broad field of Internet of Things (IoT) are cellular standards (3G, 4G, 5G) developed by the 3GPP,¹ a partnership of seven SDOs, and a number of different wireless standards, including Wi-Fi standards developed by IEEE,² and a number of standards developed by ad hoc standard groupings, including the Zigbee, Lora, and Bluetooth standards. In this chapter, we will focus on cellular standards, for which the SEPs are governed by the European Telecommunications Standards Institute (ETSI) IP Rights Policy.

Under this policy, ETSI members participating in the standard-setting process have an obligation to disclose in a timely manner any patent or patent application that may be or may become essential to a standard. ETSI maintains a publicly accessible database of these declared SEPs. Also, the members holding SEPs for a standard have to be willing to license under fair, reasonable, and nondiscriminatory (FRAND) terms to third parties interested in implementing that standard. The ETSI IP Rights Policy does not provide any further information about what FRAND means, and ETSI does not want to become involved in any commercial discussions. They leave it to SEP licensors and implementers to negotiate an acceptable FRAND royalty.

II. SEP LICENSING CHALLENGES

If SEP licensors and implementers do not succeed in negotiating a license, they have to turn to courts or arbitration to get a decision on their dispute. In the last 15 years, we have seen many SEP litigations relating to smartphones. In the period 2010–2015, litigation was used as a weapon in the platform battle between the mobile phone operating systems, Apple's iOS and Google's Android, which ended after Apple and Google entered into a patent truce in 2014. Most other litigation should just be seen as financial disputes between the various parties, where the SEP holder could be a commercial entity or a licensing company. Originally most cases were in the United States but over time also increasingly in Europe, in particular Germany

¹ 3rd Generation Partnership Project, 3GPP, www.3gpp.org/ (last visited Mar. 19, 2022).

² Institute of Electrical and Electronics Engineers, IEEE, www.ieee.org/ (last visited Mar. 19, 2022).

and the United Kingdom, and more recently also increasingly in China. Litigation is initiated by both SEP licensors and implementers, in most cases because the parties could not come to an agreement on the royalty rate. To support their case, implementers mostly argue that the asserted SEPs are not truly essential, not infringed, or invalid and that the royalty offered is non-FRAND, whereas SEP holders argue the opposite.

In 2015, the Court of Justice of the European Union introduced the Huawei–ZTE negotiation framework³ that provided guidance for SEP licensors and implementers on how to behave during licensing negotiations. A SEP licensor can seek an injunction against an implementer that is an unwilling licensee without violating competition laws, and implementers can show that they are a willing licensee and avoid an injunction if they follow the relevant steps of this framework. Although parties negotiating SEP licenses generally follow this framework, it has not led to a significant reduction in SEP litigation. Since the introduction of the Huawei–ZTE framework in 2015, more than 65 court cases have been decided in European countries, including more than 40 in Germany alone.⁴

Courts in various countries, and also the Patent Trial and Appeal Board (PTAB),⁵ in the United States hold SEPs invalid or partly invalid in a majority of the cases where validity is challenged. Generally, willing implementers face little risk of an injunction when challenging essentiality, validity, and royalties as non-FRAND, because even if they are unsuccessful in litigation, they will still likely wind up paying only a FRAND royalty. Moreover, implementers might benefit from a hold-out or delaying strategy since SEP holders are often willing to give discounts on past sales when negotiating a license retrospectively. The longer the past sales period, often the higher the benefit from such discounts.

Given this situation, SEP litigation rates are unlikely to decline in the years to come. To the contrary, due to the increasing use of connectivity standards in the various IoT verticals, the number of companies having to take SEP licenses for these standards for widely different products will rapidly grow, and the same is likely to be true of SEP litigation. Companies in these IoT verticals may be less familiar with standards and SEP licensing, which may create additional difficulties in SEP licensing. The European Commission (EC) has recognized that this may slow down the development of digital and sustainable technologies and related markets in Europe. As announced in its 2020 IP Action Plan,⁶ the EC is considering steps to create a more transparent and predictable SEP licensing ecosystem. Realizing that SEP licensing is frequently done at a global level, the EC will promote its SEP

³ Case C-170/13, Huawei Techs. Co. Ltd. v. ZTE Corp. [2015] 5 C.M.L.R. 779.

⁴ Marie Barani et al., *Case Law Post CJEU Ruling Huawei v. ZTE*, 4IP COUNCIL, <https://caselaw.iipcouncil.com> (last visited Mar. 19, 2022).

⁵ *Patent Trial and Appeal Board*, USPTO, www.uspto.gov/patents/ptab (last visited Mar. 19, 2022).

⁶ Eur. Comm'n, *Commission Communication for an Intellectual Property Action Plan to Support the EU's Recovery and Resilience*, COM (2020) 760 final (Nov. 25, 2020).

licensing principles to, and cooperate with, other countries and regions, including Japan and the United States.

The EC will focus on three policy pillars to introduce new regulations or guidelines: (i) enhancing transparency on SEPs; (ii) providing clarity on various aspects of FRAND; and (iii) improving the effectiveness and efficiency of enforcement. Since this is still a work in progress, it is not known yet which specific measures the EC will take. (This discussion was finalized prior to, and therefore does not address, the EC's announcement of new proposed SEP regulations in April 2023.) However, we believe that creating a smoother and more efficient SEP licensing system leading to less litigation requires a holistic approach that considers all elements of the SEP licensing process that trigger litigation or are mostly used in litigation to secure royalty terms that are more favorable than the SEP licensor is offering or than the implementer is willing to accept. By addressing only some elements, parties in SEP negotiations will likely focus on other elements to get better financial terms, and these elements may again be triggers of litigation.

In the end-to-end licensing process, we think that five elements are the main reasons for disputes and litigation in SEP licensing negotiations: (i) lack of SEP transparency;⁷ (ii) low confidence in the validity of SEPs; (iii) inability to assess a reasonable aggregate royalty; (iv) lack of incentives to seek licenses; and (v) concerns about an unlevel playing field.

In the following sections, we will go deeper into these issues and propose solutions for each of them. We want to emphasize that these solutions should not be considered in isolation, but rather integrally as a single solution for the total SEP licensing process. Each individual part of the solution may give rise to obligations that seem to fall more heavily on SEP licensors rather than implementers, or *vice versa*. However, when considering the integral solution as a whole, we believe that it achieves a fair balance between SEP licensors and implementers.

The solutions presented in this chapter are based on some of the mostly unrelated proposals described in the EC Expert Group report on SEP Licensing and Valuation,⁸ and are presented here for the first time as a holistic solution. In this chapter, we have put a set of proposals together that in combination reduce the main causes of licensing disputes and litigation in a fairly balanced way for SEP licensors and implementers.

III. SEP TRANSPARENCY

The ETSI database of declared SEPs⁹ was established for the purpose of recording patents that are or may become standard essential and are submitted by members in

⁷ SEP transparency: clarity about which patents can be deemed essential based on independent essentiality assessments.

⁸ Justus Baron et al., *Group of Experts on Licensing and Valuation of Standard Essential Patents (Eo3600)*, EUR. UNION COMM'N (Jan. 2021), <https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupID=3600>.

⁹ ETSI IPR Online Database, ETSI, <https://ipr.etsi.org/> (last visited Mar. 19, 2022).

accordance with their disclosure requirements under the ETSI IP Rights Policy. Due to over-declaration to safeguard compliance with the IP Rights Policy or for strategic reasons, only an estimated 25–40% of the patents in this database are actually essential.¹⁰ This database is therefore not a reliable source of information for implementers to identify which companies have SEPs, to assess the size of each company's SEP portfolio, to assess what licenses may be required to produce a standard-compliant product, and to estimate the aggregate royalty for those products. Additionally, it is difficult for SEP licensors to determine a FRAND royalty for their SEP portfolios absent reliable information about the estimated total number of true SEPs for the relevant standard.

The EC 2020 IP Action Plan indicates that the Commission will seek to improve the transparency and predictability of SEP licensing. In particular, the Commission will explore the creation of an independent system of third-party essentiality checks in view of improving legal certainty and reducing litigation costs. Patent pools have shown that large-scale essentiality checks can be done. The EC Pilot Project for Essentiality Assessment of Standard Essential Patents has confirmed the technical and organizational feasibility of such essentiality checks.¹¹

An essentiality check system needs to be designed and implemented in an efficient and cost-efficient manner. Patent examiners from patent offices, like the EPO, or attorneys from law firms doing evaluations for patent pools are well positioned to do these checks. Guidelines must be formulated ensuring that essentiality checks are done based on clear and transparent criteria. A supervising body (new or existing) should monitor compliance with these guidelines by the evaluators. This body should also arrange for certification of any entity or person that wants to perform these essentiality checks.

Essentiality findings should be treated as expert opinions, which could be appealed by patent holders and which could also be challenged by implementers and licensees in a fast and cost-effective challenge procedure (for example, within six months is considered feasible) based on a "loser pays" principle. Of course, a party may still bring its case to court, but it is expected that if the independent body does essentiality checks consistently with high quality and courts generally do not come to different conclusions, parties will likely increasingly rely on this body. If a party files an action in court and loses, without having first used the less expensive and shorter essentiality check procedure, the opposing party should be awarded its reasonable legal fees and other costs to be paid by the party bringing suit.

It is often argued that doing essentiality checks for all declared SEPs would take too much time and resources as well as cost too much. This is based on the misunderstanding that checks would be needed for all declared SEPs. However, the essentiality check process should be based on claim charts prepared by the patent holder and submitted to

¹⁰ Baron, *supra* note 8, at 35.

¹¹ RUDI BEKKERS ET AL., PILOT STUDY FOR ESSENTIALITY ASSESSMENT OF STANDARD ESSENTIAL PATENTS, EUR 30111 EN (Nikolaus Thumm ed., 2020).

the independent evaluator to start the process. A company will only submit those declared SEPs for evaluation, for which it has sufficient confidence in its claim charts; it will not be willing to pay the evaluation cost (estimated average cost around €5,000 per patent)¹² for patents with deficient claim charts. This will already eliminate an estimated 50–70% of all declared SEPs.

The cost of essentiality checks can be limited by checking only one member of a patent family in a major jurisdiction (including at least China, European Union, or the United States) and certification by the patent holder that the specified other members of that family include a claim that is substantially similar as the claim found essential in the checked patent. We believe that it is appropriate for SEP licensors rather than implementers to bear these costs, as licensors will benefit the most from having their SEPs checked for essentiality. The reasoning is as follows. In the first phase of SEP licensing negotiations, the licensor and implementer usually discuss the SEP portfolio as presented by the licensor, and the implementer may dispute the essentiality of one or more of the patents. These discussions can take considerable time and may even end up in litigation. By having the licensor's SEPs checked by an independent, trusted body, any discussions about whether or not presented SEPs are truly SEPs can be avoided. This will save time and effort both for the SEP licensor and the implementer. Since the SEP licensor can avoid this phase of the discussions with all implementers in all different IoT verticals and the implementer can avoid this phase only with the relevant SEP licensor, the total savings for the SEP licensor are higher than for the implementer, so that it seems justified that the SEP licensor should bear the cost for the essentiality checks of its patents. Since essential checks will likely reduce negotiation time and time to agreement, a licensor will also likely receive revenues earlier. Also, the practical complications of allocating these costs among an unknown number of implementers of unknown sizes recommend allocating these costs to the SEP licensors. Moreover, the SEP licensor is likely to earn a "return" on its investment in essentiality checks through the cost savings from more efficient licensing negotiations.

Another important aspect often not addressed is the timing of essentiality checks. Delaying these checks until years after the market for certain standard-compliant products has developed will result in little improvement in the licensing ecosystem. By that time SEP licensors and implementers will already have negotiated and concluded licenses, disputes will already have arisen, and litigation initiated, settled, or adjudicated. Checks need to be done as soon as possible in the early stages of development of the market for a category of standard-compliant products, which will allow the checks to take place before licensors and implementers start their negotiations.

¹² Nikolaus Thumm & Ruud Peters, *A Six-Point Plan for a New Approach to Assessing SEP Essentiality*, IAM (Feb. 3, 2021), www.iam-media.com/article/new-approach-assessing-sep-essentiality.

For each new product category, the relevant SEPs need to be identified. As the various products for different IoT verticals will be launched at different points in time after the adoption of the standard, licensors' investments in essential checks will also be spread out over time. Moreover, it should be realized that the 5G standard comprises a baseline component (New Radio/Network Core-NR/NC) and additional components for the different use cases related to different IoT verticals, which will similarly spread out essentiality checks over time.

Checks must be done for granted patents only. Currently, on average, more than 50% of all declared SEP families have a granted patent in one of the major market countries at the time of publication of a standard, but with significant time lag in granted patents across companies due to different filing routes.¹³ The percentage of granted patents will grow over time. For standard-compliant product categories that enter the market several years after the adoption of the standard, the percentage of granted patents will have increased significantly, and it will be large enough to give a reliable picture of the size of licensors' SEP portfolios and thus also their share in the total stack of SEPs for those product categories. Since the first product category enters the market relatively shortly after the publication of a standard (for cellular standards, these are usually smartphones), the percentage of granted patents is still relatively low, and the distribution of granted patents across companies is skewed. This may make the picture of the SEP landscape less reliable. Many SEP holders already make use of accelerated patent examination procedures, and this should be further encouraged to allow the percentage of granted patents to increase more rapidly after publication of a standard.

Additional measures could be taken to further stimulate companies to take steps to have their patents granted quickly (or at least, not to delay the process) as well as to have their patents evaluated quickly after grant. For example, these practices can be encouraged by adopting rules that companies may only assert SEPs that have been confirmed to be essential after a check by a certified body. Alternatively, rules could be adopted that companies can only collect royalties after the date they have submitted their alleged SEPs for an essentiality check.

Essentiality checks by an independent body, based on agreed guidelines and supervised by an authority to ensure that they are done consistently and with high quality, is a first and important step in promoting a smoother licensing environment for SEPs. On the one hand, essentiality checks will assist SEP holders in estimating their SEP share in the total stack of SEPs for a category of standard-compliant products and use that information as an input to determine the royalty for their SEP portfolio, taking into account a reasonable aggregate royalty for the total stack. On the other hand, essentiality checks will assist implementers in identifying the companies from which they may need to take licenses for their products, to estimate the aggregate royalty for their products, and to take those considerations into

¹³ Based on nonpublic input from IPlytics GmbH, a patent data analytics company.

account in their business plans. In the aggregate, these steps will result in more efficient licensing negotiations and fewer disputes and litigation concerning essentiality.

IV. IMPROVING ON VALIDITY

A. *Validity Rates*

Licensing negotiations tend to follow a rather fixed pattern. In the first phase, the implementer presents its arguments why one or more of the asserted SEPs are believed to be non-essential. In the second phase, the implementer makes arguments why one or more SEPs are believed to be invalid. As discussions about validity involve judgments about whether or not a patented invention is obvious, it might not be easy to reach agreement on validity. The objective of implementers is to try to undermine the SEP position of the licensor by advancing claims that the royalty offered by the licensor is too high and not FRAND. In cases where the parties are not able to reach an agreement and proceed to litigation, the implementer will in many cases contest the validity of the SEPs being asserted against it.

Since the introduction in the United States in 2012 of *inter partes* review (IPR),¹⁴ implementers faced with SEP patent assertions have used IPRs in an effort to invalidate the SEPs. Today many large implementers file IPR petitions as a response to a SEP assertion letter while, at the same time, ensuring that they take those steps in line with the Huawei–ZTE negotiation framework and, as a result, are likely to be viewed as a willing licensee who is negotiating in good faith. In some cases, large implementers file multiple IPR petitions, which may place financial and resource pressure on the SEP licensor. This strategy may discourage smaller SEP licensors from asserting their SEP portfolios, which may have a negative impact on their investments in innovation and willingness to participate in standard-setting processes in the future.

Based on various reports, the PTAB invalidates about 65% of the challenged patent claims in accepted cases (in the term used by the PTAB, “instituted petitions”).¹⁵ Also, courts in Germany have declared 33% of all litigated patents in the period 2018–2020 fully invalid and 41% partially invalid.¹⁶ These rates are more or less in line with the results of opposition proceedings against European patents before the European Patent Office.¹⁷ These figures apply to all patents and not only

¹⁴ *Patent Trial and Appeal Board*, *supra* note 5.

¹⁵ Clark A. Jablon, *Is the Sky Falling in the U.S. Patent Industry?*, 36 INFO. DISPLAY 37 (2020).

¹⁶ Dr. Tilman Müller-Stoy et al., *Aktuelle Vernichtungsquoten im deutschen Patentnichtigkeitsverfahren* [Current Cancellation Rates in German Patent Nullity Proceedings], GRUR 142 (2022).

¹⁷ Barker Brettell Intell. Prop., *Opposition Proceedings at the EPO* (2018), www.euro-ip.com/content/uploads/2018/08/Opposition-Proceedings-at-the-EPO.pdf.

SEPs, but it can be assumed that invalidation rates for SEPs will not be lower than for non-SEPs. Any SEP invalidity determinations reached through these adjudicative processes will impact a licensor's SEP position toward not only the implementer involved in each proceeding but also all other implementers. These invalidation rates show that implementers have a substantial likelihood of success in contesting the validity of SEP patent claims in litigation, IPRs, or oppositions. An implementer can use the risk of invalidation to try to secure better SEP royalty terms through settlement prior to adjudication. On the other hand, SEP licensors might already price into their royalty rates the likelihood that roughly half of their SEPs may be declared invalid in litigation, IPR, or oppositions.

It is not expected that this situation will change any time soon. As long as major patent offices continue to examine all patent applications with approximately the same degree of scrutiny, the percentage of invalidated claims of granted patents that are used in SEP licensing is not likely to change. Implementers will continue to contest the validity of asserted SEP patents, and SEP licensors will continue to be faced with invalidations of patents in their SEP portfolios offered for a license. Nonetheless, it still makes sense to consider mechanisms that may provide a reasonable estimate of whether the patent will be upheld or invalidated, quickly and easily, right at the beginning of negotiations.

B. In-Depth Prior Art Searches

SEP licensors could undertake in-depth prior art searches on their SEPs prior to submitting them for an essentiality check or even prior to starting to prepare claim charts. The quality of state-of-the-art semantic search engines, often with additional artificial intelligence/machine learning (AI/ML) functionalities, has improved in recent years, especially for application in the field of information and communication technologies. These engines could be used to conduct fast, low-cost full-text searches against patent databases without limitations on technical classes in the Cooperative Patent Classification (CPC) system or other classification systems. Companies offering these search engines as a commercial service are readily available. The searches may reveal relevant prior art that has not yet been considered in patent examination procedures. Based on this prior art, a patent holder could decide that the patent in its current form is not likely to stand a validity test in court (or in an IPR) and consequently that it hardly makes sense to spend money on having it checked for essentiality. Patent holders may also opt to use these search engines during the examination procedure and bring any relevant prior art to the attention of patent examiners so they can take this prior art into account when evaluating the patentability of the claimed inventions. If used pre-grant, these prior art searches would contribute to reducing the likelihood that SEPs will be declared invalid when scrutinized in court or in IPRs. The post-grant use of such searches would make it possible to predict the answer to this question with reasonable

certainty. Both the pre-grant and the post-grant use may reduce litigation based on invalidity claims of litigated SEPs. However, if such prior art searches show no indication of invalidity, an implementer would still have the right to claim the invalidity of SEPs in court. Litigation costs considerable time and money for both parties, and, moreover, it may take years before a final decision is made about the validity of a SEP, and clarity is achieved not only for the parties involved in litigation but also for other potential licensees.

C. *Validity Challenges*

It is desirable to achieve the clarity described in the preceding section in an early phase of the development of a standard-compliant product market. This could be achieved if implementers could challenge the validity of asserted SEPs in an out-of-court challenge procedure before panels of independent patent experts. These panels could be selected from a pool of experienced and qualified patent experts certified by an independent body that facilitates and supervises these panels. This body could, for example, be the same body supervising the essentiality checks as described in Section III.

The challenge procedure should be relatively fast and inexpensive. It seems feasible that with a strict process where parties bring their arguments and counter-arguments in a limited number of rebuttals, panels should be able to produce valid opinions in about six to seven months. This should also keep the cost relatively low and well below the average cost of IPRs, which are estimated between \$300,000 and \$600,000.¹⁸

These panels would issue opinions about the likelihood that a patent will withstand a validity challenge when scrutinized in court (or in an IPR). They could not invalidate a patent, as this can only be done by a court. The parties could agree to accept the opinion of such a panel, or a party not accepting the opinion of a panel could elect to go to court. If an implementer went directly to court to claim invalidity without first using the faster and less expensive validity challenge panel and the patent's validity is upheld in court, the implementer should be ordered to pay the licensor's reasonable out-of-pocket costs. The same should apply to a SEP licensor who commences litigation without having completed the challenge procedure, provided the implementer initiated the challenge to the SEP's validity in a timely manner. This would create an incentive for both licensors and implementers to use the validity challenge procedure before going to court. This would also counter any hold-up or hold-out strategies.

If the panels produce high-quality opinions and courts generally do not come to different conclusions, the parties will increasingly rely on such opinions and will

¹⁸ *Cost of Inter Partes Review: Everything You Need to Know*, UPCOUNSEL, www.upcounsel.com/cost-of-inter-partes-review.

tend not to bring such cases to court. This would reduce the number of litigations based on claims that asserted SEP patents are invalid.

V. INCENTIVIZING IMPLEMENTERS TO SEEK LICENSES

A. Publishing Standard License Terms

Even when the SEP owners and the size of their SEP portfolios are known in the case of a particular standard, it is unlikely that implementers will approach the relevant licensors for their standard-compliant products. A SEP licensor will still have to identify the implementers that commercialize standard-compliant products using their SEPs and assert their SEPs against these implementers. This wait-and-see approach may mean that an implementer is approached by SEP licensors years after they started to commercialize standard-compliant products. Without information about the estimated aggregate royalty for these products, many (or even most) implementers would not take an estimated aggregate royalty into account in their business plans and would not make provisions for the royalties they will have to pay. In the meantime, these implementers may have considerable liability exposure to royalties owing on sales made prior to being approached by a SEP licensor. This liability exposure will increase even further, as licensing negotiations may also take considerable time (easily 18–36 months). Although SEP licensors are usually willing to give discounts on royalties for past-use sales, the outstanding past sales amount may create such a financial burden for the implementer that this may prolong negotiations even further.

The aforementioned situation could be avoided if licensors with confirmed SEPs make their standard license terms (or, alternatively, their standard license agreements) for a standard-compliant product publicly available through the relevant SDO, for example, ETSI. This could be done by recording those terms and conditions in the ETSI database or alternatively by showing a link to the website of the relevant SEP licensor where these terms and conditions are listed, which ensures that the latest terms and conditions are shown.

It should be appreciated that the standard license terms will apply only to specifically identified standard-compliant product(s). There may be different standard-compliant products within one application field – for example, infrastructure equipment and smartphones in the telecoms area, but also different products in various IoT verticals. A SEP licensor may publish different license terms for these different products since they may use different SEP families and the value that these patented technologies add to these products may be different. A SEP licensor does not need to publish the terms for all these different products at the same time. Rather, it could publish terms when the markets for the relevant compliant products start to develop.

B. *Implementers Proactively Seeking Licenses*

By publicly disclosing its standard terms for a license under its confirmed SEPs for specific standard-compliant products, the SEP licensor would not be required to take the initiative to approach an implementer and should be assumed to have fulfilled both the first step of asserting its SEPs against an implementer selling such products and the third step of making a FRAND offer for a SEP license for these products according to the Huawei–ZTE negotiating framework.

The licensor's disclosure of its license terms should obligate the implementer to proactively seek a license from the SEP licensor, as required by the Huawei–ZTE negotiations framework. The implementer should fulfill the second step of this framework by expressing its willingness to take a license on FRAND terms and also should fulfill the fourth, fifth, and sixth steps, which obligate the implementer to respond diligently to the SEP offer without delay, to promptly make a counteroffer if it does not accept the published offer of the SEP licensor as being FRAND, and to provide security for the payment of past and future royalties based on its counteroffer, respectively. Moreover, an implementer would be required to take these steps prior to the commercialization of the relevant standard-compliant products.

This extension of the Huawei–ZTE negotiation framework will create incentives both for SEP licensors with true SEPs to publicly disclose their licensing terms and conditions before, or as early as possible after, the market for the relevant standard-compliant products starts to develop and for implementers to proactively seek licenses from such licensors prior to commercialization.

If implementers can access the published standard licensing terms of a SEP licensor, this will promote a more level playing field among implementers. Despite the nondiscrimination obligation under the FRAND undertaking, implementers have regularly expressed hesitancy to take licenses out of concerns that different terms may be offered to their competitors.

Under the extended negotiation framework, SEP licensors would be able to conclude licenses more rapidly and earlier in the commercialization process as compared to the current negotiation framework. When a licensor's SEPs are confirmed to be true SEPs, it can bypass the usual negotiation phase of discussing with each potential licensee whether or not its SEPs are true SEPs, saving both licensors and implementers time and effort and shortening the time to negotiate license agreements. Moreover, when implementers proactively seek licenses, SEP licensors could negotiate licenses with implementers not only more rapidly but also at an earlier point in time, which will enable them to receive licensing revenues earlier than otherwise would be the case. SEP licensors would be faced with an increased workload by having to negotiate licenses with several implementers in a more condensed period of time. However, greater efficiency in the licensing process seems to be needed in any case in light of the increasing number of implementers due to the increasing use of connectivity standards in the various IoT verticals.

By having to proactively seek licenses from a SEP licensor with confirmed SEPs and published standard license terms, an implementer would also avoid payment of a substantial amount of royalties for past sales that could form a significant obstacle to reaching a SEP license agreement under the current negotiation framework. This scenario is likely to arise when, as described previously, implementers wait until a SEP licensor asserts its patents to start negotiations.

We emphasize that a SEP licensor would have the choice to determine whether or not it wishes to publicly disclose its license terms for its SEPs and for which products. If a SEP licensor declines to disclose its license terms, the current Huawei–ZTE negotiation framework would continue to apply. This means that a SEP licensor has to assert its SEPs against an implementer as a first step to start the negotiation process. Additionally, the implementer would only be obligated to proactively seek a license if the licensing terms are also published in a database of the relevant SDO.

If the SEP holder takes the steps described previously and an implementer either does not proactively seek a license or fails to make a substantiated FRAND-counteroffer in a timely manner, the SEP holder would be entitled to seek an injunction against the unwilling implementer.

If the license offered by the SEP holder relates to one component of a complex product incorporating many different technologies, including several standardized technologies, an injunction may be too harsh a penalty for the implementer, who may have already invested in the development and manufacture of this product. On the other hand, an injunction may be too weak a sanction if the implementer can avoid it by submitting a counteroffer in the course of litigation initiated by the SEP licensor. Therefore, it may be more appropriate in this case to impose a penalty in the form of increased royalties on the implementer's past-use sales prior to entering into a license agreement. The size of this penalty should depend on the time elapsed between the implementer's response and the licensor's offer. This type of penalty is necessary to create sufficient incentives to induce the implementer to submit a counteroffer in a timely manner and present any other arguments it wishes to present against the assertions of the SEP licensor. In addition to this penalty, a SEP licensor may claim damages to the extent permitted under relevant national laws.

This sanction would also promote a more level playing field among implementers. If most and even all implementers seek to obtain a SEP license in a timely manner, they will also include the royalties in the calculation of the price of their product from the outset. Given an implementer's exposure to increased royalties in the absence of a timely response to a published license offer from a licensor, implementers would incorporate the expected royalties in the price of their standard-compliant products.

To the same extent, this sanction would also counteract hold-out tactics. If the implementer fails to make a timely response to a standard license offer, then the increased royalty should apply to all sales made by the implementer until a license

agreement is reached, either by settlement or judicial determination. Therefore, an implementer would have an incentive to respond in a timely manner to a standard license offer or, in the absence of such a response, to limit the prospective penalty by negotiating expeditiously a license agreement with the SEP holder.

VI. A REASONABLE AGGREGATE ROYALTY

A SEP licensor must determine what would be an appropriate FRAND royalty for its SEP portfolio applicable to certain standard-compliant products, taking into account a reasonable aggregate royalty for the total SEP stack for those products. We do not believe it is helpful to explain to SEP licensors and implementers what FRAND means or to provide guiding principles for FRAND license negotiations. It will probably raise more questions and trigger more litigation than it would avoid. Rather, it seems more constructive to focus on what practical methods could be applied to assess the reasonable aggregate royalty for the total SEP stack for a certain standard-compliant product. As is known, this aggregate royalty is not a single figure but a range of figures. We will outline in this section a three-layered approach, with each layer bringing an additional level of refinement in attaining a reasonable aggregate royalty.

The first layer makes use of the results of the essentiality checks as described in Section III. Where the estimated share of each SEP holder in the total SEP stack for a certain standard-compliant product is known, a SEP licensor can assess the estimated aggregate royalty based on its proposed royalty rate by “grossing up” its royalty by applying the licensor’s royalty rate across the entire SEP stack. If royalty rates of other SEP licensors are known (for 5G smartphones, several SEP licensors, including Qualcomm, Nokia, Ericsson, and Huawei have published their maximum royalty rates), then the estimated aggregate royalty based on their royalties can be determined. The more datapoints, the better a SEP licensor can assess whether its royalty rate is in the right ballpark. This approach could lead to a kind of self-regulation of FRAND royalty rates for individual portfolios based on what is considered to be a reasonable aggregate royalty range.

A SEP licensor could argue that its SEP portfolio is more valuable than that of other SEP holders, and therefore its royalty may be higher than those of others. It is indeed reasonable to assume that some SEP holders have several SEPs that have a higher value than average, and some have several SEPs that are of lower-than-average value. But across all SEP holders, this will likely balance out in assessing the aggregate royalty range.

It should be realized that the estimated aggregate royalty rate based on the total SEP stack will be higher than the actual aggregate royalty will be in practice because certain SEP holders will not actively license their patents but use them only defensively (like Samsung and Apple, who based on their large market shares, and thus large SEP exposure basically pursue a defensive SEP strategy).

In the second layer, it is assessed whether the aggregate royalty rate range resulting from “grossing up” royalty rates for individual SEP portfolios reflects the added value of the patented technologies to the relevant standard-compliant product. This added value may differ from product to product (for example, compare the value of the 5G standard to a self-driving car and an offshore energy turbine). Various methods can be applied to estimate this added value. Hedonic price regression, choice modeling, and demand modeling approaches¹⁹ can be used but may be too complex to be used on large scale, and in many cases, the outcomes may be less reliable for standard-compliant product categories for which the market is in the very early stage of development. These methods can be appropriate in litigations that take place at a point in time when there is an established market. In such cases, usually sufficient money and thus resources are available for these methods to be applied by economic specialists familiar with the relevant technology area and standard-compliant products, but even then, different experts may reach different conclusions.

Using comparable license agreements as a reference point for the estimated aggregate royalty rate seems to be a somewhat easier and more practical approach. Comparable licenses are usually considered to be licenses concluded with implementers that are similarly situated in the relevant product market. People may differ in what they consider to be similarly situated, but competing for customers with the same products in the same market seems to be a good description. It is unlikely that many comparable license agreements will have been concluded at an early stage of the development of the market for a new compliant product category. In that case, one can examine comparable license agreements for another complaint product category that may have been introduced to the market earlier or, if that is not the case, SEP license agreements negotiated for a previous generation standard. The available license agreements must be broken down into various elements. For example, some may be based on a running royalty and others on a lump-sum basis. They may also apply to a different royalty base – for example, an end product or a component. The different agreements may have to be weighted to take into account the level of similarity between these agreements. In case licenses for a previous generation standard are used, “scale up” factors may need to be applied to reflect the ratio between the number of SEPs for the related products for each generation and other factors, including price and performance ratios for the two generations. If sufficient licenses are available, the estimated aggregate royalty rate based on announced or known royalty rates for individual SEP portfolios can be compared with the aggregate royalty rate based on the comparable licenses.

A problem in applying this approach is that most license agreements are confidential, which may result in an insufficient number of license agreements being available to determine a reasonably reliable aggregate royalty estimate. This brings

¹⁹ Baron, *supra* note 8, at 110–11 and Annex 6.

us to the third layer, which aims to ensure that a sufficient number of comparable license agreements will be available.

Parties concluding SEP licenses should be obligated through regulation or other means to submit their SEP license agreements to a market transparency office under the supervision of a governmental authority. Given the sensitive nature of many of these agreements, this office must keep them strictly secret. This office should be staffed with experienced licensing, patent, standards, and economic experts to be able to categorize, analyze, normalize, weigh, and scale up the different agreements to make them reasonably comparable. Based on this work, they could regularly publish reports with aggregate royalty rates (or, preferably, ranges) for the different standard-compliant products governed by the different relevant standards, together with the applied methods used to arrive at their figures. The estimated aggregate royalties for these products based on grossed-up individual royalties can be checked against these published aggregate royalties.

This third layer approach would support licensors in setting FRAND royalty rates for their SEP portfolios taking into account the reasonable aggregate royalty ranges for the relevant products. In case all or at least the major SEP licensors establish a patent pool, it can also make use of this aggregate royalty information to set the royalty rates for the products licensed by the pool. Usually, patent pools offer discounted rates by sharing part of the lower transaction cost with their licensees.

Additionally, implementers would be able to better assess the estimated aggregate royalty for the SEP licenses they need for their standard-compliant products. They could include these royalties as costs in their business plans and could make provisions for the payment of these royalties for the period that they have not yet negotiated the required licenses. This will avoid exposure to large unpaid royalties for past-use sales, which can discourage an implementer from entering into a license agreement with a SEP licensor.

We believe this framework for determining the aggregate royalty for various standard-compliant products will facilitate licensing negotiations between individual SEP licensors and implementers and result in fewer FRAND-royalty disputes and thus less litigation.

VII. A BETTER LEVEL PLAYING FIELD

Implementers frequently express concerns that their competitors may be paying lower royalties than they are paying or are being offered. They also fear that a SEP licensor may not undertake sufficient efforts to license all of an implementer's competitors or that later licensees will benefit from higher discounts or discounts over longer past-sales periods. Moreover, they worry that larger, more powerful players in their market get much better terms than themselves, which makes it difficult to grow their market share for most products in highly competitive markets.

Due to the lack of transparency in SEP licensing, the nondiscrimination prong of FRAND is one of the more difficult issues to overcome.

In the current SEP licensing climate, large, financially powerful implementers are frequently only prepared to take licenses if they are forced to do so after litigation. They might put a lot of pressure on a licensor by counterclaiming non-essentiality and invalidity of their SEPs, including filing many costly IPRs in the United States (filing 15–20 and even more IPRs are not unusual today). Under the financial pressure of the huge litigation costs (including IPRs) and lacking the prospect of collecting royalty payments soon, SEP licensors might tend to make large royalty concessions. They may give large discounts on royalties for past sales, substantial volume discounts for future sales, or discounted lump sums on highly “de-risked” or worst-case sales projections. The effects are sometimes masked by including other elements in the deal, such as including non-SEPs or announcing a technical or other collaboration between the parties, to avoid any accusations of discriminatory licensing practices. The resulting effective royalty rates may be significantly lower than agreed with other smaller, less powerful players operating in the same market. Competing and growing market share for these smaller players may become more difficult, and it could also create a barrier for new companies to enter the market. This will ultimately lead to less choice and higher prices for consumers.

Frequently the argument is used that these larger, financially powerful companies with large market shares are not similarly situated as the smaller players since they are operating mostly in the premium segment of the market, whereas the smaller players are mostly operating in the budget segment of the market. If this argument is accepted, it would put these large companies in a separate league in the market, making the bigger players even bigger, and forcing smaller players to stay small. It all depends on whether or not all companies competing for customers for their products in the same market are considered similarly situated, even in a situation where they have widely different market shares.

These discrimination concerns can be mitigated by the various steps proposed in this chapter: increased SEP transparency based on the introduction of SEP checks; the availability of market information about aggregate royalty ranges for standard-compliant products; the obligation of implementers to seek licenses if SEP licensors have published their standard license terms for these products as described in the previous sections; and patent pools and licensing negotiation groups (as addressed in Chapter 7).

Nevertheless, the nondiscrimination concerns could be reduced even further if the market transparency office would not only publish the aggregate royalty rates per product but also upon the request of the competition authorities, and if courts would also aggregate royalties per company so that they could investigate whether there is any discrimination that would lead to hampering competition in the relevant product market. Providing access to this information through these mechanisms

will likely have a positive effect on avoiding unnecessary discrimination. If there are clear indications of discrimination, then the competition authorities can start a full investigation and courts would make a determination.

VIII. CONCLUSION

Taken together, the practical solutions described in this chapter could promote a more efficient SEP licensing ecosystem, where SEP licensors and implementers would have greater incentives to negotiate license agreements, rather than to litigate over their differences. These solutions address the major reasons behind most SEP litigation, including disputes about essentiality, validity, reasonable aggregate royalties for SEPs, hold-out behavior, and discrimination concerns. These solutions as a whole are designed to balance costs and benefits for both SEP licensors and implementers.