# Group of Experts on Licensing and Valuation of Standard Essential Patents

# ‘SEPs Expert Group’

# (E03600)

# Contribution to the Debate on SEPs

**January 2021**

**Disclaimer**

The contributions of the expert group to the SEP debate do not reflect the views of the European Commission ("Commission"). They are intended to advise the Commission and to stimulate discussion among all relevant stakeholders. The contributions of the expert group to the SEP debate do not constitute policy positions that are binding on either the EU Member States or the Commission. Possible policy follow-up will be based on considerations by the relevant bodies and institutions within their respective fields of competence.

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# EXECUTIVE SUMMARY

***Policy context***

In its Communication of 2017 entitled "Setting out the EU approach to Standard Essential Patents" the European Commission ("Commission") presented its views on Standard Essential Patents (SEPs) with a holistic and balanced approach. Sound policy relating to the treatment of SEPs should, on the one hand, incentivise contribution of best technologies to global standardisation efforts, while on the other hand, foster smooth access to standardised technologies for implementers. This approach was supported by Council Conclusions 6681/18.[1]

The Communication announced that the Commission would monitor the SEP licensing markets with a particular focus on IoT technologies. In this context, it would also set up an expert group with the view to deepening expertise on industry licensing practices, sound IP valuation and FRAND determination. [2]

***Expert group***

The expert group was set up by a Commission Decision in July 2018.[3] The main task of the expert group was to provide the Commission with economic, legal and technical expertise and to assist the Commission to inform policy measures that it may take to ensure a balanced framework for smooth, efficient and effective licensing of SEPs. The expert group is also a forum for exchange of experience and best practices in the field of licensing and valuation of SEPs. Pursuant to the Decision, the Commission may consult the group on any matter relating to licensing and valuation of SEPs. In October 2018, the Commission appointed the experts to advise the Commission.

At its first meeting in November 2018 the Chair asked the expert group to identify the challenges for SEP licensing with a particular focus on the IoT, taking into account the particular needs of small and medium-sized enterprises ("SMEs"), and launch a reflection on possible ways to address those challenges based on existing practise and beyond.

The members of the expert group ("members") were, therefore, invited to provide a comprehensive overview of licensing and valuation practices and techniques that are currently applied and/or immediately available to address the identified challenges. They were also invited to generate ideas looking forward into the future framework for SEPs licensing and valuation. Overall, the members were asked to look for a balanced approach bolstering Europe's industrial position in the development of new standardized technologies, such as 5G and 6G, as well as the roll-out of the IoT in its many varied applications across sectors.

On this basis, the members have formulated findings and proposals. They have analysed how SEP licensing is evolving as the use of SEP-based standards, notably in the IoT. They have identified key challenges, analysed current ways of dealing with them and made a

[1] http://data.consilium.europa.eu/doc/document/ST-6681-2018-INIT/en/pdf
[2] COM(2017) 712 final, 29.11.2017, p. 8 and 13
[3] C(2018) 4161 final, 5.7.2018

number of proposals, called “structural reforms”, that may be considered to achieve the suggested way forward. These structural reform proposals reflect the personal views of a single or group of experts stemming from their specific knowledge and experience and would need to be backed by further analysis, if considered by the policy makers.

The expert group’s findings and proposals should be read holistically. No single proposal will achieve the desired objective but a combination of different proposals could offer possible improvements to the system. Not all members that voted in favour of the adoption of this contribution agree with the identified problems and proposed solutions.

The main findings and proposals are as follows.

## I. Evolution of FRAND Licensing in IoT Eco-systems

The members have analysed how FRAND licensing for connectivity standards evolves in the IoT. The IoT denotes networks of connected and communicating ICT devices, known as “objects” or “things”. These objects or things are part of different application domains or “verticals” ranging from industrial applications in smart manufacturing and smart energy to consumer applications used in smart wearables and smart health. Many technical standards may have to be defined and used for these networks to succeed, as interoperability between the various objects and their software is a necessary condition for IoT applications to function.

The Standards in the IoT world include not only standards needed to connect “things” in the IoT but also (i) standards that ensure the quality and security of the IoT communication technology, (ii) standards needed to enable cooperation between different devices in the IoT and cloud-based services, (iii) standards defined for and applied within the “things” of the IoT and (iv) standards required for ensuring the security of the internal operation of the “things” in the IoT (cyber security standards).

Depending on their use case, IoT objects may rely more on certain standards than others. For instance, for stationary devices, like a connected refrigerator, mobile connectivity is not required but fixed-line communication means may suffice. However, mobile objects such as connected cars may want to rely on mobile radio communication technologies to achieve the necessary interoperability. The value of connectivity may also differ across IoT verticals. For example, the value of connectivity for connected cars, especially those that drive autonomously, will likely be different from its value for a connected refrigerators.

The members consider that licensors of SEPs and implementers of standards in the IoT are likely to face significant challenges in coming years. Some of these arise from the complexity of the IoT landscape due to, for instance, the presence of multiple verticals and different business models. The fact that more than one connectivity standard may be used within each IoT vertical is also a source of added complexity. Such complexity may create problems such as increasing transaction costs, reducing transparency, and increasing uncertainty for both licensors and implementers, among others.

The members generally believe that the choice of licensing level and the valuation of SEP portfolios across different IoT verticals will remain contentious issues. The use of platform,

service, or data-driven business models will also create additional challenges in determining the licensing business model and the licence value that can be attributed to the use of the standardized technology in creating value from these businesses.

An important issue is whether fair, reasonable and non-discriminatory ("FRAND") terms and conditions should be set uniformly across IoT verticals or should be allowed to differ among different IoT verticals. Because the products being sold in verticals will differ from one to the other, the incremental value of the standardised technologies covered by SEPs will likely be different across different IoT verticals. For some members this implies that valuations done for SEP licences for different products in various IoT verticals may differ. Yet, there is no consensus amongst members on this matter.

## II. Analysis of key issues and proposals for improvement

### How to increase transparency about SEPs and SEPs licensing?

Currently, there is a lack of transparency as to the ownership and number of true SEPs covering an adopted standard, which makes it difficult for implementers to determine what SEP licences they need for their standard-compliant products or services. Some standard development organization ("SDO") declarations provide virtually no data with regard to specific SEPs. Other SDOs, such as the European Telecommunications Standards Institute ("ETSI"), require declarations that are more detailed but these are not regularly updated to reflect changes in the SEP landscape. Patent applications may be rejected, patents may be invalidated or expire or lose their essential character, as standards are approved, supplemented or amended, affecting the accuracy of already-filed declarations.

Members of the expert group generally agree that providing greater transparency on the SEP landscape could be beneficial to both SEP holders and implementers as it may facilitate smoother SEP licensing negotiations and reduce SEP litigation. With this in mind, some members make the following proposals to improve transparency with respect to SDO's databases of declared SEPs, assessments of essentiality of purported SEPs and determinations of validity of confirmed SEPs.

*Declared SEP databases.* At this time, ETSI is an example of an SDO that has a comprehensive digitalised database with detailed information on declared SEPs for relevant standards. Some members propose that the EU incentivizes other SDOs that develop standards relevant to the EU, including non-European SDOs, to introduce SEP databases with specific SEP declarations, for example by requiring it for standards used in EU public procurement. To increase the relevancy of the declared SEP databases, some members also propose that SDOs create platforms where SDO members can submit applicable information regarding declared SEPs, such as results of third-party essentiality determinations and outcomes of opposition and litigation proceedings regarding essentiality or validity of declared SEPs.

*Essentiality.* With the objective of improving the transparency of essentiality determinations, the expert group makes the following proposals. First, to support implementers in assessing which licences they need for their products and support SEP holders in determining FRAND royalties for their portfolios, some members propose that

SEP holders have independent bodies, like patent offices as the European Patent Office (the "EPO") or alternatively supervised networks of certified law firms, check the essentiality of their declared SEPs shortly after approval of the standard. Second, to keep the cost of essentiality checks at a reasonable level preferably only one patent (in a major market country) per patent family should be checked combined with self-certification for other members of that family. The use of AI search tools may also be considered to support these essentiality checks as a measure to further reduce cost. Third, to inform the relevant stakeholders, some members propose that confirmed SEPs, i.e. SEPs checked by independent evaluators and confirmed true SEPs, are recorded in SDO's databases together with (high level) claim charts. Fourth, fast and low cost procedures could be introduced allowing implementers to challenge the essentiality of confirmed SEPs. Finally, measures could be introduced to incentivize SEP holders to submit their declared SEPs for essentiality checking as quickly as possible after a standard has been approved, like SEP licensors to mandatory request accelerated examination in case no patent of a family has been granted in a major market country yet, or to demand royalties for a SEP patent family only from date of submission of a family member in a major market country for essentiality checking.

*Validity.* At least one member makes several proposals to increase the likelihood that SEPs can withstand validity tests in court, including requiring SDOs to: exchange standardization documentation with patent offices, encourage members to file oppositions against declared SEPs and encourage SEP holders to have in-depth prior searches done (e.g. by AI search tools) for improved examination by patent offices. Fast and low cost challenge procedures could be introduced allowing third parties to challenge the validity of a confirmed SEP before an independent arbitration panel. This procedure could be made mandatory before going to court or alternatively, if an implementer does not make use of the validity challenge procedure before going to court, it could be obliged to compensate the SEP holder in case the implementer loses in court.

**Where to license in the value chain?**

One of the most disputed questions in the context of SEP licensing is whether, as a result of their FRAND commitment or their obligations under competition law, SEP holders are under an obligation to grant FRAND licences to entities at any level of the value chain requesting such licences ("license to all") or whether they can select the level in the value chain where they grant FRAND licenses ("access to all").

The members have decided not to take position as to what is the appropriate level where licensing should take place, but some members have tried to resolve this issue, by setting out a number of principles that could guide the licensing of SEPs in the value chain.

First, *licensing at a single level in a value chain for a particular licensed product (or case of application)*. From an economic perspective, it may be more efficient if all relevant SEPs are licensed at a single level in the value chain ("the licensing level"). Licensing at one level, rather than at multiple levels, will substantially reduce transaction costs and the risk of "double dipping", as well as the risk of under-compensation for the licensor if potential licensees at different levels of the value chain level try to push the royalty burden to other

levels in the value chain to minimalize their own royalty. For this principle to work in practice, some members believe that a degree of horizontal and vertical coordination between SEP holders and licensees may be needed.

Second, *a uniform FRAND royalty for a particular product irrespective of the level of licensing*. Thus, the royalty for a license for a SEP portfolio that is fully implemented in an end-product should be the same, whether it is licensed to an OEMs or to a supplier if the latter's product also fully implements that SEP portfolio.

Third, *the FRAND royalty is a cost element in the price of a component and should be passed on downstream*. If licensing is targeted at a level higher up in the value chain, to avoid a situation where the supplier would have to absorb the (entire) cost from its profit margin, it should be possible for this supplier to increase the price of its product to account for the extra costs of the license fee (i.e. the related cost (or value) should be passed down in the value chain). For this principle to work in practice, vertical coordination discussions may be needed in the relevant value chain.

Some experts believe that to make the licensing principles work in practice, the level of licensing should ideally be determined as early as possible and preferably before the market for each licensing product for an IoT vertical takes off. Measures should also be taken to mitigate the possible negative consequences that may arise for SEP holders or implementers, from the selection of a given level in the value chain where licensing would take place. If licensing at the component level would prevail, the possible negative consequences that could be felt by SEP holders could be addressed by the three licensing principles listed above. If licensing at the end-product level would prevail, component suppliers may be concerned that they may not be sufficiently protected to lawfully produce their components. To provide suppliers appropriate assurances for their business, several instruments could be used, including have made rights, non-asserts, covenants-not-to-sue or to sue last.

**How to establish fair, reasonable and non-discriminatory (FRAND) terms and conditions?**

*Fair and reasonable: determination of a royalty*

The determination of a royalty can be done in different ways, but it typically requires identifying a royalty base and a royalty applied to that base. Different values can be used for calculating the royalty base. It can be based on the value of the sales of the entire end-product, of intermediate products such as modules or of the smallest saleable patent practicing unit (SSPPU) implementing the patented technology. The royalty can be set as a percentage of the royalty base (*ad valorem* royalties) or a per-unit payment. In practice, licensors and licensees may adopt hybrid royalty schemes, e.g. a percentage rate subject to (per-unit) royalty caps.

Given a license's other terms and conditions, an offer falls outside the Fair and Reasonable (FR) range if the SEP holder's compensation exceeds the incremental value that the patented technology adds to the licensed product. The terms and conditions on offer should not reflect any hold-up value, which may result from irreversible choices made by licensees

during the development or the implementation of a standard. A licensing offer also falls outside the FR range if it fails to remunerate the SEP holder for the value added created in the product implementing the standard. In other words, a FR license should not reward hold-out, i.e. the unlicensed use of the patented technology by refusing to enter into good faith license negotiations or by delaying such negotiations.

Most but not all members consider that the economic value that the patented technology adds to a licensed product may differ from the economic value that such a technology adds to another licensed product. This may be because different products rely on the technology in different ways or because the technology enhances the value of different products differently.

There are several approaches for the determination of an FR value of a SEP license, including the *ex ante* approach, the comparable license agreements approach, the top down approach, and the present value-added ("PVA") approach. Some members have made a structural reform proposal for the use of the PVA approach for the determination of an FR value of a SEP license. Each of the valuation methods described in this Part has its pros and cons. Which one to choose from will depend on the answers to some key questions such as the point in time when a valuation is to be done and the availability of the required data. For example, the comparable licenses approach will not work if there are no comparable licenses available.

For these reasons, it may be preferable to use several methods at once. For example, one may use the comparable license approach and then check its results by reference to the top down approach. Whatever valuation method is used, it should be realized that a valuation method is unlikely to provide an exact number as output. Given the spread in the data for the various input parameters used in a valuation, the outcome is typically a range and not an exact number.

*When are licensing conditions non-discriminatory?*

This aspect of the FRAND commitment cannot be seen independently from the FR side. The ND commitment requires the licensor to treat similarly situated parties in a similar manner. In the EU Treaty, a similar requirement follows from Article 102(c) TFEU, which prohibits dominant firms to engage in anti-competitive discrimination.

First, it is generally agreed that the ND commitment does not require the SEP holder to offer the exact terms and conditions to all licensees. A SEP holder should be allowed to respond to different market situations by offering different licensing terms. However, in the presence of similarly situated implementers, differences need to objectively justified based on a holistic views of relevant elements, such as sales volumes, certainty of royalty payments, geographic scope, etc.

Second, volume discounts, lump sum discounts and annual royalty caps are generally acceptable if offered to competitors that are similarly situated unless they greatly favour one or more licensees without any added benefits to the licensor. Pursuing certain implementers for a license and not others is not discriminatory either, as licensors cannot be expected to pursue all implementers at the same time. On the other hand, if there exists evidence of

selective enforcement in a way that might lead to intentional skewing of competition, this type of situation should be further scrutinized.

Third, analysis of the ND condition in large part is based on comparing license terms and conditions offered or granted to licensees that are similarly situated with those offered to a potential licensee so as to ensure that the latter is not being treated less favourably. Hence, some level of transparency with respect to existing licenses is required. However, non-disclosure obligations in license agreements may make it impossible for licensees and licensors to verify that the ND limb of the FRAND commitment is satisfied. To address this problem, some members propose the creation of a confidential repository of existing SEP licensing agreements, which could be used by courts, competition boards, public arbitration boards or trusted persons.

Finally, some members propose that SEP holders should ideally use publicly available, standard license offers for all potential licensees, publish a list of licensed patents or publicly disclose existing licensee information. Some members also propose that the EC promotes a methodology, which provide certain ranges as sort of safe harbour within which the license is considered non-discriminatory by identifying key-factors which might have an impact on this assessment.

**How to facilitate negotiation and dispute handling?**

The basis for negotiations between a SEP holder and an implementer is the FRAND licensing commitment made by the SEP holder under the IPR policy of the relevant SDO. In addition, the Court of Justice of the European Union (CJEU) in *Huawei* v. *ZTE* has determined the conditions under which a SEP holder is entitled to an injunction. By placing obligations on both the SEP holder and the SEP implementer, whereby the former should demonstrate it is a willing licensor complying with its FRAND licensing commitment and the latter should show that it is a willing licensee seeking a FRAND license, the CJEU has defined a framework that applies to both parties' behaviour during their negotiations. Although the ruling in *Huawei* v. *ZTE* provides a helpful framework for SEP license negotiations, many questions remain unanswered. Therefore, some members make proposals to improve licensing negotiations between SEP holders and implementers in addition and beyond the current CJEU framework.

The complexity of the various interests involved in the use and licensing of SEPs requires a high degree of clarity and transparency with regard to the relevant facts, including those concerning the conclusion of license agreements with third parties.

According to a first proposal by some members, such transparency may be achieved through specific requirements for the exchange of information between negotiating parties and a transparency office that remains to be established for building and maintaining a strictly secret repository of SEP licence agreements.

A second proposal by some members goes a step further by requiring implementers to proactively seek licenses, prior to commercializing their standard-compliant products, from those SEP holders who have sufficiently demonstrated that their patents are essential for the relevant standard and who have made their standard licensing terms and conditions for

standard-compliant products publicly available through the relevant SDO. Some experts propose that implementers not seeking licenses would be considered holding-out licensees who may be faced with a payment of a higher royalty than the FRAND rate. Some members further propose that if a SEP holder does not make publicly available its terms and conditions (see above), implementers should be required to record the type and model of their standard-compliant products (or services) at the time of introduction to the market in an SDO database. If the implementer fails to do so, it could be required to pay an increased royalty rate for the period prior to concluding a licence agreement. The proposals, therefore, require both parties to take a more active stand.

A third proposal by some members encourages parties to negotiate SEP licenses without delay by imposing sanctions on the party engaged in delaying tactics. If a court has determined that one of the parties has acted in bad faith, there are two alternative consequences. In the case of bad faith by the licensee, the licensee may have to pay a penalty in addition to its FRAND royalty, if the court does not order an injunction. On the other hand, if the licensor engaged in bad faith behaviour, the licensee may get a certain discount on its FRAND royalty.

Fourth, two competing proposals by two members relate to the question of whether a court should determine a rate that best reflects the FRAND principle or issue an injunction where the parties cannot agree to a FRAND rate. One of the proposals provides a means of determining the most appropriate royalty rate if the court is presented with two FRAND offers that do not match. The other proposal proposes that if a SEP holder has made a FRAND offer that the potential licensee rejects, and the potential licensee cannot present sufficient evidence supporting its position that the SEP holder's offer is not FRAND, the SEP holder may be granted an injunction by the court.

Finally, some experts propose that litigating parties could by court order be asked to bring certain elements of their dispute before an independent expert body, which would make an assessment and a settlement proposal together with the reasoning supporting its decision. This assessment would not be binding on the parties but the court may be able to use the reasoning of the expert body as an expert opinion.

**Patent Pools**

In view of the increasing number of declared SEPs and the increasing number of SEP holders, it is expected that implementers of complex IoT products using many different standards will need an increasing number of licenses. Patent pools are an attractive solution for these complex IoT products as they reduce transaction cost for both licensors and implementers, and may reduce the aggregate royalty for total number of SEPs used in the products licensed by the pool.

Against this background, some members make a number of proposals to make patent pools even more attractive. First, in order to have patent pools operational as quickly as possible after approval of a standard, some members propose that SDOs start fostering the formation of patent pools already during the standard development phase (without the SDOs becoming involved in the pool setting process themselves). The EC could direct European SDOs to undertake this fostering of patent pools. Second, some members propose that for

the period until the operational start of a patent pool, a collective licensing agency could be established under public law in the EU, which upon request of an implementer could grant licenses under all European SEPs for a standard, for which at least two SEP holders have been identified. Third, according to some members for IoT products using a large number of standards it may be attractive to form patent pools for an as large number of standards as possible. SEP holders could be encouraged to form this pool of pools for example for clusters of standards related to the same type of technologies or functionality used in a product.

Joint licensing by patent pools reduces transaction cost for both licensor and licensees. Some members consider that transaction costs could be further reduced if implementers were allowed to form groups to jointly negotiate licenses on behalf of their group members. The mechanism and controls to form and operate these license control groups in compliance with the relevant competition rules would need to be developed.

# PART 1

# AIMS, METHOD AND OUTPUT

The members of the expert group ("members") were, invited to analyse the current licensing and valuation practices and techniques and to generate ideas looking forward into the future framework for SEPs licensing and valuation.

On this basis, the members have identified key challenges, analysed current ways of dealing with them and made a number of proposals, called "structural reforms", that may be considered to achieve the suggested way forward. These structural reform proposals reflect the personal views of a single or group of experts stemming from their specific knowledge and experience and would need to be backed by further analysis, if considered by the policy makers.

The expert group's findings and proposals should be read holistically. No single proposal will achieve the desired objective but a combination of different proposals could offer possible improvements to the system. Not all members that voted in favour of the adoption of this contribution agree with the identified problems and proposed solutions.

The analysis and proposals do not aim at achieving consensus among all members, as there may be many diverging opinions on every issue. One of their main objectives is to generate ideas for a further debate.

In this context, the members made an effort first to present in a balanced manner the main existing opinions and practices on SEP licensing and valuation. The contribution attempts to provide a comprehensive overview of all issues without necessarily being exhaustive of all opinions expressed in the literature, case law and practice.

Second, the members discussed their ideas of how to improve the existing SEP licensing and valuation practices. Members made a number of structural reform proposals covering each aspect of SEP licensing and valuation. Those proposals were discussed among all members. First, the members explained the proposals. Second, the members discussed the concerns related to those proposals. Third, the authors had the opportunity to refine their proposals to address some of the concerns raised. Not all concerns could be reflected in the contribution. Some open issues were flagged.

It should be noted that some of the proposals suggest to refine or modify the patent statutes or the licensing framework set forth by the Court of Justice of the EU (CJEU) in its judgement *Huawei* v. *ZTE*[4]. The implementation of these proposals would either require (i) the European Union or the Member States to adopt legislation including these proposals, or (ii) the CJEU to revisit its *Huawei* v. *ZTE* judgement, when it is given an opportunity to do so.

[4] Judgment of the CJEU of 16 July 2015, *Huawei* v. *ZTE*, Case C- 170/13, EU:C:2015:477

The expert group generated 79 proposals. Those proposals are identified in the text of the contribution with a number and a background colour and are rated by the members as explained below. The green background colour refers to a main proposal, the yellow background colour refers to a sub-proposal to the main proposal and the rose background refers to a sub-proposal to the sub-proposal. Annex 1 contains a brief description of each proposal set forth in detail in the contribution, solely for purposes of providing a high-level overview of the proposals together in one place, and as a guide to where the full description of each proposal can be found in the contribution. It is strongly suggested that the reader refers to the complete version of each proposal, as contained in the contribution, to understand the context and purpose of such proposal.

In view of the many proposals and the fact that the members supported different proposals to a different degree, the members decided to vote on the structural reform proposals. The vote was based on the 'review' approach, used to rate services, for example. Thus, each member was able to identify its support for a proposal. Each of the 79 proposals received rating from one to five stars as follows:

| **Rating** | * | ** | *** | **** | ***** |
|---|---|---|---|---|---|
| Degree of support | I do not support at all | I do not support | I am neutral | I support | I fully support |

The rating was based on the opinion of the members who voted secretly. The opinions of the members who chose not to vote on certain structural reform proposals are not reflected in the rating of the proposals.

In view of the methodology explained above, it is important to underline that no expert shares all the opinions, positions and structural reform proposals made in this contribution. Despite this fact, one member considered that she could not support the contribution in its entirety. The reasons for her disagreement with the contribution as a whole are expressed in her dissenting opinion, can be found in Annex 3.

The members agreed, however, not to invalidate the votes on the structural reform proposals of those members, who did not support the contribution as a whole. This means that the support or lack of support for the individual structural reform proposals may also reflect the views of the dissenting members.

It should be noted that the analysis and proposals contained in this report are intended to advise the Commission and to stimulate discussion among all relevant stakeholders on how the entire SEP licensing and valuation system might be improved to create a framework that is a better fit for the digital/IoT market. The analysis and proposals do not reflect the views of the Commission, and are not binding on the Commission or on any other institution. The expert group recommends that the Commission, should it decide to take further policy action in the field of SEPs, duly assess the impacts of any

such proposed policy action, notably as regards its possible effects on the future of standardisation and the EU's lead in 5G and 6G development and implementation.[5]

[5] An ETSI Report describes in some detail the risks and opportunities for European standardization: Calling the Shots – Standardization for EU Competitiveness in a Digital Era", Report of an expert panel chaired by Carl Bildt, https://www.etsi.org/images/files/Calling-The-Shots-Standardization-For-The-Digital-Era.pdf

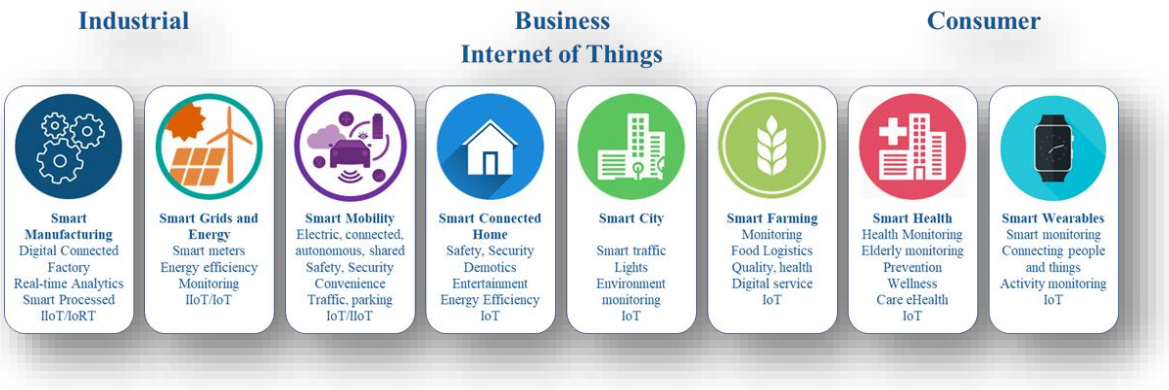
# PART 2

# EVOLUTION OF FRAND LICENSING IN IOT ECOSYSTEMS

## 1. Introduction

The goal of this Part is to identify some of the issues that holders of standard essential patents ("SEPs") – patents that protect technology essential to a standard[6] – and implementers of standards[7] in the Internet of Things ("IoT") are likely to face in coming years.

The IoT denotes networks of connected and communicating "information and communication technology" ("ICT") devices, known as "objects" or "things". These objects or things are part of different application domains or "verticals". Figure 1 below depicts some of these "IoT verticals", ranging from industrial applications in smart manufacturing to consumer applications such as in the health sector.



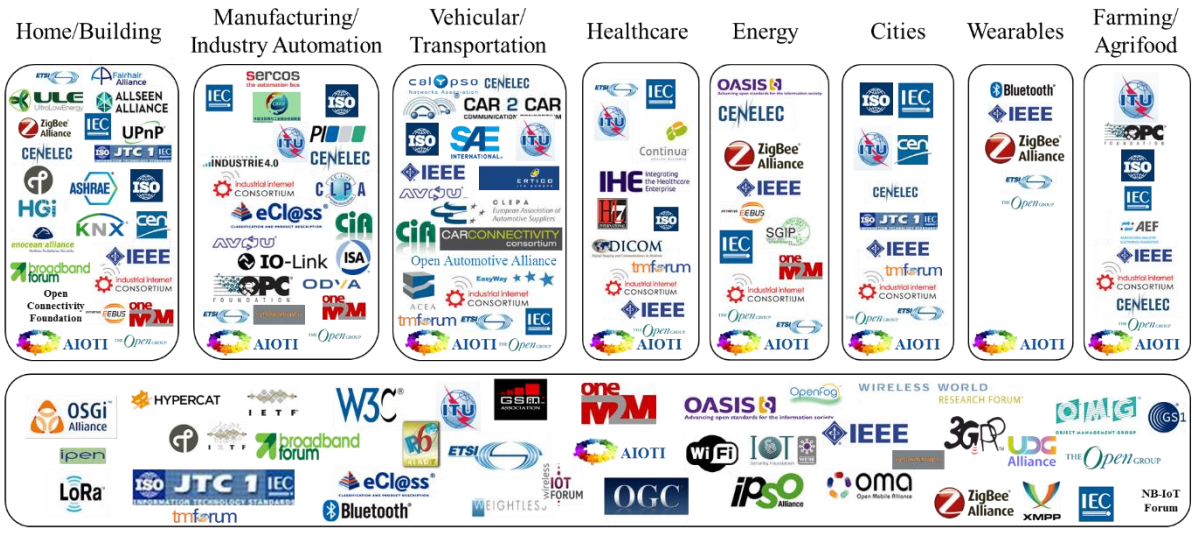

Source: IERC

These devices collect and exchange data that can be analysed and aggregated for use in monitoring, maintenance and improvement of processes, with the goal of delivering products and services to consumers.[8] The IoT will create value for consumers by providing: (i) services and offerings based on the objects or things in the IoT; (ii) additional services and offerings enabled by the exchange and communication of data and information among objects or things in the IoT; and (iii) services and offerings enabled by the exchange and communication of data and information between objects or things in the IoT and cloud-based services.

[6] https://ec.europa.eu/docsroom/documents/26583
[7] This paper focuses on standards subject to SEPs and further references to standards should be understood as those subject to SEPs, unless otherwise indicated.
[8] https://ec.europa.eu/digital-single-market/en/news/internet-things-brochure

For the purposes of this contribution, we do not need to delve into the technical details of IoT networks. However, it is important to recognize that many technical standards may have to be defined and used for these networks to succeed, as interoperability between the various objects and their software is a necessary condition for IoT applications to function. Depending on their use case, IoT objects may rely on standards in different ways. For example, a smart meter or a smart refrigerator using cellular communication connectivity is usually stationary and may not use those parts of the standard related to the hand-over of communications between cells (see Figure 2 below). While many standardized technologies relate to telecommunication technologies that are common to many different applications ("horizontal"), others vary by field of application. In this contribution, we will refer to fields of application of standardized IoT technology as "IoT verticals". The value created by adding connectivity to specific objects may differ across IoT verticals. For example, the value of connectivity for connected cars, especially those that drive autonomously, will likely be different than for a connected refrigerator. Moreover, there will be many standardized technologies used in autonomously driving vehicles, which are unrelated to communication technology.

**Figure 2: The Standardization Landscape of the IoT**




Source: ETSI TR 103 375 V1.1.1 (2016-10): SmartM2M; IoT Standards landscape and future evolutions

In order to identify some of the issues that SEP holders and implementers of standards in the IoT are likely to face in coming years, we first introduce in section 2 some basic notions about standards and SEPs. Second, we provide in section 3 an assessment of FRAND licensing to date, including an overview of past and current SEP licensing controversies. Third, in section 4 we describe the recent evolution of the SEP declaration landscape, including the number and evolution of declared SEPs,[9] the

[9] In this paper the term "declared SEP" means a patent or patent application for which the holder has submitted a declaration informing an SDO that this patent or patent application may be or may become essential to a particular draft-standard, if and when adopted, in this form or to a particular standard as approved by that SDO.

entities declaring SEPs, and the evolution of licensing revenues. Fourth, in section 5 of this Part we provide more details about the role of standards in the IoT. Finally, we conclude in section 6 with a discussion of the likely challenges facing IoT implementers and SEP holders in the years to come.

## 2. Standard Development Organizations and their IPR policies

Standard development generally refers to the process of developing technical specifications based on the contribution of multiple parties. Most standards are developed under the *aegis* of a standard development organization ("SDO") in an open, balanced, and consensus-oriented process. There is a large number of SDOs, as standard-developing activities are pursued in a wide range of economic sectors.[10] Standardisation typically produces significant positive economic effects, for example by promoting interoperability, encouraging the development of new and improved products, as well as facilitating the achievement of considerable efficiencies in supply chains and manufacturing. As a result, there is wide agreement that standard development tends to increase competition across a wide range of industries, in particular among standard implementers, and lowers output and sales costs, to the benefit of consumers and the economy.

Standardization also has the potential to produce adverse effects, such as eliminating valuable variety in technological choices and contributing to the lock-in of a particular technological choice. Furthermore, there is a potential risk that firms may use the standard development process to coordinate on prices, exclude rival products, or otherwise harm consumers.[11]

Standard development typically involves collaboration among many participants in an open and voluntary manner, with standards being based on the technical contributions of participants. Successful standards often provide the best available cutting-edge technologies, which in turn may require substantial investment in R&D by the contributors of such technologies. These contributors can protect their innovations by applying for patents covering their inventions.

Companies engage in standardisation efforts for a variety of reasons, including enhancing their reputation, gaining a competitive edge by having their own technology included in the standard, observing the directions of the technological choices that are made for the standard and thus (re)orienting their research efforts and/or their product development. Companies may also invest in developing technologies that could become part of a standard, patenting these technologies, and using such patents to lower their

[10] Examples of well-known SDOs are the International Organization for Standardization ("ISO") and the European Committee for Standardization ("CEN"). In the area of Information and Communication Technologies, prominent SDOs include the European Telecommunications Standards Institute ("ETSI"), which together with other SDOs participates in the 3rd Generation Partnership Project ("3GPP"), oneM2M, the Internet Engineering Task Force ("IETF"), and the standards association of the Institute of Electrical and Electronics Engineers ("IEEE-SA").

[11] OJ C 11, 14.1.2011, p. 1–72, paragraphs 264 to 266, Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements.

royalty costs through cross-licensing agreements and/or generate licensing revenues. SEP holders can license their SEPs to obtain a return on their R&D investment, given that manufacturers of standard-compliant products or components will need licenses to practice all the applicable SEPs in order to lawfully implement the relevant standard.

## 2.1 SDO Policies Regarding Patent Declarations

A key goal of SDOs is to create standards that best meet global market needs and to promote the wide adoption and implementation of these standards. Thus, SDOs adopt policies aimed at ensuring that implementers of the standards have access to the technology protected by the relevant SEPs (i.e. the patents which read on their standards) on fair and reasonable terms. For these reasons, many SDOs require that participants in the standard development process disclose any patents or patent applications that they believe are or may become essential to a standard of the SDO.

The information contained in the declaration may vary across SDOs. Currently, the declaration database that seeks to provide the most detailed information about declared SEPs is one maintained by ETSI, which contains hundreds of thousands of patents and applications self-declared as "possibly essential or likely to become essential" to standards developed by ETSI, as well as cellular mobile communication standards developed by 3GPP (e.g., UMTS, LTE). ETSI's database provides information regarding the status of declared SEPs, such as whether a declared patent application has been granted. It also collects information about other members of the same patent family. Many other SDOs do not maintain databases with such level of detail, and in many cases simply require a "blanket or general declaration", whereby a SEP holder states that to the extent it owns SEPs relevant to the standard, it commits to license those SEPs under the policy of the SDO.

Existing commercial databases integrate different SDOs' declaration databases with standardized information on patents and provide information on litigated cases involving the declared SEPs, as well as information on re-assignments to new owners.[12] Yet, some of the information that is needed to assess the number and significance of SEPs relevant to a particular standard is typically not available from the SDO declaration databases and cannot be found in publicly available sources.

Importantly, declarations submitted to SDOs simply express the declarant's belief at the time of submission as to the current or future essentiality of the declared patent(s). The information in SDOs' declaration databases is rarely updated, so it is difficult for users of these databases to assess which patents declared as potentially essential are in fact essential. The reason for such lack of certainly in part stems from the underlying purpose of the declaration process – i.e. to ensure that all patents that are or could become essential to a standard are available for licensing under terms that are in accordance with the SDO's patent policy. In other words, SEP holders are encouraged to be "over inclusive" and identify patents that could become essential to the standard

[12] Some examples: IPlytics, PatentSight, Questel, etc.

(recognizing that some of these patents may never become essential, for example, if the patented feature is not incorporated into the standard). This process, without further refinement, results in the creation of a declaration database that includes not only the relevant SEPs, but also numerous patents and applications that are not essential to the standard. In addition, the self-declared nature of these patents, without further "quality control", results in uncertainty about the essentiality of the declared patents, unless they have also been evaluated by a third party or examined in litigation.

Accordingly, for the most part, the information typically included in SDOs' declaration databases alone is insufficient to assess the SEP landscape in support of licensing negotiations. Existing SDO databases – especially those of SDOs providing more detailed information – can provide a starting point for such an assessment and may be combined with different publicly or commercially available outside sources. Nevertheless, several members believe that improving the information that is available directly from the SDO databases may be helpful in promoting consistency in licensing practices and terms. We address SEP transparency issues in greater detail in ***Part 3.1*** on transparency**.**

## 2.2 Licensing Commitments

Standardized technologies are publicly available for implementation by all industry players. As such, it is not possible to make or sell products compliant with a standard without practicing patents that are essential to the implementation of that standard (i.e. SEPs). It is for this reason that SEP holders are commonly required to indicate whether they are willing to license patents that become SEPs on "fair, reasonable and non-discriminatory" ("FRAND" or "RAND") terms and conditions.[13] Under SDOs' patent policies, these commitments typically apply to the extent that the declared SEPs are and remain essential to one of the SDO's standards.

SDOs require licensing under FRAND terms and conditions in an effort to promote broad adoption of standards as well as to incentivise participation in the standardisation process. The FRAND commitment benefits the implementer by giving an assurance of availability of a license under fair, reasonable and non-discriminatory terms. However, it also benefits the SEP holder to the extent its patented technology is incorporated into the standard, because if the standard is widely adopted and implemented in a large volume of products, the SEP holder can generate revenue by licensing its SEPs under FRAND terms.

An important issue is whether a SEP holder who has made a FRAND commitment has an obligation to license its SEPs to *any* implementer of a standard, regardless of its position in the product value chain. The alternative being that it only licenses to

[13] In some SDOs, licensing SEPs on FRAND terms is mandatory for SDO members and/or participants in standards development. In many cases, SEP holders may choose between a commitment to license on FRAND terms and conditions, offer to license their SEPs on royalty free basis and otherwise FRAND terms and conditions, or commit not to assert their SEPs against users that only use the patented technology for the implementation of the standard.

implementers located at one or another level of the value chain. The issue is unresolved so far due, among other reasons, to SDO patent policies – i.e. while some SDOs' patent policies indicate that a SEP holder must make a license available to any implementer of the standard requesting a license, the policies of other SDOs in this regard are unclear and subject to varied interpretations. The question is of particular importance in cases where the SEP holder is approached by a standard implementer operating at one level of a given value chain (e.g. a chipset manufacturer) but seeks to license the SEP at a different level in the same value chain (e.g. to the end-product manufacturers that use chipsets as inputs). The issue of licensing in the value chain is discussed in detail in ***Part 3.2*** on licensing in the value chain.

### 2.3 FRAND Terms and Conditions

Historically, the FRAND concept arose out of a variety of situations. In the US, the first consent decree was issued in the government's antitrust suit against AT&T and Western Electric in 1956, creating an obligation for these firms to license their patents to others on reasonable terms. In 1959, the American Standard Organization (ASO, which later became the American National Standards Institute or ANSI) adopted a reasonable terms policy for patents covering standards.[14] A large number of ANSI-accredited SDOs adopted ANSI's IPR policy. ETSI was the first major SDO to adopt an IPR policy incorporating the notion of "fair, reasonable, and non-discriminatory" terms, even though many observers and practitioners consider that there is no material difference between RAND, FRAND, and other very similarly worded licensing commitments. Licensing issues related to computing standards (such as JEDEC's processor standards) significantly contributed to the development of current SEP licensing practices, notably through the well-known *Dell* and *Rambus*[15] cases. At least one SDO's IPR policy[16] provides some detail as to how licensing terms complying with the policy's definition of reasonable terms may be determined, whereas the vast majority of SDOs leave the specific determination of licensing terms to the negotiations between parties. At least one SDO (ETSI) also mentions as a goal of its IPR policy that SEP holders should be fairly rewarded for the use of their SEPs in standards.[17]

SDOs' IPR policies are supported by guidance from competition/antitrust authorities in the EU, the US and other countries, which attempt to define what constitutes anti-competitive behaviour or abuse of a dominant position based on ownership and

[14] Contreras, J.L., 'A brief History of FRAND', *Anti-trust Law Journal*, No1, 2015, p. 43 https://nsai.co.in/pdf/ipr/A%20Brief%20History%20of%20FRAND%20Guidelines.pdf

[15] Case COMP/38.636 Rambus [2010], OJ C 30 of 6.2.2010; Rambus Inc., Case n. 9302, Federal Trade Commission (2006); Rambus Inc. v Federal Trade Commission, 522, F. 3d 456 (C App D.C. Circuit, 2008); Dell Computer, 121 Federal Trade Commission 616 (1996)

[16] IEEE SA Standards board bylaws, available at: https://standards.ieee.org/about/policies/bylaws/sect6-7.html

[17] ETSI's IPR policy, section "Policy Objectives", paragraph 3.2: "IPR holders whether members of ETSI and their affiliates or third parties, should be adequately and fairly rewarded for the use of their IPRs in the implementation of standards and technical specifications."

licensing of SEPs. Moreover, while some courts (including in the US[18], UK[19], the Netherlands[20] and India[21]) have accepted the view that a contract is formed between a SEP holder and the SDO (with standard implementers as third party beneficiaries) as a result of submission of a FRAND declaration, other courts (in particular in Germany) have rejected that position.[22] Where the FRAND commitment is not considered a contract, it is still a unilateral promise by the SEP holder to be considered together with the applicable IPR Policy in interpreting that commitment.

The phrase "fair, reasonable and non-discriminatory" should be read as a "composite whole".[23] Determining whether licensing terms and conditions are FR may require investigating whether they are "non-discriminatory" ("ND") and *vice versa*. The determination of whether a SEP license or licensing offer is FR and ND needs to consider all terms and conditions. They may include one or more compensation terms, such as monetary payments (royalties), back/cross-licenses, and/or other terms and conditions that confer value to both parties. Other terms and conditions of the license, such as the scope, duration, transferability and non-assertion or standstill provisions, to name only a few, contribute to express the value of the license. For expositional simplicity we deal with FR and ND conditions separately.

Regardless of the structure of the license agreement, differing valuation methods can be used to determine whether the terms and conditions meet the FR requirement. In ***Part 3.3*** on FRAND terms and conditions we review the different FR valuation methods that have been proposed. In the same part we also deal with the assessment of ND terms and conditions. Both sections should be read in conjunction.

## 2.4 Injunctions

The judgment of the Court of Justice of the European Union in *Huawei* v. *ZTE*[24] judgment establishes a framework for the behaviour of both SEP licensors and potential licensees and sets the conditions that SEP licensors and implementers must meet to seek (in the first case) or avoid (in the latter case) an injunction.

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[18] Opinion and Order of the United States District Court Western District of Wisconsin (Crabb, B.) of 10 August 2012, *Apple* v. *Motorola*, Case No. 11-cv-178-bbc, sub B and C, 886 F. Supp. 2d 1061 (W.D. Wis. 2012), Section B 1 et seqq. Opinion and Order of the United States District Court Western District of Washington (Robart, J.) of 6 June 2012, *Microsoft* v. *Motorola*, Case No. C10-1823JLR, sub III B, 864 F. Supp. 2d 1023 (W.D. Wash. 2012), Section III B.

[19] Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet* v. *Huawei*, UKSC 2018/0214, [2020] UKSC 37, paras. 5, 8 et seqq. and 58.

[20] Judgment of the Court of Appeal of The Hague (the Netherlands) of 7 May 2019, *Philips* v. *Asus*, No. 200.221.250/01, ECLI:NL:GHDHA:2019:1065, paras. 4.148 et seqq. Judgment of the Court of Justice The Hague (the Netherlands) of 8 February 2017, *Archos* v. *Philips*, Case No, C/091505587/ HA ZA 16 – 206, ECLI:NL:RBDHA:2017:1025, paras. 2.1 et seqq and 3.1 et seqq.

[21] Telefonaktiebolaget LM Ericsson v. Intex Techs. (India) Ltd, Interim Application No. 6735 of 2014 in Civil Suit (Original Side) No. 1045 of 2014, High Court of Delhi (13 March 2015).

[22] Judgment of the German Federal Court of Justice ("Bundesgerichtshof – BGH") of 5 May2020, *Sisvel v. Haier*, Case No. KZR 36/17, para. 53 ff. – FRAND-Einwand.

[23] Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet* v. *Huawei*, UKSC 2018/0214, [2020] UKSC 37, para. 113

[24] Judgment of the CJEU of 16 July 2015, *Huawei* v. *ZTE*, Case C-170/13, EU:C:2015:477.

Specifically, under the framework established by *Huawei* v. *ZTE*, a SEP holder who has made a commitment to offer FRAND licenses may seek injunctive relief against a standard implementer under certain conditions. For example, the SEP holder may satisfy its obligations under the framework by notifying the implementer of the infringement of the patent and submitting a FRAND licensing offer, and the standard implementer fails to comply with its own obligations by not promptly responding to said offer with a FRAND counteroffer.

Although not all SEP holders that have committed to license on FRAND terms and conditions may actively seek to license their SEPs, they are required to provide a notice of infringement and make a FRAND license available before seeking injunctive relief against an implementer of the standard. As is the case with any patent assertion, the implementer of a SEP has the right to challenge the infringement allegations as well as the validity and enforceability of asserted SEPs. While such challenges may result in delays in the licensing negotiations, they do not necessarily indicate gamesmanship on the part of the implementer, or an unwillingness to take a license.

Despite the available guidance, many issues remain unclear and are subject to further disputes. For instance, there is a great deal of uncertainty as to the interpretation of some of the conditions contained in the *Huawei* v. *ZTE* framework, and different courts (sometimes even within the same Member State) have adopted inconsistent views.[25]

Several members consider that greater certainty and transparency regarding declared SEPs' essentiality and validity may result in speedier and more efficient licensing negotiations and handling of disputes. ***Part 3.4*** on negotiations and handling disputes discusses those issues.

## 2.5 Patent pools

Standards are often developed through a collaborative process and involve multiple contributors, meaning that the SEPs covering the standard will be owned by many parties. Thus, an implementer needs rights under the SEPs of multiple SEP holders to make authorized use of the patented technology. Such rights may be obtained either bilaterally or through some joint licensing mechanism. Historically, in some technology areas, both implementers and SEP holders have chosen to license through patent pools, while in other technology fields bilateral licensing has been the preferred approach. A more detailed discussion about Patent Pools can be found in ***Part 3.5*** on pools and joint licensing mechanisms.

[25] Recent judgments of national courts have provided further guidance regarding the implementation of the *Huawei* v. *ZTE* framework in different Member States. See in particular Judgment of the German Federal Court of Justice ("Bundesgerichtshof – BGH") of 5 May2020, *Sisvel v. Haier*, Case No. KZR 36/17, as well as Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet* v. *Huawei*, UKSC 2018/0214, [2020] UKSC 37.

## 3. Assessing the Success of FRAND Licensing

Some members consider that the implementation of standards has been quite successful overall and has not been hampered by implementers having to take SEP licenses under FRAND terms and conditions. In their view, the existing regulatory framework for the licensing of SEPs has gradually emerged through the combined effects of regulatory interventions, court decisions, and policy choices of private organizations. In their opinion, while several issues remain contentious, and new controversies may arise because of technological and economic change, standards developed in the existing framework have been a general success from both a market and a social point of view. Using standards has contributed to technological innovation and has been a source of profits in the relevant industries.[26] Many innovative products using standardized technologies have reached a very large segment of consumers, and entities that have helped develop or productize the standards have, in most instances, obtained a significant return on their R&D investments. These members therefore believe that in general SEP licensing based on FRAND terms and conditions has been successful, regardless of conflicts that may arise as a result of the licensing process.

Other members disagree, pointing out that SEP licensing negotiations have become increasingly contentious over the last decades. In their view, without a better approach to SEP licensing, industry and consumers will suffer from inefficiencies and higher costs. This is particularly true with the introduction of an increasing number of new, standard-intensive products associated with the IoT.

### 3.1 Hold-Up versus Hold-Out

Some members emphasise the risk of "patent hold-up", referencing situations where SEP holders may exploit the market power that may be conferred by the adoption of the standardized technology to demand high royalties, based on the threat of enjoining the implementer from using the relevant standard in its products if such royalties are not paid. They maintain that hold-up problems, by increasing the cost of licensing, have limited the diffusion of standardised technologies and may have even distorted competition between implementers. On the other hand, certain members consider that the real problem with SEP licensing is "strategic infringement", i.e. the so-called "patent hold-out" problem. This refers to the behaviour of "unwilling licensees" who refuse to pay fair and reasonable royalties for the use of SEPs, engaging in delay tactics

[26] "User costs have plummeted. The average mobile subscriber cost per megabyte decreased 99 percent between 2005 and 2013. Smartphones are now available for as little as $40. Mobile network infrastructure costs have also fallen dramatically, while performance has soared—a 95 percent cost reduction (per megabyte transmitted) from second generation (2G) networks to third generation (3G) networks, and a further 67 percent drop from 3G to fourth generation (4G) networks. Mobile data-transmission speeds have skyrocketed: 4G networks offer 12,000 times faster data-transmission speeds than 2G networks. Consumer adoption of 3G and 4G standards has outpaced that of all other technologies, growing to nearly 3 billion connections in less than 15 years, and projected to exceed 8 billion connections by 2020. Effective industry-driven collaborations to solve technical problems, set standards, and license intellectual property have been key enablers in this revolution." https://www.bcg.com/publications/2015/telecommunications-technology-industries-the-mobile-revolution.aspx

such as initiating multi-jurisdictional litigation, among others. There is considerable disagreement over the existence and effect of such hold-up and hold-out tactics.[27]

### 3.2 "Royalty Stacking"

Some members are concerned that the fragmentation of among SEP ownership may result in an "aggregate royalty", i.e. the total royalty burden on an implementer if it were to license all SEPs covering a specific standard that is not reasonable, especially if a single SEP holder's licensing demand for a given standard does not take into account the demands of other SEP holders for the same standard (often referred to as "royalty stacking"). While some members do not believe that royalty stacking is an issue in practice, maintaining that there is no evidence supporting this position, patent pools can help resolve concerns about this type of "royalty stacking", as they combine the royalty demands of their members into one licensing transaction.

Some members consider that it would be beneficial to determine an aggregate royalty for all SEPs covering a specific standard before individual SEP licenses are concluded, taking into account the relevant product and product market. They claim that, absent some level of certainty regarding the royalty burden for applicable SEPs, it is difficult for implementers to assess the effect on the cost of their products. Thus, establishing processes for determining this "cost" early in the product development cycle may help avoid many of the disputes that have historically arisen in SEP licensing as a result of commercial and business considerations. Furthermore, enhanced clarity and certainty will likely result in more consistency in SEP licensing terms and conditions, which will could help address the stated concern of implementers with regard to their competitive position *vis-à-vis* other implementers – i.e., that if they take a SEP license and start paying royalties when their competitors have not yet done so, they suffer competitive harm.

Other members disagree with the suggestion that an aggregate royalty should be determined before individual SEP licenses are concluded. They consider that the proper valuation of a SEP license may require information that becomes available only after the standard has been widely adopted and implemented, in part because in some cases the valuation will depend on the specific application of the standard. They also maintain that the existing framework for determining FRAND licensing terms and conditions already allows for consideration of the aggregate royalty cost by the standard

[27] Prominent theoretical papers arguing that hold-up may constitute a significant risk include the following: Lemley, Mark A., and Shapiro, Carl, 'Patent holdup and royalty stacking', *Tex. L. Rev.* 85, 2006, p. 1991; Farrell, Joseph, Hayes, John, Shapiro, Carl and Sullivan, Theresa, 'Standard setting, patents, and hold-up', *Antitrust Law Journal* 74, no. 3, 2007, pp. 603-670; and Shapiro, Carl, 'Injunctions, hold-up, and patent royalties, *American Law and Economics Review,* 12, no. 2, 2010, pp. 280-318. These papers have been criticized for various reasons. In particular, several scholars have noted the lack of empirical evidence supporting the hold-up theory; see Galetovic, Alexander, Haber, Stephen, and Levine, Ross, 'An empirical examination of patent holdup', *Journal of Competition Law & Economics*, 11, no. 3, 2015, pp. 549-578. Some scholars have argued that the opposite risk of hold-out may constitute a more serious problem. See in particular Chien, Colleen V., 'Holding up and holding out', *Mich. Telecomm. & Tech. L. Rev.* 21, 2014, p. 1.

implementer. Some courts, for example, have assessed whether SEP licensing terms and conditions are FRAND by calculating the aggregate royalty burden if all SEPs for the standard were licensed at a rate that is proportional to the disputed license.[28] Finally, these members note that establishing a widely accepted aggregate royalty requires an almost impossible task – that is, to align the diversity of views and often conflicting interests of many stakeholders, including both SEP holders and implementers – and cannot be done without an extraordinary amount of collaboration among such parties.

### 3.3 Litigation Patterns

There is also disagreement among members about the extent, significance, and role of litigation related to SEP licensing. Based on existing studies and observable patent litigation data, declared SEPs are more likely to be subject to patent litigation than other patents.[29] There are also indications that disputes involving SEPs are more complex on average than other patent disputes.[30] Observable litigation case counts suggest that the incidence of patent litigation involving "declared" SEPs has indeed increased in the 2000s both in Europe and worldwide. Furthermore, while other forms of dispute resolution are not as easily observable as litigation, several practitioners report that SEP licensing negotiations have generally become more contentious over time. See Annex 3 for further discussion of SEP litigation in Europe.

For some members the increased frequency of SEP disputes and litigation is a significant cause of concern. In their view, the increasing number of disputes in part results from the emergence of new business models – in particular, businesses whose sole or primary source of income is the licensing of patents (often referred to as "patent assertion entities" or PAEs).[31] Because they do not manufacture any products, PAEs, have no need for a cross-license in considerations for their SEPs. Their primary

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[28] Judgment of the District Court Dusseldorf ("Landgericht Düsseldorf"), Germany, of 13 February 2007, Case - 4a O 124/05, ECLI:DE:LGD:2007:0213.4AO124.05.00, sub II 4 c bb; Memorandum opinion, findings, conclusions and order of the United States District Court for the Northern District of Illinois Eastern Division (Holderman, J.) of 27 September 2013, , *Re* "*Innovatio IP Ventures*", Case No. 11 C 9308, MDL Docket No. 2303, sub II B, V B; Order of the United States District Court Western District of Washington (Robart, J.) of 8 May 2013, *Microsoft Corp.* v. *Motorola, Inc.*, Case No. C10-1823 JLR, para. 541; Memorandum of findings of fact and conclusions of law of the United States District Court Central District of California (Selna, J.) of 21 December 2017, *TCL Communications* v. *Ericsson*, Case No. SACV 14-341 JVS (DFMx) and CV 15-2370 (JVS(DFMx), 21 December 2017, sub 2 IV, pp. 18-26; Judgment of the High Court of Justice, Chancery Division, Patent Court (England and Wales) of 5 April 2017, *Unwired Planet* v. *Huawei*, HP-2014-000005, [2017] EWHC 711 (Pat), para. 261-272

[29] Bekkers, Rudi, Baron, Justus, Martinelli, Arianna, Ménière, Yann, Nomaler, Önder and Pohlmann, Tim 'Selected quantitative studies of patents in standards', *Available at SSRN 2457064*, 2014. Bekkers et al. find that for a sample of declared SEP, "the estimated likelihood of litigation over their whole lifetime is around 16 percent compared to 3 percent for a matched set of patents with otherwise similar characteristics." See Annex 3 for a more comprehensive survey of empirical evidence on SEP litigation.

30 Lemley, Mark A., and Simcoe, Timothy, 'How essential are standard-essential patents', *Cornell L. Rev.* 104, 2018, p. 607. In an analysis of US litigation data, Lemley and Simcoe find that SEP litigation cases are more complex (more docket filings per case) than other patent litigation cases. *v.*

[31] There are different types of non-practicing entities ("NPEs"), including public research institutes, private companies specializing in R&D, and patent assertion entities ("PAE"). While many NPEs invest in R&D to develop patented technologies, PAEs specialize in the assertion of patents developed by others.

objective in SEP licensing is thus typically to extract maximum licensing fees, possibly leading to increased disputes and litigation.[32] Other members consider these concerns unjustified. They maintain that, compared to the number of declared SEPs and the size of the market for products that implement the relevant standards, the observable number of litigated cases involving declared SEPs remains small and a large majority of SEPs are not enforced. They rely on evidence showing that the share of declared SEPs subject to patent litigation is very small and has decreased over recent years and that only a small share of standard implementers are involved in SEP litigation, especially in the EU.[33] These members further maintain that, while litigation can be costly, it may be an effective means of settling a dispute and establishing useful legal precedence. Court decisions in SEP litigation cases have significantly contributed to clarify the obligations for SEP holders and standard implementers under SDOs' patent policies and EU competition law. Lastly, they note that, while declared SEPs are more likely to be asserted in court or subject to opposition procedures, as compared to other patents, declared SEPs are also significantly more likely to be licensed, renewed, reassigned, or cited.[34]

Certain members also note that PAE participation in SEP licensing is not necessarily a source of concern, not always intended to maximize licensing revenue (i.e., beyond what would be FRAND), and may help inventors achieve a better return on investments in standard-related technology.[35]

## 4. Recent evolution of the SEP landscape

There is very limited publicly available data on declared SEPs for most standards. Furthermore, the informative content of available data is disputed. In particular, (i) SEP declarations are not subject to systematic third-party review and, as a result, likely include patents that are not in fact essential, and (ii) the value and significance of declared SEPs is varied and often unclear. Thus, while it is relatively easy to count

[32] Several studies show that NPEs participate in a large share of the observable SEP litigation cases. Compared to their share in the number of declared SEPs or contributions to standards development, NPEs are thus significantly more prone to participate in litigation than other SEP holders. See, for example, Contreras, Jorge L., Gaessler, Fabian, Helmers, Christian, and Love, Brian J., 'Litigation of Standards-Essential Patents in Europe: A Comparative Analysis', *Berkeley Tech. LJ* 32, 2017, p. 1457.

[33] See Annex 3 for details.

[34] For a comparison of citation, renewal, and litigation rates between declared SEPs and a sample of control patents, see Baron, Justus, and Delcamp, Henry. Rysman and Simcoe (2008) also find that declared SEPs are significantly more cited than other, comparable patents. 'The private and social value of patents in discrete and cumulative innovation', *Scientometrics*, 90.2, 2012, pp. 581-606. Rysman, Marc, and Simcoe, Timothy, 'Patents and the performance of voluntary standard-setting organizations', *Management science* 54.11, 2008, pp. 1920-1934. Multiple studies have established that a patent's likelihood to be subject to litigation and opposition procedures are significantly correlated with indicators of patent value. Lanjouw and Schankerman find a "striking" association between litigation and forward citation rates of US patents. Lanjouw, Jean O., and Schankerman, Mark, 'Characteristics of patent litigation: a window on competition', *RAND journal of economic*s, 2001, pp. 129-151.

[35] For empirical evidence consistent with this view, see: Kesan, Jay P., Layne-Farrar, Anne and Schwartz, David L. 'Understanding Patent "Privateering": A Quantitative Assessment', *Journal of Empirical Legal Studies* 16, no. 2, 2019, pp. 343-380.

declared SEPs (where such information exists), it is more difficult to make a meaningful assessment based on this information.

With these drawbacks in mind, and based on the limited data available,[36] the expert group makes the following empirical statements:

- The cumulative number of declared SEPs continues to increase.
- The number and share of total SEPs are subject to diverging estimates and the essentiality rate of declared SEPs appears to be small.
- There is no evidence that transfers of declared SEPs have significantly changed the number of SEP holders.
- Participation in 3GPP standards development has steadily increased, with a recent uptick in new participants.
- SEP royalty payments have grown over time but are a relatively small fraction of the value of product implementations.

The methodology used for Figures 3 to 7 is explained in detail in Annex 4.

### 4.1 The cumulative number of declared SEPs continues to increase

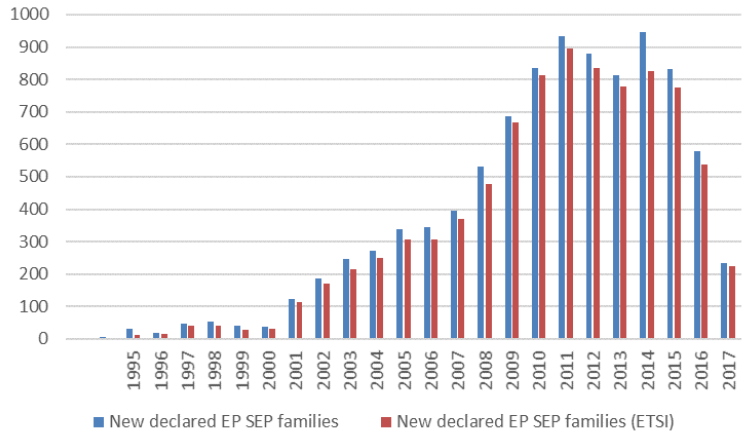
The number of *newly* declared SEPs for SDO standards per year significantly increased beginning in 2000. Figure 3 provides an overview of the number of new patent families with at least one granted EP member declared essential.[37] These numbers conflate different SDOs, including SDOs requiring specific declaration of every potential SEP and SDOs allowing for blanket disclosures. Most of these declarations were made to ETSI and relate to 3GPP standards. The number of new declared SEP families with EP members levelled off after 2009. However, the data in Figure 3 is likely to undercount more recent SEP declarations. More recent data sources highlight an increasing number of declared SEP families related to 5G since 2015.[38]

[36] Several of the reported statistics are based on the Searle Center Database, which is available to academic researchers upon request. For further information see https://www.law.northwestern.edu/research-faculty/clbe/innovationeconomics/data/technologystandards/index.html). Other statistics are generally based on publicly available data or published reports and/or academic publications.

[37] A patent becomes a declared SEP when a granted patent is declared essential, or when an application that was declared essential while pending is granted. The data and data collection methodology underlying the figure are discussed in Baron, Justus, and Pohlmann, Tim, 'Mapping standards to patents using declarations of standard-essential patents', *Journal of Economics & Management Strategy*, 27.3, 2018, pp. 504-534.

[38] Pohlmann, Tim, Blind, Knut and Heß, Philipp, *Fact finding study on patents declared to the 5G standard*, 2020, p. 15.

**Figure 3: New active declared EP SEP inpadoc families, by year of entry (grant or declaration year)**

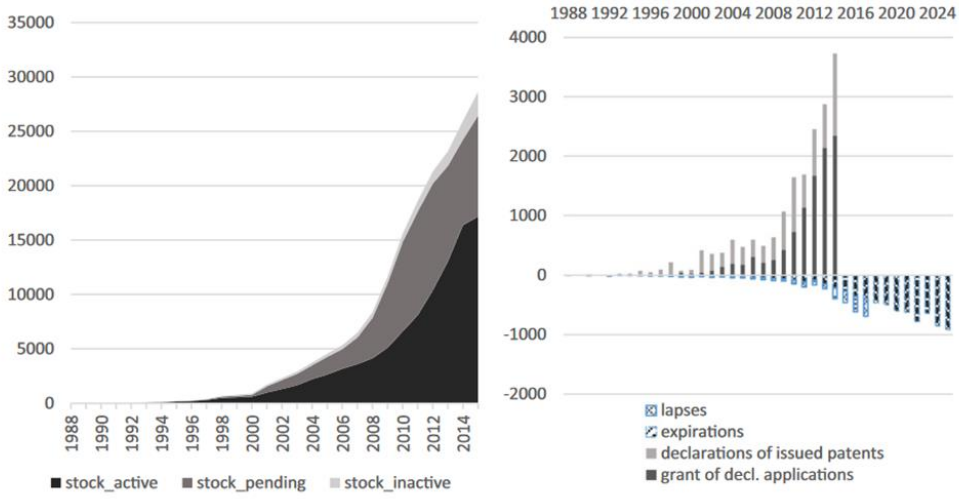



Source: Based on the Searle Center SEP declaration data (Baron and Pohlmann, 2018)

Notes: Number of new patent families with a declared EP SEP, by year of EP grant or declaration, whichever is larger.

The total *stock* of declared SEPs continues to increase and will likely continue to do so in the foreseeable future, because the number of new patents entering the stock is currently significantly larger than the number of patents expiring or lapsing. Also, there is a significant stock of pending applications declared as possibly essential. See Figure 4 below. While the stock continues to increase, the growth rate has started to decrease noticeably since 2013. The growth rate of the stock of active SEPs will likely continue to decrease, as an increasing number of declared SEPs are nearing their expiration dates. The stock of declared SEPs is relevant because it captures the patents that implementers need to consider for licensing.

**Figure 4: Flows and stocks of active declared SEPs, US patents**

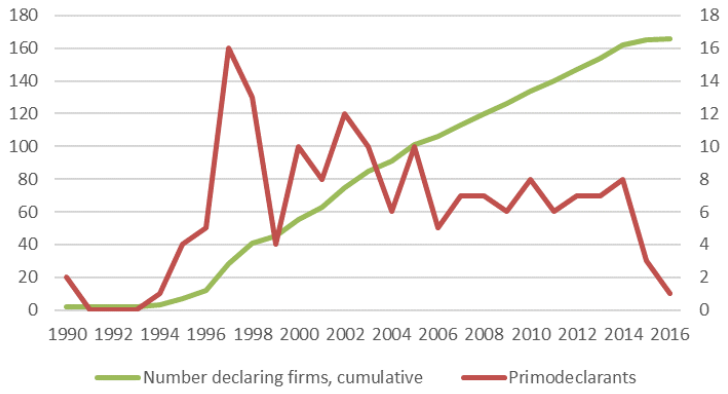



Source: Baron and Pohlmann, 2018

Notes: US patents. The left side depicts the evolution of various stocks (active, pending, and expired/lapsed declared SEPs). The right side depicts flows, i.e. entries and exits from the stock of active declared SEPs, including projections of future exits based on currently active declared SEPs' date of expiration.

Implementers may also need to consider the number of potential licensors. A first approximation to this number is the number of firms having made at least one SEP declaration. But not every company declaring SEPs will become an active licensor of SEPs, even if some of their declared SEPs are essential. Companies may also assert and license SEPs even though they have no SEP declarations.[39] Considering declarations made to ETSI, the cumulative number of declarants has continuously increased over time, whereas the number of new declarants each year has almost continuously decreased over time since inception of 3GPP. See Figure 5 below. Note that the referenced observation period does not include the most recent years.

**Figure 5: Cumulative number of declaring firms and yearly number of new declarants (primo declarants)**




Source: Based on the Searle Center SEP declaration data (Baron and Pohlmann, 2018)

Notes: ETSI only. Left scale for cumulative number of declaring firms, right scale for number of primo-declarants per year. Data possibly subject to truncation.

## 4.2 The number and share of total SEPs are subject to diverging estimates and the essentiality rate of declared SEPs appears to be small

The population of declared SEPs includes patents that are not truly essential. While the number of declared SEPs is an objective measure that can be determined with reasonable precision and confidence, the number of true SEPs is unknown. Estimates of the share of SEPs among declared SEPs cited in litigation, practitioner discussions, and

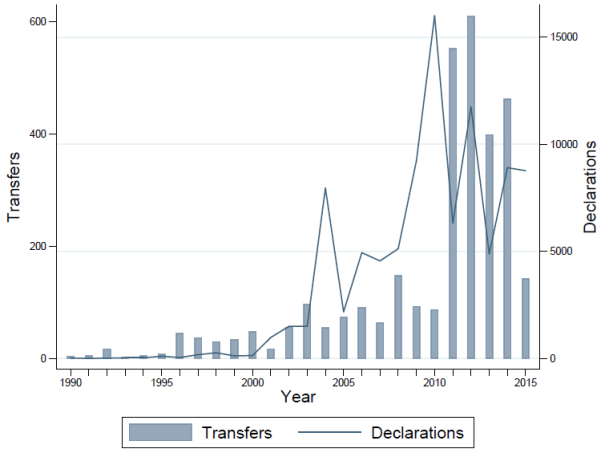
[39] This may include companies that did not participate in developing the standard. Companies that do not participate in standards development may not have an obligation to declare potential SEPs. See generally Contreras, Jorge L., 'When a stranger calls: standards outsiders and unencumbered patents', *Journal of Competition Law & Economics*, 12.3, 2016, pp. 507-540.

the literature span a wide range. Estimates of the number of SEPs by company display similar divergences. An average essentiality ratio somewhere between 25% and 40% seems realistic, with substantial variation between standards and portfolios.[40] Patent findings from litigation cases in the US similarly suggest that the share of SEPs among declared SEPs is well below 50 percent.[41]

### 4.3 SEP transfers have not significantly changed the number of licensors

In addition to being issued its own SEPs, a company may become a SEP holder by acquiring SEPs that may or may not have been declared as essential. About 18% of declared SEPs change ownership. The number of reassignments of declared SEPs has significantly increased in recent years in both Europe and the US. See Figure 6.

**Figure 6: Transfers and declarations of declared SEPs, number of US patents by year**




Source: Baron, Justus, and Laurie Ciaramella. "The market for standard-essential patents." (2018). Working paper.

Notes: Transfers are defined as re-assignments at the USPTO, excluding assignee name changes, mergers and acquisitions, and within-firm re-assignments.

[40] See generally Goodman, David J., and Myers, Robert A., '3G cellular standards and patents', *International Conference on Wireless Networks, Communications and Mobile Computing*, Vol. 1, IEEE, 2005. Stitzing, Robin, et al. 'Over-declaration of standard essential patents and determinants of essentiality', *SSRN 2951617*, 2017. Brachtendorf, Lorenz, Gaessler, Fabian and Harhoff, Dietmar, '*Truly Standard-Essential Patents? A Semantics-Based Analysis*', 2020. All these estimates are based on assessments produced and paid for by commercial parties. It is important to bear in mind that different parties have different interests, which may contribute to skew the estimations of their experts. Furthermore, some stakeholders and observers have criticized the existing assessments as inherently unreliable, citing e.g. the limited workload allocated to the assessment of each patent as compared to the substantially more thorough essentiality assessment carried out by pools or during litigation for the patents under dispute.

[41] Lemley, Mark A., and Simcoe, Timothy, 'How essential are standard-essential patents', *Cornell Law Review* 104, 2018, p. 627. Overall, the patent findings from litigation data confirm that the population of declared SEPs includes a significant share of patents that are invalid or not infringed by products implementing the standard to which they were declared essential.

Reassignments can both increase and decrease the population of potential SEP holders. There are well-known cases of so-called "privateering", where a SEP-owning company transfers a part of its SEP portfolio to another company mainly for purposes of licensing and monetization, thus increasing the number of licensors. But there are also cases in which one SEP holder acquires the entire SEP portfolio of another company, adding it to its own portfolio and thus reducing the number of licensors. Overall, there is no conclusive evidence as to whether SEP transfers have significantly contributed to splintering of SEP portfolios and increased fragmentation.

### 4.4 Participation in 3GPP standards development has steadily increased

Over recent years, a significant number of new entities have begun participating in 3GPP and contributing to RAN. The number of contributions to RAN displays an almost continuous increase, with a recent uptick (Figure 7). While the number of contributing firms has long been relatively stable at around 100 entities, with significant overlap from one year to the other and only low numbers of new contributors each year, the number of new contributors appears to have increased in more recent years. It should be noted that contributions to 3GPP are highly heterogeneous in type and significance, reducing the significance of contribution counts (Baron, 2019).[42]

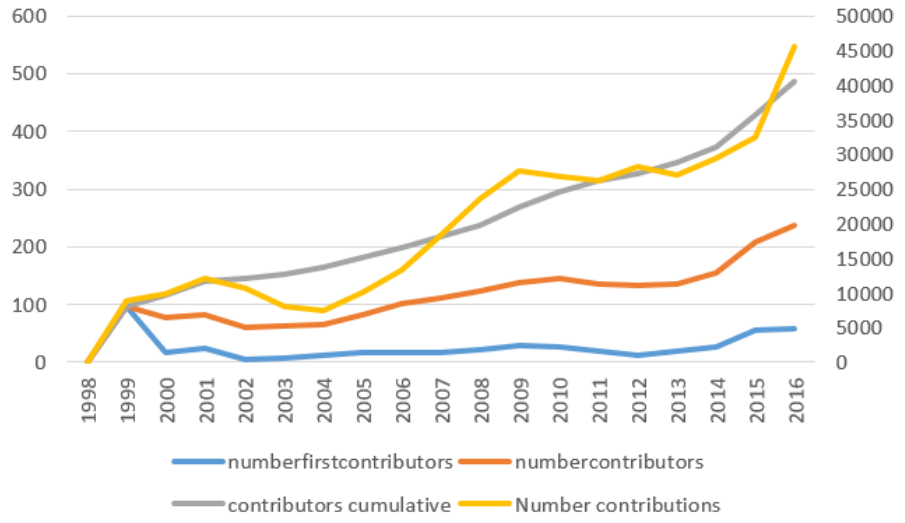



**Figure 7**: Contributions and contributing organizations to 3GPP's TSG RAN

[42] See generally Baron, Justus, 'Counting standard contributions to measure the value of patent portfolios - A tale of apples and oranges, *Telecommunications Policy*, 44.3, 2020, p. 101870. While also patents are highly heterogeneous, at least a patent is a clearly defined entity established by patent law. By contrast, what constitutes a "contribution" to 3GPP is highly context-specific.

### 4.5 SEP royalty payments have grown over time but are a relatively small fraction of the value of product implementations

Like any business agreement, licensing agreements are generally confidential and there is no comprehensive database containing details of patent licensing contracts in Europe or elsewhere. In the US, however, a non-negligible number of licensing agreements have been disclosed by public companies to the Securities and Exchange Commission ("SEC"), in accordance with the rules and regulations of the SEC with regard to reporting obligations, and such agreements have some significance for the valuation of such companies. This information has been compiled and is being distributed by a number of private vendors. However, it still represents only a spotty and partial picture of the much larger population of licensing agreements, and therefore has limited usefulness in the overall analysis of total licensing agreements or royalty payments. That said, there is some indication that royalty payments roughly doubled between 2009 and 2016. SEP licensing revenues have grown at a faster rate than IPR licensing revenues in general.[43] According to one estimate based on known SEP holders' aggregate licensing revenues, the aggregate royalty yield has represented a constant and relatively small share of the price of the product market implementations of those standards covered by the declared SEPs.[44] Nevertheless, court findings provide evidence for cases in which individual implementers pay royalties to individual SEP holders that exceed these calculated industry average aggregate royalty yields.[45]

## 5. Standards in the IoT world

Several SDOs are developing technical standards intended to address the various standardisation needs described in section 1 of this Part. Within EU standardisation organisations, ETSI and CEN/CENELEC are supporting the development of IoT applications. Similar to 3GPP for mobile wireless communications, OneM2M is an international partnership between different SDOs seeking to develop IoT relevant standards.

These standards can be divided into subsets as described below.

### 5.1 Standards needed to connect "Things" in the IoT

Connectivity is a key aspect of IoT covered by standards. The method used to connect objects or things will depend on, among other factors, the required signal range and power, reliability, latency, quality of service, throughput rate, and communication bandwidth. Based on their exact requirements, certain communications technologies will be more appropriate than others. For stationary devices, like traffic signals in the

[43] Galetovic, A, Haber, Zaretzki, L., 'An estimate of the average aggregate royalty yield in the world mobile phone industry: Theory, measurement and results, *Telecommunications Policy*, 42, 2018, pp. 263-276

[44] Galetovic et al.

[45] See for instance Findings of Facts and Conclusions of Law of the United States District Court, Norther District of California, San Jose Division, of 21 May 2019, Federal Trade Commission v. Qualcomm Incorporated, Case No.17-CV-00220-LHK.

automotive space or household appliances, fixed-line communication capabilities may provide viable alternatives. Mobile objects or things in an IoT network may interconnect using radio communication technologies. Many radio communication solutions are available. Depending on the required signal range and data rate, for example, we have:

- Short range, low power (but low data rates): RFID, NFC, Bluetooth Low Energy (BLE), ZigBee, ZWave;
- Medium range: Wi-Fi (high data rate), EnOcean (low power);
- Long range, low power: LoRa, Sigfox, Weightless, Narrowband Fidelity (NB-Fi); and
- Long range, higher power (but higher data rates): 2G, 3G, 4G, 5G NR, LTE, Worldwide Interoperability for Microwave Access (WIMAX), etc.

### 5.2 Standards needed to ensure the quality and security of the IoT communication technology.

The communication of data between the objects in the network needs to be reliable and meet certain quality standards. Depending on the intended application, different levels of security or safety requirements may apply. These requirements need to be satisfied across all communication technologies used in a given IoT network and include standards covering encryption technologies or cyber security as well as QoS standards.

### 5.3 Standards needed to enable co-operation between different devices in the IoT and cloud-based services.

Additional standards may be needed to make the data communicated useful to both the IoT objects and the cloud-based services with which those things interact. These standards define the semantic content of the data exchanged so that the objects in the IoT "understand" how to interpret such data.[46] Other standards will allow objects, including those using different communication technologies to interoperate, as well as standards that define "application programming interfaces" ("APIs") which act as interfaces between the objects and the cloud-based platforms.

### 5.4 Standards defined for and applied within the things of the IoT.

All the standards that must be implemented to ensure the correct functioning of objects in the pre-IoT period will remain applicable and required in the IoT world. An overview

[46] For example, an autonomous vehicle in the IoT must be able to interpret correctly information about traffic jams or accidents on its planned travel route. It has to react correctly to control commands and traffic information received from cloud-based services, and to deliver traffic information in a way that can be interpreted by the other objects in the IoT and by services in the cloud.

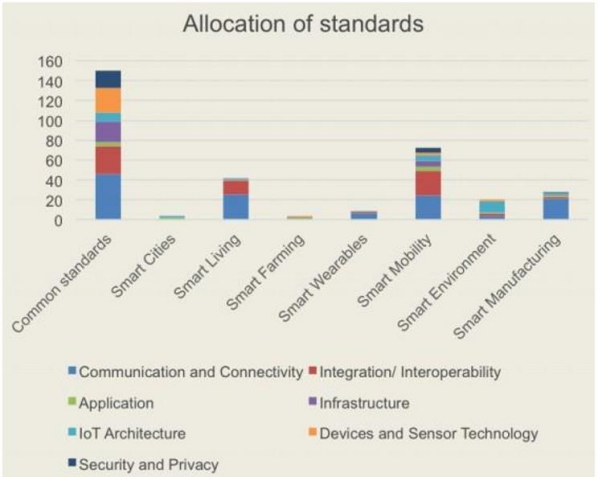
of the standards organizations dealing with these standards can be found in Figure 2 above.[47]

### 5.5 Standards required for ensuring the security of the internal operation of things in the IoT (cyber security standards).

In addition to the necessary communication features which each object in the IoT needs to provide, the internal functioning of the IoT objects must also be protected. Therefore, cyber security standards are needed to ensure the safe and untampered functioning of the objects in the IoT, at least in areas in which these objects deliver services and functions.

More and more companies and organisations understand the need for standards, as the current rapidly developing IoT landscape is overwhelmed by different technologies, protocols, development tools and reference architectures. Some of them apply to a few verticals (or domains); others are generic and can be applied to more than three IoT domains, as shown in Figure 8 below.

**Figure 8: Overview of identified IoT standards by an ETSI OneM2M Study**




Source: IOATI, 2017

## 6. SEP licensing in the IoT

This section discusses the likely challenges facing IoT implementers and SEP holders in the years to come. We first highlight the complexity of the IoT landscape. Then we discuss the difficulties that such complexity may create – transaction costs, reduced transparency, lack of predictability for both licensors and implementers, the choice of

[47] Examples for standards in this category define, for example, the requirements to be fulfilled by combustion engines in an automatic vehicle or passenger safety standards for automobiles.

licensing level and the valuation of SEP portfolios across different IoT verticals, just to name a few.

## 6.1 Complexity

The multiplicity of IoT verticals described in previous sections may give rise to new SEP licensing issues. Further complications are likely to arise due to a number of factors, including (i) the variety of business models that may operate in each of those verticals; (ii) the SEP licensing model used for each vertical; and (iii) the multiplicity of standards used in each vertical (in particular, connectivity standards).

First, McKinsey Digital (2015) identifies at least five interrelated business models in the IoT world: (i) *platforms*, such as Google, Facebook, Apple, Uber, etc.; (ii) *pay-per-use or subscription services*, for example, Netflix, Signify, and Rolls Royce; (iii) *IPR licensing businesses*; (iv) *data-driven businesses*, as practiced for example by various IoT platforms such as Salesforce, Thingworx 8, Microsoft Azure, IBM Watson, or Here; and (v) *companies producing objects or things*, such as modules, smart meters, connected cars, among others.

As related to SEP licensing, the use of platform, service, or data-driven business models will create challenges in determining the licensing business model and the license value that can be attributed to the use of the standardized technology in creating value from these businesses. If SEP licenses are needed for the combination of products (which make no use of SEPs by themselves) and cloud-based software products (which also make no use of the SEPs without the related products), license value cannot be attributed to products and therefore cannot be charged to participants in a product manufacturing value chain.[48]

Second, the licensing model employed to license SEPs may vary across verticals and business models, in part because the value of a license may differ from one business model or IoT vertical to another. For example, licences for multi-sided platforms may be based on the implementation of the standard and use of relevant SEPs on the consumer service side. SEP licences to multi-sided platforms may also be based on the revenues generated on the other side of the market (e.g. advertising revenues in the case of Google and Facebook, or application developer revenues in the case of Apple's App Store, or the revenues of drivers in Uber's case). In the case of subscription services, on the other hand, the royalties charged to are likely to be set by reference to the number of subscribers or in proportion to the service revenues, whereas in the case of data-driven businesses royalties may be a function of the number of licensees. Each of these approaches entails its own set of complications in level of licensing and valuation.

[48] For example, in the automotive vertical of the IoT a fleet of L2/L3 automated/autonomous cars will clearly be a sample of "things" in the IoT. The cars themselves come with the licenses needed for their operation. After the sale of the car, a software provider may offer a cloud-based software package that enables platooning of two or more of these cars. Licenses to some SEPs will be needed only when two car owners decide to use this feature, e.g. patents that cover the methodology to find the minimum or maximum speed of a platoon when going uphill or downhill. Since it is unclear whether car owners will use this feature, it does not seem clear that the OEM or its value chain should be the licensee.

Finally, the fact that within each IoT vertical one or more standards may be used (especially connectivity standards) is also a source of added complexity. For instance, in some IoT verticals, different connectivity standards may compete to become the preferred standard, whereas in other IoT applications various standards may be used in parallel. Commercial design decisions will ultimately determine the success of the different connectivity standards, perhaps also affecting the SEP licensing approach for such standards.

**Table 1** below presents comparative information on a subset of IoT connectivity standards, including the type of connectivity, standard name, and SDO name. In addition, it describes the royalty regime (FRAND licensing or royalty free licensing) that is included in the relevant SDO's IPR policy.

**Table 1: IoT connectivity standards and IPR policies**

| Connectivity | IoT standard | SDO | Royalty regime |
|---|---|---|---|
| LoWPAN | Zigbee | Zigbee Alliance/IEEE | Royalty Free or FRAND* |
| | Bluetooth LE | Bluetooth SIG/IEEE | Royalty Free |
| LPWLAN | WiFi HaLow | IEEE | FRAND* |
| WLAN | WiFi | IEEE | FRAND* |
| Cellular | 2G, 3G, 4G, 5G | 3GPP | FRAND |
| LPWAN | EC-GSM, LTE-M | 3GPP | FRAND |
| Low Range WAN | LoRa | LoRa Alliance | Royalty Free |

(*) denotes the more restricted FRAND-based IPR policy by IEEE.

## 6.2 Potential concerns: transaction costs and transparency

According to some members, apart from having a larger number of potential implementers, the IoT will bring about an increased number of participants in the standard development process. This, together with the increased technical complexity of the standards, may lead to a larger number of declared SEPs and SEP declarants and consequently to an increase in the number of true SEPs and the number of SEP holders. They are concerned that these developments may increase transaction costs and reduce transparency in the SEP landscape, making it more difficult for licensors to set FRAND royalties for their SEP portfolios that will also be reasonable in the aggregate for the total SEPs stack. From the implementer's perspective, a further concern could be the resulting difficulty in determining: (i) the universe of SEP holders from which licenses need to be obtained, (ii) the estimated FRAND royalty for each of these licenses, and (iii) the resulting aggregate royalty for implementation of a given standard in a product, to name a few.

According to some members, one of the concerns regarding increased transaction costs is due to the nature of IoT verticals as compared to other industries, such as smartphones. While in the smartphone industry a large share of the downstream value corresponds to a relatively small number of manufacturers producing a limited variety of devices, some of the IoT verticals shown in Figure 1 above are (or will be) much more fragmented. The population of licensees may thus not only be larger and more diverse, but the number of small and medium-sized enterprises ("SMEs") requiring SEP licenses will likely be much larger than in the industries where SEP licensing has taken place thus far. This is especially important since SMEs may be less experienced with the complexities of FRAND licensing, and have very limited resources to deal with such complexities.

For the reasons stated above, certain members believe that the increased number of implementers and the large variety of products to be licensed will require a more efficient and cost-effective SEP licensing regime. In contrast, some other members believe that these concerns are unjustified because SEP holders are unlikely to enforce their SEPs where royalties at stake are not significant enough to justify the cost of licensing. Thus, they consider that in IoT verticals where the contribution of the standards to the value of the implementations is limited, and in particular with SMEs, these SEP licensors will not be aggressively pursuing royalty revenues.

### 6.3 Potential concerns: the level of licensing, valuation

An important issue that, while debated in the past, is bound to be debated at length in the context of SEP licensing in the IoT is the appropriate level of licensing. Some members believe the SEP holder is free to decide at what level of the value chain to license its SEPs, while other members believe any implementer, regardless of their position in the value chain, may request a license. Therefore, the following questions must be addressed: (i) which is the appropriate and most efficient level of the supply chain at which licenses should be offered/taken? (ii) should that level be different from one IoT vertical to the other? (iii) what are the implications, if any, of the choice of licensing level for valuation? (iv) should the licensing level reflect established procurement norms in the different supply chains?

Some IoT verticals, such as the automotive industry, have well-established procurement norms in their supply chains, whereby suppliers have to provide IP indemnities for the products supplied to end-product manufacturers. SEP holders approaching these end-product makers instead of their suppliers to negotiate a license are likely to meet resistance. This creates challenges for arriving at solutions acceptable both to SEP holders and value chain participants in the IoT vertical concerned. These challenges will likely be greater if new IoT supply chains are established and products or services markets are formed before acceptable SEP licensing norms are created in the relevant IoT verticals.

Issues relating to level of licensing and licensing in the value chain are addressed in more detail in ***Part 3.2*** on licensing in the value chain below.

With respect to SEP valuation, concerns have been expressed about whether FRAND terms and conditions should be set uniformly across IoT verticals or should be variable from one IoT vertical to the other. Because different products are sold in different verticals (and these products differ from those in the smartphone industry), the incremental value of the standardised technologies covered by SEPs will likely be different across different IoT verticals (and, importantly, need not bear a relationship to the incremental value for the smartphone industry). For some members this implies that valuations done for SEP licenses may justifiably vary across different products in different IoT verticals. Yet, there is no consensus amongst members on this matter, which is discussed further in ***Part 3.3*** on FRAND terms and conditions below.

# PART 3

# ANALYSIS OF KEY ISSUES AND PROPOSALS FOR IMPROVEMENT

# PART 3.1 – INCREASING TRANSPARENCY OF SEPS LICENSING

## 1. Introduction

There is a multitude of technical standards that may be used in any given product. These standards cover a wide array of functionalities relevant to the development and manufacturing of products, including but not limited to: mechanics, electronics, safety, security, quality, development methodology, and many more.

In most cases, standards are covered by patents that are essential to the implementation. In other words, the standard cannot be included in a product without making use of the patented technology. As previously discussed, SDOs in which these standards are developed typically require those contributing to the standard to "declare" patents that they believe are or may become essential to a particular standard ("declared SEPs"). However, there are some standards with no declared SEPs at all, some standards with very few declared SEPs, and some standards with a very large number of declared SEPs. There could be a variety of reasons for this discrepancy among standards, some of which are described below.

For one thing, the contributors to the development of different standards may have varying degrees of interest in patenting their contributions altogether and therefore, they may not have patents to declare. Further, the more advanced the technologies contributed to a standard are, the higher the likelihood that it includes inventions, for which patents were filed before the technology was contributed. Another reason may be that the product implementations for certain standards may not be conducive to significant revenue being generated through SEP licensing and thus, the desire to obtain or declare patents may be low. However, in some instances, contributors may decide to obtain and declare a large number of SEPs for strategic reasons, including but not limited to: (i) establishing their reputation as a contributor of many technical solutions; (ii) assembling a substantial portfolio of SEPs as basis for licensing or for defensive purposes; or (iii) preventing accusations of failure to disclose, or insufficient disclosure, especially if they intend to enforce their SEPs and obtain royalty revenue. Finally, the IPR policies of different SDOs may be relevant to a decision by a contributor with regard to the extent and scope of SEP disclosures. In some instances, SDOs may encourage participants to declare their SEPs by identifying the relevant patents and patent applications, while in other instances they may only require general (so called 'blanket') declarations. These and many other factors could impact the development and evolution of the SEP landscape and disclosure of SEPs for a given standard.

The desirability of greater transparency with regard to the SEP landscape is not a contentious issue in general. Transparency is considered beneficial for both SEP holders and implementers, facilitating SEP licensing and paving the way for more efficient

advancement in technology markets. This Part aims to address certain key issues surrounding transparency in SEP declarations, as follows.

1.1 How does the composition and development of the SEP landscape affect transparency?

1.2 What are potential challenges to the development of market solutions?

1.3 Are there new IoT-specific SEP transparency challenges that need to be addressed?

1.4 What specific solutions could potentially address the existing and potential SEP transparency challenges to the benefit of all market actors?

### 1.1 How does the composition and development of the SEP landscape affect transparency?

Most would agree that the processes established by SDOs for the submission of SEP declarations are designed primarily to advance standard development, not to form a basis for SEP licensing. As a result, SEP holders have been encouraged to declare patents that they believe are either essential to the standard or may become essential to the standard depending on the development process. Many believe that this has resulted in "over-declaration" for some standards, especially in the connectivity technologies. From the SDO's perspective, however, over-declaration is not an issue because the goal is to ensure the broadest possible declaration of SEPs. In some cases, SDOs allow blanket declarations by SEP holders in part because such declarations are considered sufficient to remove the risk that a SEP holder would refuse to license its SEPs if the covered technical contributions are included in the standard – in other words, in case the SEP holder will have SEPs there is an assurance that an implementer will have access to a SEP licence regardless of whether the SEPs have been individually declared to the SDO. Blanket declarations also serve the purpose of identifying the relevant SEP holders, despite the fact that they provide no details regarding the scope of the SEP portfolio.

Given that SEP declarations are not intended to facilitate SEP licensing, it is understandable that SDOs have differing positions regarding the need for transparency in the SEP landscape. At least one SDO, namely ETSI, provides a database for the individual declaration of patents or patent applications, and asks declarants to provide further indication to which section of a (draft) standard the declared patent or application is considered to be essential or possibly essential. However, no mechanism is in place to either ensure the accuracy of the information provided in a declaration, or update the information as needed (for example, over time, an application may issue into a patent, a patent may get invalidated by a court, or the SEP holder may determine that a declared patent is in fact not essential as the technology was not included in the final standard).

Most other SDOs do not have the same requirements as ETSI – in some instances, the SDO IPR policy simply requires that a short document be submitted confirming the SEP holder's position on FRAND licensing. Such documents do not require a listing of patent numbers, let alone references to specific sections of the (draft) standard for which declared patents are claimed to be essential. These so called 'blanket declarations' serve to inform implementers as to the identity of possible SEP holders, and to provide some assurance that a standard will not be blocked by the declarant if it will hold SEPs (i.e., by refusing to provide a license to the SEPs covering the standard) and they also inform implementers as to the identity of possible SEP holders. However, they fail to provide information on the existence, relevance, or number of the relevant SEPs for the standard. Finally, there are some other SDOs that require only negative disclosures – i.e. disclosure of patents that a participant is not willing to license under FRAND terms and conditions – which provides no visibility into the SEP portfolio of the declarant.

The lack of detail in a large of majority of SDO declarations makes it difficult if not impossible for an implementer using the standard to ascertain the scope of licenses needed to avoid infringing applicable SEPs. Instead, implementers have to do their due diligence on those questions regarding the potentially relevant SEPs portfolios individually, although SEP holders are facing the same questions. Thus, many implementers may choose not to proactively investigate the matter and rather wait for SEP holders to notify them about their SEP portfolio and provide a notice of infringement. Many members believe that the process as it currently exists – i.e. the lack of transparency for SEPs and SEP holders – increases licensing transaction cost to the detriment of both SEP holders and implementers. While some members point out that there is currently no clear evidence for that, other members believe that there is a risk that the challenge of SEP transparency may slow down the diffusion of FRAND-based standards in the market.

The transparency of the SEP landscape is expected to be of particular importance in the current market environment in view of the following two issues discussed in more detail in Part 2, at section 4, above:

- **The cumulative number of declared SEPs continues to increase**

  The number of declared SEPs, especially for connectivity standards, has grown significantly over the last three decades and continues to increase. After several years of stabilization, the recent development of the 5G cellular standard is resulting in a renewed increase in the number of declarations and declaring companies.

- **The number and share of true SEPs are subject to diverging estimates**

  It is generally agreed that the existing databases of declared SEPs include many declared patents that are in fact not essential. The determination of essentiality is a complex investigation requiring legal and technical expertise, and studies show

an average essentiality rate of between 25% and 40%, depending on the particular standard and the identity of the declarant.

**1.2 What are potential challenges to the development of market solutions?**

While there is general agreement by most market participants that greater SEP transparency would be beneficial, it seems that there has not existed sufficient urgency so far to create practical solutions to the transparency problem. Below is a non-exhaustive list of potential reasons for this lack of urgency, and of challenges in creating such solutions:

- Sophisticated actors have found solutions that may mitigate transaction costs, thus reducing the practical impact of this issue;
- The transaction costs for most major SEP holders and implementers are apparently not significant enough in relation to their total business costs;
- A so called "collective action problem", where – market actors struggle to coordinate themselves to collectively create a solution to a jointly held transparency problem (e.g. creating their own essentiality analysis to reduce duplicative transaction costs). This collective action problem can be more prevalent in the case of SMEs;
- The initial cost burden required for creating a balanced system with greater transparency is substantial and not trivial to distribute between SEP holders and implementers;
- SEP holders may be concerned that greater transparency could be used opportunistically to further support patent hold-out;
- Implementers may be concerned that greater transparency could lead to additional burdensome obligations on their part;
- Not all stakeholders believe that greater transparency will translate into improved SEP licensing.

If SEP holders and implementers alike benefit from greater transparency, then solutions to address the matter should be possible. Accordingly, as a starting point, a better understanding of the issues outlined above can lead us to developing sustainable transparency solutions, through private or public means, or both.

**1.3 Are there new IoT-specific SEP transparency challenges that need to be addressed?**

Many of the emerging IoT verticals will likely differ in fundamental ways from the smartphone industry, which has been at the centre of most debates and disputes regarding the licensing of SEPs for the last two decades. These fundamental differences may relate to the value chains for various verticals, the market structure, business

models, and procurement norms, just to name a few. These will also vary depending on the IoT vertical. In industries where implementers have a reasonably good understanding of the standardized technologies they are using in their products, the lack of transparency with respect to SEPs outlined above can still create licensing challenges. As many implementers in the different IoT verticals currently lack a deep understanding of connectivity standards and related technologies, these challenges could be further exacerbated.

### 1.4 What specific solutions could help address the existing and potential SEP transparency challenges for the benefit of all market participants?

To allow for more efficient licensing of SEP in light of the complexities discussed thus far, it would help to have better knowledge of the SEP landscape in general. This section addresses three new or improved building blocks that if implemented, would provide enhanced transparency with regard to the SEP landscape – in other words, more information about essential, valid patents for a given standard. Even though it may be impossible to create a fully transparent system, having a reasonably clear SEP landscape will go far to support licensors and implementers in their SEP licensing negotiations.

The first building block concerns the improvement of SEP declarations. The second building block relates to the introduction of systematic testing of declared patents to determine essentiality. The third building block aims to increase the likelihood that a SEP will be found valid when tested in court.

The sections below discuss how the above building blocks might be established and/or enhanced to improve the transparency of the SEP landscape covering connectivity standards developed at 3GPP and ETSI as well as the many other standards that may be used in IoT products.

Some of the proposals described in this Part could be read together with some other proposals described in ***Part 3.4*** on negotiations and handling disputes in order to balance the burden of obligations between SEP holders and implementers.

## 2. SEP Declarations

Generally, as part of the standard development process, SDO IPR policies require some type of a declaration by SEP holders so as to avoid a situation where a technical solution covered by a SEP is adopted into a standard, but the SEP holder is unwilling to offer licenses under FRAND terms and conditions. Typically, SEP declarations provide early assurance that the standard may adopt the patented solution without the risk that implementers of the standard will later be blocked from using the standard as a result of the SEP holder's refusal to license.

It is unavoidable that the declaration process leads to declaration of patents SEPs that in fact are or will not be essential. Considering that SEP declarations are encouraged to be filed early on in the standard development process, for the reason stated above, many of the declared patents and applications could be declared as "likely to become essential"

depending on what is included in the final version of the standard as adopted. In fact, in many cases, a patent application may be filed shortly before a proposed technical contribution is made, and the claims issuing out of that application are therefore unknown until much later in time. Accordingly, in this situation as well as others, at the time of declaration the SEP holder cannot know whether the technical contribution covered by a patent or patent application will be included in the standard, thereby making the patent essential to that standard. Thus, the timing and scope of SEP declarations in and of itself creates a significant amount of uncertainty and lack of clarity in the SEP landscape as reflected through declarations.

While blanket declarations serve to assure that the use of a standard is not blocked by a SEP holder not willing to grant licenses, they do not provide any additional transparency regarding the overall SEP landscape. Of course, the declaration identifies the declarant (who might be or become a SEP holder), but no information about the size and composition of the SEP portfolio or specific patents is disclosed. This is not a problem for standards where SEP licensing for monetary compensation does not play a significant role but becomes an issue for standards with many SEP holders actively licensing their SEPs for royalties to obtain a fair and reasonable return for their contributions to the standard.

All these issues ultimately may lead to increased transaction costs, since in any SEP license negotiation between SEP holders and implementers those issues are likely to be addressed by each negotiating party. In this section some proposals are discussed which could improve the process and quality of available information on SEP declarations, leading to more transparency regarding the SEP landscape and ultimately lowering licensing transaction costs.

### 2.1 Increase incentives for SDO's to request specific SEP declarations and discourage blanket disclosures

**Proposal 1**

As a prominent example among SDOs, ETSI's SEP declaration policy asks SEP holders to declare specific patents and patent applications that they believe to be essential, or that may become essential, to a specific standard. ETSI's database links these declared SEPs and applications to information from the European Patent Office to keep all family and status information up to date. While this is still far from being perfect, other SDOs' patent declaration databases offer significantly less information. Many of these SDOs are not located in the EU, but their standards may have a substantial impact on the EU (e.g. the WiFi/802.11 standards created by IEEE). Blanket declarations, do not achieve the same level of transparency, making it more difficult to estimate the number of SEPs and SEP holders that are relevant for a particular standard. Creating additional burdensome obligations solely for ETSI and other SDOs based in Europe may further increase the imbalance, and place European SDOs at a disadvantage. On the other hand, increasing SEP transparency across all standards (not just in the EU) will help

licensing negotiations proceed in a more efficient and cost-effective manner, benefiting all parties involved and the industry as a whole.

***Therefore, it is proposed that the EU should create stronger incentives for SDOs whose standards impact the EU or for SEP holders contributing to standards that impact the EU to make specific disclosure of individual patents (or preferably patent claims) and standards (preferable standard sections) mandatory.*** Specific IPR disclosures need not replace blanket declarations, which can typically be made earlier in the standardization process. SDOs may require generic licensing assurances early in the standard development process in addition to requiring specific IPR disclosure at a later stage, when more information on the scope of the final standard specification and the granted patent claims has become available (e.g. after final adoption of a standard). An entity that commits to royalty free licensing or non-assertion of all potential SEPs may be exempt from a specific disclosure obligation.

The proposed requirement for specific SEP declarations may initially require additional effort on the part of SEP holders to assess their portfolios and provide the required information to the SDO as part of the declaration. However, experts who support this proposal believe that this extra effort would be counterbalanced by a smoother SEP licensing process, benefiting the SEP holder. Also, for owners of SEPs checked by independent evaluators and confirmed true SEPs ("confirmed SEPs"), there will be reduced risk of decreasing royalty revenue (such being based on their true SEPs) due to dilution by declared SEPs of little or no relevance and value to the standard.

The members that support this proposal also believe that there will be notable benefits for implementers, namely the fact that the proposed approach would reduce the effort to evaluate the essentiality of SEPs in order to determine the need to take a license. Search cost currently borne by implementers and/or third parties could be saved, ultimately leading to lower consumer prices. The related royalty burden could be estimated more easily by implementers early in the product development process, at least in cases where a substantial portion of the declared SEPs are already granted and can therefore be evaluated regarding their relevance, i.e. essentiality to the standard.

Moreover, supporters of this proposal argue that this solution would have a positive effect for SDOs that already require detailed declarations, because it would level the playing field among SDOs in competing for standard developers. Moreover, if additional measures were to be implemented in order to further enhance the transparency of the SEP landscape – such as essentiality checks – the proposed specific and detailed SEP declarations would provide a solid framework to build upon.

In contrast, some experts have expressed concerns about this proposal. For one thing, some believe that requiring additional efforts by SEP holders to more specifically identify relevant patents and provide the requested detail about these potential SEPs will involve expenditure of additional resources and may create incentives for the SEP holders to attempt to obtain increased royalties in order to compensate them for this extra cost. Another concern relates to the feasibility of maintaining an updated database

that reflects the current status of the standard and the declared patents and patent applications (for example, when patents are issued, or if they are challenged in court or invalidated). Some members question whether this added burden should be placed on SDOs or SEP holders, or whether there are other means to achieve the same result. Finally, it does not seem possible to mandate these changes to IPR disclosure policies for non-EU-based SDOs and they will need to adopt such measures voluntarily.

**Proposal 2**

***The EU could direct SDOs to require, or could incentivise SEP holders to voluntarily provide, specific disclosure of potential SEPs, including specific designations of patents and standards, in order for their standards to be used for public procurement in the EU.***[49] The Commission could update its guidelines on the application of EU competition law to standardization agreements to encourage SDOs to require, or SEP holders to provide voluntarily, specific IPR disclosure.[50] This initiative would: (i) contribute to improving transparency for standard implementers, (ii) help level the playing field between SDOs, and (iii) establish a foundation for further measures in support of greater transparency on SEPs.

## 2.2 Encourage SDOs to offer a platform for additional information regarding declared SEPs

**Proposal 3**

As outlined above, current SEP databases do not contain information suitable as a basis for SEP licensing. Further, they lack a mechanism to reflect the evolution of the SEP landscape over time, meaning much of the information is likely outdated. The SEP landscape changes constantly, for example, as patent applications are granted or rejected, patents are invalidated or expire, or as standards are approved, supplemented or amended (affecting the essentiality of certain patents). Also, determinations of essentiality of patents, for example by third parties, are not reflected in the databases. It would be useful to enhance the accuracy of the information contained in SEP databases (i.e. beyond that provided in initial declarations), possibly by introducing a system that allows additional information to be aggregated to reflect the current state of the SEP landscape.

[49] OJ L 316, 14.11.2012, p. 12–33. Annex 3 to Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation only requires that IPR essential to the implementation of ICT specifications falling within the scope of the regulation is licensed to applicants on a FRAND basis. This should be complemented with a specific disclosure requirement in order to ensure that offered licensing terms are indeed fair and reasonable.

[50] OJ C11, 14.1.2011, p. 1, Communication from the Commission - Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements. The revised guidelines should recognize there are SDOs that are not at risk of creating anti-competitive effects (e.g. because their standards face sufficient competition from other standards). For other SDOs, adopting an appropriate IPR policy may ensure that anti-competitive effects are unlikely. In recognition of the detrimental and potentially anti-competitive effects of a lack of transparency regarding the number and identity of potential SEPs for a standard, an appropriate IPR policy requires specific disclosures of all SEPs, unless the declarant agrees to license all its SEPs on a royalty-free basis.

Accordingly, a proposal is made that the EU encourage SDOs to create a database to which parties may submit additional information regarding SEPs and SEP declarations. The SDOs should formulate clear rules regarding what type of additional information may be submitted. As a minimum, declarants should indicate whether they continue to believe that the patent is or may become essential.[51] Other updating information suitable for inclusion may include a reputable third party's essentiality evaluation and court rulings regarding the patent's validity or essentiality. At their own discretion, SDOs may choose to either restrict essentiality evaluations to specifically designated or accredited bodies, or to any party complying with specified criteria showing independence, scientific rigorousness, and expertise. The SEP holder and other SDO members should be allowed to submit such information as long as they comply with clearly defined rules.

The members supporting this proposal maintain that having updated information of this type in the SEP databases benefits SEP holders as well as implementers in various ways. For example, the information can be used to assess the strength of a given SEP portfolio. Further, the SEP holder has discretion as to what information is submitted for inclusion in the database. From an implementer's point of view, the enhanced SEP database is useful in that the additional information contained therein could make it easier for implementers to determine from which SEP holders a SEP license needs to be taken. If reliable information on essentiality or validity is provided in the database, this also saves the implementer considerable time and resources, which would otherwise have to be spent in assessing the declared SEPs. As a result, transaction costs associated with the process of reviewing SEPs and negotiating licences could be reduced considerably, which benefits all stakeholders.

These supporters of the proposal also believe that having essentiality assessments included in the SEP database has the advantage of creating an open and competitive process in which suitably qualified parties may offer essentiality evaluation services. Of course, a conflict could arise if multiple reputable third parties (e.g. different patent offices, or different courts) provide inconsistent assessments with regard to the essentiality of a SEP, in which case courts would have to ultimately decide the issue. Even in this situation, however, the additional information will be useful.

Other viewpoints are expressed by certain members who believe that there may exist significant challenges in setting up a process for collecting sufficient amount of meaningful information in SEP databases. First, they point out that it may be challenging to ensure the quality of the submitted information and to provide sufficient incentives for SDOs and SEP holders to use the database diligently. Second, they maintain that the database could be used to submit biased and unreliable information,

[51] Such a reinforcement of a previously made declaration would be particularly relevant after adoption or major revision of the standard and/or after grant of the patent. SDOs may install a process after standard adoption for inviting all declarants to the draft standard to indicate whether they believe their patents to be essential to the standard as adopted, or if they still believe such patents (or patent applications) may become essential. SDOs may also re-issue such invitations after significant revisions of a standard, or after a specified lapse of time after release.

and that certain parties may inundate the database with incorrect and misleading information in an effort to discredit the system. Accordingly, appropriate countermeasures should be taken to avoid such occurrences. For example, liability with respect to the information submitted to the database should be with the party submitting that information. Of course, this could create a disincentive for parties to submit information. Importantly, SDOs that choose to implement the proposed process should not be placed at a disadvantage vis-à-vis other SDOs that do not (for example, non-EU SDOs). Possible disadvantages include (i) additional cost incurred to maintain the enhanced SEP database, potentially resulting in unwanted consequences such as higher membership fees, and (ii) more obligations that could make the SDO less attractive, for example with standard contributors. In other words, having an unbalanced system established based on this proposal, with insufficient incentives, could lead to distortion of the standardization activities, and even to shifting of important standard development activities away from the EU. One member of the group pointed out that some of these challenges could be overcome by linking SDO databases with other existing databases, such as patent registers, and thus automating and facilitating the process.

Finally, it is worth noting that much of the information that is proposed to be included in the enhanced SEP databases will not be available until late in the standardization process, after the standard has been approved and possibly implemented in products and even licensing contracts have been concluded. Accordingly, the impact of the submitted or updated information on concluded agreements, ongoing negotiations, pending litigation cases and future licensing offers may be limited and should be evaluated.

***Proposal 4***

***Provided that the platform is limited to providing objective and relevant information, the EU should set clear rules that reduce liability and antitrust risks for the platform sponsor.***

***Proposal 5***

***The EU may use the instruments of financing of European standardisation to compensate European Standardisation Organisations and EU-based National Standards Bodies for the administrative costs of hosting such a database and assessing the compliance of third-party information with the relevance criteria.***

***Proposal 6***

***The EU should encourage third parties charged with determining FRAND licensing terms and conditions to take additional information provided on SDO databases into account.*** In particular, when assessing whether licensing terms for a specific SEP portfolio are consistent with the share of the portfolio in the overall "stack" of SEPs for a standard, greater weight should be given to those declared SEPs in the stack for which qualified corroborating information is made publicly available.

## 3. Essentiality Assessments

As mentioned earlier in this Part, the existing policies governing the SEP declaration process inevitably lead to disclosure of patents that are not and may never be essential, in large part due to the desire for early disclosure in connection with the standardization process. Therefore, for added accuracy and transparency, adding essentiality assessments as a later component of the process will be useful. Issues relevant to such essentiality assessments, and proposals in this regard, are set forth in this section.

Generally, essentiality assessments, if done properly, are likely to increase the transparency of the SEP landscape far beyond that made possible through the self-declaration process, no matter how detailed the self-declarations are. Furthermore, the feasibility, credibility, and success of essentiality checks, if introduced, will depend largely on several factors, including: (i) timing of the assessment; (ii) cost-effectiveness of the assessment; (iii) the independence of the evaluator and (iv) the rigorousness of the evaluation it performs. In terms of timing, essentiality checks can be done only after the standard is finalized and only for granted patents. However, the earlier they are performed, the better implementers will be able to consider the results in connection with their business and product plans (for example, to take the royalty burden into account when determining the cost of the product). On the other hand, SEP holders can take account this information in establishing their licensing strategies and programs. Thus, the increased transparency of the SEP landscape resulting from this process will benefit both SEP holders and implementers (e.g. regarding smoother licensing negotiations and less litigation).

High-quality essentiality assessments are generally considered to be costly, one point of reference being the average cost of essentiality checks done by most patent pools (see ***Part 3.4*** on negotiations and handling disputes). Essentiality checks should thus be introduced in a pragmatic manner balancing the complementary goals of precision versus reasonable effort, and early availability versus certainty.

At least one Patent Office has attempted to introduce some version of third party patent reviews. A few years ago, the Japanese Patent Office established a service that provides a non-binding essentiality analysis called 'Hantei' in situations where parties are engaged in a SEP dispute and submit the patent for an 'advisory opinion'. However, it seems that for various reasons, this voluntary procedure has not yet been invoked to assess patent essentiality claims.

Presented below are certain proposals to establish processes for improving transparency of the SEP landscape through reasonable and cost-effective essentiality assessments. A recently concluded pilot study sponsored by the Commission and performed by several European universities and institutes has investigated possible ways to introduce essentiality assessments in a practical, cost-effective, and reasonable manner. The proposals in this section and the results and proposals of the pilot study should be assessed in conjunction with each other. [52]

### 3.1 SEP holders to have SEPs intended to be licensed checked on essentiality

**Proposal 7** ★ ★ ★ ★ ☆

The fact that no essentiality checks are systematically performed for declared SEPs to determine whether they are objectively SEPs ("true SEPs") leads to a lack of transparency as to the ownership of true SEPs following the adoption of a standard, what licenses may be needed to lawfully implement the standard, and what the estimated aggregate royalty for these licenses may be. For one thing, absent reliable information about the estimated total number of true SEPs, it is difficult for SEP licensors to determine FRAND royalties for their SEPs while taking into account the reasonable aggregate royalty. Additionally, some SEPs cover more significant aspects of a standard than other SEPs for the same standard, and without more clarity regarding the essentiality of declared SEPs, the relative value of SEPs may not be taken into account in determining FRAND royalties.

***To improve these observed weaknesses, it is proposed to introduce independent essentiality checks for those SEPs that SEP holders intend to commercialise, whether for offensive or defensive licensing purposes.***

To create a reasonably clear picture of the SEP landscape for a particular standard, essentiality checks should be done as quickly as possible after the approval of a standard and before a SEP holder starts to license its SEPs. Essentiality checks need not be performed for every declared SEP – only for those declared SEPs that the holder believes to be essential at the time of approval of the standard, and that are intended to be licensed by the SEP holder. A SEP holder has to make a claim chart before an essentiality check can be done by an independent evaluator. He will only spend money on such an essentiality check if he has sufficient confidence in the quality of his claim chart. This will already create a strong filter for the number of declared SEPs for which essentiality checks will be requested, and has already been shown to work effectively in patent pools, where patents are checked by independent evaluators based on claim charts submitted by the SEP holders. Taking into account estimates from various sources that only between 25%-40% of all declared SEPs may be essential, this means that for somewhat less than 60%-75% of all declared SEPs, no essentiality checks will be requested.

[52] https://research.tue.nl/en/projects/project-for-essentiality-checks-of-standard-essential-patents

SEP holders who have submitted an undertaking that they are willing to license their SEPs but declare not to have any intention to undertake licensing activities for their SEPs or who have declared to license their SEPs royalty free, can be exempted from this obligation. However, if such a SEP holder wants to revoke its declaration and intends to start licensing its SEPs at a later point in time, the SEP holder still has to have its SEPs checked on essentiality. Also, the same measures as proposed in proposal 15 for all other SEP holders should apply to these SEP holders.

To promote efficiency and save costs, if a SEP holder has previously submitted its SEP(s) for evaluation by independent evaluators, for example as part of a patent pool program, such evaluations could be adopted for purposes of the SEP database (i.e. under the current proposal) as well assuming they meet the established criteria for SEP essentiality evaluations. Further, the essentiality check procedure should include the possibility for a fast appeal procedure in case the SEP holder disagrees with the findings of the independent body. Finally, third parties should have the option to challenge the essentiality of a SEP included in the SEP database (see specific related proposal further below).

The members supporting this proposal argue that it creates benefits for SEP holders, which are believed to justify the additional cost that would be required to perform essentiality checks. It would help SEP holders in estimating their share of the entire SEP stack for a given standard, and thus in determining a reasonable royalty for their SEP share for a product implementing the standard. More importantly, this early evaluation could save SEP holders a huge amount of time and money in licensing negotiations since very little additional effort needs to be expended in making claim charts for evaluation purposes, particularly since many of these steps need to be taken by SEP holders in preparation of licensing negotiations. Having essentiality checks performed in advance (and only once) by an independent external body, validating the checks done by the SEP holders in-house, will help shorten the discussions with potential licensees about whether or not the patents are true SEPs, paving the way for the licensing discussions to proceed in a more efficient, cost effective manner and reducing transaction costs for both licensors and implementers. The above benefits for SEP holders will be higher with increasing numbers of licensees appearing in the field of IoT, and SEP holders will be expected to license many companies across the different IoT verticals.

The proposal also supports implementers, helping them better determine from which SEP holders they need to take licenses, what a reasonable aggregate royalty for the estimated total SEP stack might be, and what may be the fraction of royalties associated with each SEP holder from this total SEP stack. This may result in smoother licensing negotiations and lower transaction cost for implementers. According to some members of the group the number of disputes in court would likely decrease, if the proposal was implemented.

One complicating factor may be that SEP essentiality checks are done against a particular version of a standard, and new versions may be released due to modifications or extensions of the standard. Modifications are mostly done to clarify certain matters and/or correct minor errors in these standards. Most, if not all, confirmed SEPs remain SEPs to these new versions of the standard. In any event, claim charts can be used to check whether confirmed SEPs would be affected by the amended paragraphs/sections of the standard specification. When a standard is extended, the extended parts may be covered by additional SEPs. These should go through the same essentiality check process and any new SEP relating to these extended parts should be added to the database of true SEPs for this new version of the standard.

Standards may have optional parts in addition to mandatory parts. For purposes of essentiality checks, it makes no difference whether a SEP relates to a mandatory or optional part of a standard. On the other hand, SEP holders may treat SEPs covering optional sections of the standard differently in their licences to implementers, and vice versa. Some SEP holders may include one or more of these options in the licence without demanding any additional compensation, while others may structure their licences in a way that licensees have to pay an additional royalty per option (or combination of options) used. Similarly, licensees may choose to exclude options from their licences if they are not using those sections of the standard.

It is common practice to conclude licence agreements for a limited period. In these licences parties usually agree on how they handle modifications/extensions of the relevant standard(s) generated during the term of the licence agreement, so as to avoid any need to renegotiate when a new version is released during the term of the agreement.

Accordingly, is appears that modifications and extensions of standards as well as the existences of mandatory and optional parts in a standard do not necessarily create a limitation for essentiality checks as proposed or require essentiality checks to be repeated for a given SEP.

Some members are concerned that SEP holders would have to bear the cost of doing the essentiality checks, though this proposal is silent regarding costs. They remark that increased obligations – notably regarding transparency measures – could ultimately lead to reduced participation in standardization activities, and that the proponents of these transparency proposals over-estimate the benefits and under-estimate the challenges for SEP licensors. Therefore, care should be taken in a potential implementation of the proposal that the related cost is kept low relative to the benefits the parties obtain from the proposal. Additional concerns were expressed by some members that the result of the proposed essentiality check (even after appeal) and of a potential essentiality challenge (see proposal below), if any, could still be disputed in court and thus the overall effort (i.e. transaction cost) would increase rather than decrease. This could lead to additional friction in the licensing negotiations. It was also pointed out by some members that any obligation to perform essentiality checks might lead to reduced

willingness to provide declarations and therefore result in lesser overall transparency. Instead, it was argued that, for example, it might be sufficient to have only a "proud list" of SEPs checked for essentiality. Further, some members maintained that for many standards the landscape of essential patents after a particular point is dynamic, not static. Accordingly, such checks might have to be repeated and viewed as snapshots. It was also questioned in the group how to ensure that the third parties performing the checks are truly independent, and that the process is sufficiently rigorous and transparent. It was also argued by some members that essentiality checks should be further explored and encouraged but not mandated, where the possibility to mandate these checks in future would need to be subject to global alignment (e.g. through the SDOs, such as 3GPP).

Furthermore, in light of the substantial effort required for SEP holders to provide high quality claim charts for the essentiality check, some members questioned whether that additional burden imposed on the SEP holder by the proposal should be balanced by including additional obligations to be imposed on the implementers using such confirmed SEPs. The additional effort imposed also needs to be viewed in the global context, considering that the EU could only impose this approach on SEP holders declaring their SEPs to European SDOs. Thus, the questions was raised as to whether this might disadvantage the European SDOs vis-à-vis those outside Europe, or if it would make European SDOs more attractive for SEP holders due in part to the enhanced transparency and efficiency.

The following are additional proposals to supplement the one above, and provide additional, more refined measures, which some member believe could be applied to successfully implement essentiality checks for SEPs.

### 3.2 Essentiality checks for one patent of a patent family in a major market country only

**Proposal 8**

As outlined above, an important element of essentiality checks is that they are done in a cost-effective way.

***It is proposed that, in order to keep the cost of essentiality checks at a reasonable level, checks be performed for only one patent in a patent family in a major market country, with self-certification for other members of the same family.***

According to the proposal an essentiality check by an independent body can be done in one major market country only. The major market countries will include at least EU, USA, China and Japan. Other major market countries could be added on a case by case basis. To get a reasonably clear picture of the number of confirmed SEPs and the companies owning those as quickly as possible after the standard has been approved, SEP holders should have the essentiality check done in the first major market country where the patent member is granted. If at the time of approval of a standard, one or more patents of a patent family have already been granted in major market countries,

the SEP holder may choose in which major market country it wants to have its patent checked on essentiality.

If at the time of approval of a standard the European patent is the first granted patent in the family, an independent body – e.g. the European Patent Office or other qualified patent offices, or independent law firms (see below) – should do the essentiality check.[53] If the first patent is granted in another major market country outside the EU, the essentiality check should be done in that country – e.g. if the first patent is granted in the US the check should be done in the US.

It is emphasized that in case essentiality checks are done for declared SEPs relating to European standards, these checks may not only be done by an independent body in Europe, such as the European patent offices or independent law firms, but also by patent offices or independent law firms outside the EU. If other countries outside the EU would follow Europe in doing essentiality checks as described above, essentiality checks would become simpler and more efficient. In that case, European patent office(s) can do essentiality checks for SEPs for both standards of European SDOs and standards created by SDOs outside Europe. This holds for the situation that the European patent is the first patent granted of the SEP family for the relevant standard or in case patents are granted in more major market countries already, the European patent is selected by the SEP holder to be checked on essentiality.

Likewise, the patent offices or patent law firms in major market countries outside Europe can do essentiality checks for both standards created by SDOs in their own country and for standards created by SDOs in other major market countries, including Europe. Again, on the condition that the patent in that country is the first patent granted of the relevant SEP family or if family members have been granted in other major market countries, the patent in that country is selected for the essentiality check.

Once a member of a patent family issued in a major market country has been found essential, a self-certification process can be used to identify other members of the same family. As such, the SEP holder may submit a statement confirming that the family member has an identified claim, which is substantially similar to a claim of the evaluated or confirmed SEP from the same family. If other countries follow the European approach, it becomes easier to coordinate and harmonize the essentiality checks across countries, because there is a mutual interest in doing that. In addition to this statement, a (certified) English language translation of this substantially similar claim has to be submitted, if not already available in the English language. This certification could be done by the SEP holder itself or upon the request of the SEP holder by the independent body that performed the essentiality check in the major market country. Of course, as long as there is no confirmed essential patent in a major market country, a patent will need to be evaluated in full if the SEP holder wants to include it in the SEP database.

[53] Note that these essentiality checks do not need to done only by European entities.

Members supporting this proposal maintain that its implementation would provide added certainty that the relevant members of a patent family are true SEPs, while keeping the cost for these essentiality checks at an affordable level. Much depends on who performed the essentiality checks. Since patent offices have not done any essentiality checks so far (only independent law firms have been used), it is not known what fee they would charge if they were to do these checks. Also, the cost of an essentiality check will likely depend on the major market country where it is done. Regardless, the proponents believe that the average cost of an essentiality check could be between EUR 4 000 and EUR 5 000 with Europe and the US on the higher side and China and Japan on the lower side. If essentiality checks are systematically done for SEPs relating to standards created by more SDOs around the world, these costs will likely decrease.

While creating transparency as to the number of confirmed SEPs will likely benefit all stakeholders, the supporters of the proposal believe that the benefits for a SEP holder are more substantial than for an implementer. Also, they maintain that having this information would accelerate licensing negotiations with *all* prospective implementers as the SEP holder and the potential licensees no longer have to argue and potentially litigate about whether or not an asserted patent is essential. This will also accelerate the discussions about an appropriate FRAND royalty because the number of essential patents is a major element determining this royalty. Knowing the number of confirmed SEPs saves substantial time and efforts, reduces the time to conclude licences and allows licensors to collect royalties earlier.

There are added benefits for SEP holders and the market as a whole from having independent essentiality checks performed. By having an independent body systematically checking the essentiality of SEPs, the validation of the essentiality of the SEPs by this body will become a signal for the quality of the SEPs of a certain SEP holder that will be recognized by the market. This will create an additional incentive for SEP holders to have their SEPs evaluated.

The EU could introduce the proposals of this section through an EU regulation for SDOs, respective standards and involved parties residing in the EU. How these measures could best be introduced in other major market countries has to be further investigated.

While concerns were expressed by certain members about the proposed introduction of essentiality checks, there was no specific objection to the overall approach proposed here, i.e. to have only a patent in one major market country assessed. It was mentioned, though, that since the results would not be legally binding, substantial litigation may still occur.

### 3.3 Accelerated prosecution for declared SEPs without granted patents in a major market country

**Proposal 9**

To ensure that a reasonably clear picture of the SEP landscape can be obtained as quickly as possible after a standard has been approved, it is important that SEP holders have or otherwise get at least one patent granted in a major market country for each declared SEP family as early as possible in order to have these SEPs checked for essentiality soon after the standard has been approved.

***Therefore, it is proposed that SEP holders have one member of each SEP family prosecuted on an accelerated basis (to the extent possible) by the patent office in one of the major market countries, if at the time of approval of the relevant standard no member of the SEP family has been granted in any major market country.***

More specifically, if SEP holders have declared SEPs in the SEP databases and believe that their SEPs are true SEPs at the time of approval of the relevant standard, they should request accelerated prosecution of one family member in one major market country (such as the EU, the US, China, or Japan) as quickly as possible after the standard has been submitted for approval. Of course, this request can only be made within the time limits set forth by the relevant patent office, and only if the prosecution process has not advanced to such a phase that accelerated prosecution can no longer be requested. Patent offices in all major market countries, including Europe (EPO), the US, China and Japan, have accelerated prosecution procedures in place.

After the grant of a family member in one of the major market countries, the SEP holder should have this patent checked on essentiality in accordance with the above proposals. This process will lead to earlier and better clarity with respect to the SEP landscape, and supporters of the accelerated prosecution proposal believe it is justified because of the public interest in having such clarity earlier and better, considering that SEP licensing may have an effect on pricing of products for consumers. However, note that this proposal does not suggest accelerated prosecution for all declared SEPs.

According to the supporters of this proposal, additional clarity will also benefit the SEP holder in negotiations with prospective licensees and the SEP holder will receive licensing revenues from the granted and confirmed SEP earlier than otherwise would be the case. These benefits are considered to outweigh the burden of having to pay an additional fee for the accelerated prosecution. The introduction of reduced fees for small entities or SMEs requesting accelerated prosecution could be considered.

Certain members expressed several concerns about the efficacy of this proposal, as follows. First, the proposal would create additional cost and effort for the SEP holders without sufficient added return. Second, due to the dynamic nature of the SEP landscape with standards being revised and amended over time, the benefit created by accelerated prosecution to overall transparency might be limited. Third, some patent offices might

not be able to handle the increased number of requests for accelerated prosecution. And finally, SDOs may not be the right bodies to impose such an obligation (through their IPR policies), and other means of implementation, perhaps through regulations, should be considered. Moreover, it was argued that the benefits to SEP holders may easily outweigh the additional cost related to accelerated prosecution (e.g. faster royalty collection options).

### 3.4 SEP holders to determine extent of essentiality checks to be performed based on, for example, 75% of their declared SEPs

**Proposal 10** ★★★☆☆

The goal of essentiality checks is to create a reasonably clear picture of the SEP landscape as soon as possible after approval of a standard, which supports (i) SEP holders in setting their FRAND royalties for SEP licences and (ii) implementers in determining which licences they need for their standard-compliant products. To create a reasonably clear picture, it is not necessary to have identified all SEPs of a licensor.

***It is proposed that a SEP holder should determine whether or not it will have essentiality checks done by the independent body for, for example, 75% of its declared SEP families.***

This proposal will further reduce the cost for essentiality checks. By having checks done based on, for example, 75% of the SEP declarations, it is believed that a sufficiently clear picture of the SEP landscape will emerge. At the time of adoption of a standard (and possibly even before that) a SEP holder will have to check whether its declared SEPs are still relevant. For declared SEPs it still believes to be essential, the SEP holder should develop claim charts to submit to the evaluating entity. It is likely that claim charts will be submitted for a fraction of the declared SEPs and that once a SEP holder has determined for 75% of its SEP declarations whether or not it will have a declared SEP checked, a reasonably clear picture of the SEPs of a SEP holder will become available – i.e. based on the number of SEPs confirmed to be essential by the independent evaluator. Once this is done by all SEP holders, a reasonably clear picture of the overall SEP landscape can be obtained.

### 3.5 Patent offices to be the preferred bodies to perform essentiality assessments

**Proposal 11** ★★★★☆

Patent offices, such as the EPO, are seen as trusted, neutral and high-quality organizations by both licensors and licensees and appear to be in the best position to do essentiality checks.

***It is therefore proposed that patent offices should be the preferred bodies to do the proposed independent essentiality checks.***

If the EPO in cooperation with national patent offices of member states performs these checks, the EPO would have to monitor the quality and consistency of the essentiality

checks performed across the various offices based on established guidelines. National patent offices that do not conduct full patent examinations should not qualify to do the proposed essentiality checks.

If the EPO begins essentiality checking, patent offices in other major market countries (such as the US, China and Japan) could also begin doing essentiality checks for SEPs in their countries based on the same or similar guidelines as used by the EPO. Coordination is needed among these patent offices to ensure that the essentiality checks are done in a consistent, rigorous, and harmonized manner, and in accordance with established guidelines. It is preferred, although not required, that an existing or to-be-established international body be given the task of supervising and monitoring the compliance of the involved patent offices with the agreed guidelines.

If a patent office, such as the EPO, is not willing to do these essentiality checks, alternatively, a supervised network of certified European law firms could be used for this purpose. Certification should be done on the basis of criteria to be formulated ensuring consistent quality, rigorousness, neutrality and non-bias in checking essentiality of SEPs, regardless of the entity that performs the task. As suggested with the patent offices above, an appropriate existing or to-be-established independent body would have to monitor this European network of law firms to ensure their adherence to the established criteria. Once established in Europe, the network could be connected to similar networks of law firms in other major market countries that would have to certify based on the same criteria as the law firms in Europe. Coordination across the various countries would be needed in order to ensure that the essentiality checks are done in a consistent and harmonized way.

Of course, if the EPO would start doing essentiality checks, but patent offices in other major market countries would not be willing or would not yet offer this type of essentiality check services, use could be made of networks of certified law firms in these countries.

### 3.6 Investigate use of AI/ML algorithms to support cost-efficient essentiality assessments

**Proposal 12**

Reference is made to Part 3.5 on patent pools of this contribution, where a proposal is made with regard to essentiality checks using specialised tools based on AI/ML. If those tools provide useful results, they could also be used in the context of essentiality checks performed by an independent body, as proposed above. This is also studied in the EC JRC essentiality check study,[54] the results of which may need to be considered in this context.

[54] https://research.tue.nl/en/projects/project-for-essentiality-checks-of-standard-essential-patents

### 3.7 Cost of essentiality checks to be born by SEP holders

**Proposal 13**

In view of the above**,** the members supporting the introduction of essentiality checks believe that he benefits for a SEP holder to have its SEPs confirmed as true SEPs would outweigh the cost of the essentiality checks.

***It, therefore, is considered reasonable that a licensor bears the cost of the essentiality checks done for its SEPs.***[55] However, to alleviate the burden on smaller entities, a reduced essentiality check cost structure could be considered for small entities falling under the Commission's definition of SME[56] or similar definitions in other countries.

As essentiality checks are generally conducted by SEP holders before any license negotiations are started, it is also more practical to let SEP holders bear the cost of the essentiality checks. Alternatively, these costs could be shared by licensors and licensees, but sharing these costs with a beforehand unknown number of licensees create quite some complexities. Issues to be considered in any sharing mechanism with licensees would include, but not be limited to, whether the checking cost should be equally shared among all licensees or be differentiated depending on the size of the licensee and whether SMEs should be exempted from sharing in these costs.

Certain members expressed concerns about the SEP holders solely having to bear the cost of the proposed introduction of essentiality checks.

### 3.8 SEP holders to submit essentiality confirmations together with claim charts to be recorded in SDO SEP databases

**Proposal 14**

During licensing negotiations many SEP holders provide prospective licensees with claim charts under strict confidentiality obligations (to prevent disclosure to third parties, in particular to prevent that anything disclosed in these claim charts is used by a prospective licensee in legal proceedings against the SEP holder). The negotiation of these non-disclosure agreements ("NDAs") delays sometimes substantially the start of the actual licensing negotiations.

***It is therefore proposed that SEP holders should submit essentiality confirmations for their SEPs together with the relevant claim charts to be recorded in SDO SEP databases.***

[55] For a SEP holder that wants to check100 – 1 000 SEP families for an average cost of EUR 5 000 per patent (checking one patent per family), the total cost could be up to EUR 500 000 – 5 000 000. This cost could be spread out over, for example, 100 licensees. This would result in an average cost of EUR 5 000 – 50 000 per licensee. If the cost would be equally shared between the parties, the cost for the SEP holder per licensee would be EUR 2 500 – 25 000. Cost savings by SEP holders in reduced negotiation time and shorter time to money may easily go beyond these costs for essentiality checks.

[56] OJ L 124, 20.05.2003, p. 36, Commission recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises

The implementers of a standard could then identify the SEP holders, and their estimated number of confirmed SEPs. They could also check how the essential claims of the confirmed SEPs relate to the standard, and why these SEPs are true SEPs in relation to the implementer's products or services. As an independent trusted body will validate these claim charts, there may no longer be a need for NDAs covering the disclosure of such claim charts.

For SDOs that already have SEP databases this information could be integrated into these databases or recorded in a separate database. SDOs that do not have any databases for declared SEPs to be identified would need to create a database to record such information.

The supporters of this proposal find it beneficial because they believe it will facilitate and accelerate licensing negotiations. They maintain that SEP holders can use this information to determine a FRAND royalty for their own SEPs as compared to the entire SEP landscape as reflected in the relevant SEP database.

On the other hand, some members are concerned that the claim charts – being legal work products of the SEP holder that should be protected by NDAs – might include information that should not be publicly available. In that context, one member also pointed out that ETSI's IPR Guidelines acknowledges the use of NDAs for FRAND negotiations, that any business negotiation usually involves signing an NDA, and that the lengthy process of signing one for FRAND licensing negotiations is sometimes used as a hold-out mechanism. Another member expressed that a distinction should be made between an NDA required to obtain claim charts and an NDA needed to exchange product/business/financial information during licensing negotiations. Other members expressed the view that published claim charts would potentially be used for invalidation of SEPs and the proposal might therefore increase the number of invalidity proceedings. Finally, one member of the group expressed the opinion that sooner or later NDAs would have to be concluded between the negotiating parties for purposes of negotiations and therefore the proposal was not useful in that respect.

### 3.9 Incentivizing SEP holders to have essentiality checks done

**Proposal 15**

***It is further proposed to incentivize SEP holders to submit their SEPs as quickly as possible for essentiality check (as proposed above) by introducing measures allowing SEP holders to demand royalties for a licence under confirmed SEPs only from the date the SEPs were submitted for essentiality checks, or alternatively allow for substantially reduced royalties for the time before such submission.***

According to its supporters, this type of incentive will help provide better clarity with regard to the identity of relevant SEP holders and an estimate of confirmed SEPs as soon as practical after the adoption of a standard, which will ultimately benefit all interested parties and stakeholders. For clarity sake, this proposal relates to confirmed SEPs only.

At the same time, other members expressed concerns about preventing a SEP holder from collecting royalties for a valid and infringed patent only because it failed to perform an essentiality check. These members maintain that one of the rights of a patent holder is to be able to collect royalties for the use of its patent, or to prevent others from using the patent if they do not pay a reasonable licence fee. Therefore, it was argued that this proposal could lead to a competitive disadvantage for the SEP holders with a strong European patent portfolio, and for European SDOs.

### 3.10 Third-party essentiality challenge procedures before the independent bodies doing essentiality assessments

**Proposal 16** ★ ★ ★ ★ ☆

Third parties (potential licensees, other SEP holders or other interested parties) may disagree with the essentiality findings of the independent bodies. They would have to go to court to contest the essentiality, which costs a lot of money and takes a lot of time. Such litigations may also be misused as part of hold-out tactics by potential licensees.

***Therefore, it is proposed to introduce a fast challenge procedure before the independent body that did the essentiality check that can be used by any third party disagreeing with the essentiality of a patent listed in a SEP database.***

By introducing such a challenge procedure, implementers (or other interested parties) can avoid lengthy and costly litigations to contest the essentiality of confirmed SEPs listed in an SDO's SEP database. The outcome of the challenge procedure is non-binding and any party may still challenge the essentiality in court. Furthermore, an implementer may choose not to use the challenge procedure and go to court directly. However, offering parties the option to use a fast and less costly procedure instead of lengthy and expensive litigation may be attractive. It is further proposed that the cost of the challenge procedure, including any reasonable out of pocket costs, should be borne by the losing party.

Detailed procedures for these fast challenges must be established, but the basic principle should be that the challenger must demonstrate why the outcome of the independent essentiality check is incorrect. In the interest of time, for example, the challenger could be required to present all arguments in its first submission to the independent body. The other party may also be required to present all its counterarguments in its first rebuttal, after which the challenger may respond one last time. Thereafter the independent body may ask questions from the parties or make its decision based on the exchange of documents. If designed properly, the whole challenge procedure focusing solely on the essentiality of a SEP, should not take more than 6 months.

Other incentives could be introduced to encourage the use of this fast challenge process. For instance, a process could be implemented whereby if a party in SEP licensing negotiations disputes one or more SEPs of the other party directly in court, without first using the essentiality fast challenge procedure, the challenging party is required to pay

reasonable compensation to the SEP holder for any challenged SEP that is confirmed by a court to be a true SEP.

The expert group members supporting this proposal consider one benefit to be that it would provide a fast and low-cost challenge procedure to be used instead of costly litigation in the course of licensing negotiations. They also point out that the additional measures would prevent a high burden for SEP holders and misuse of the challenge procedure for delaying progress as part of negotiation tactics.

Other members of the group have expressed their concern as to the relationship between the results of the challenge procedure and the role of courts ultimately deciding on essentiality / infringement. Some members have tried to resolve this by saying that the essentiality challenge might be introduced as a mandatory first instance before starting litigation based on the SEP at issue. However, multiple subsequent challenges should be avoided for the same SEP. Further, at this time, it is uncertain whether the independent bodies (e.g. patent offices) under consideration are willing to perform such challenges. Finally, certain other members are concerned that this new process will only add extra time to and further delay negotiation, particularly since in many instances courts have the final say with regard to essentiality and infringement.

### 3.11 Prevent challenges for all or substantial number of SEPs of a SEP holder

**Proposal 17** ★★★★☆

***Measures should be introduced to prevent the challenging of independent essentiality confirmations for all or a substantial number of SEPs of one SEP holder as part of licensing negotiations and delay tactics***.

### 3.12 Essentiality checks to also indicate the type of invention covered by the SEP

**Proposal 18** ★★★☆☆

It appears to be generally recognized that not all SEPs are equal and that some SEPs are more relevant to a standard than others. Therefore, in determining an appropriate FRAND royalty for a SEP portfolio as it relates to a standard-compliant product, not only must the number of SEPs be taken into account, but consideration must also be given to the relevancy or significance of the SEPs to the implementation of the standard in the particular application.

***Accordingly, it is proposed that the independent body doing essentiality checks should indicate for a confirmed SEP the type of invention that the essential patent claim covers (for example as 'fundamental', 'key', or 'specific', or according to any other appropriate type of classification).***

According to this proposal, the independent bodies performing the essentiality assessment should determine the type of invention only based on the classifications provided, and not with a view to the weighing factors used for purposes of royalty determination/allocation. The latter is more appropriately determined by the SEP

holders themselves. The independent bodies would define an appropriate classification for a standard based on their technical study of the standard and, if needed, based on technical input from and discussions with the relevant SDO (technical people, who participated in the standard setting). The process should preferably include a fast appeal procedure in case the SEP holder disagrees with the relevancy findings of the independent body.

SEP holders should submit, in addition to the claim charts mentioned in the previous proposal, the type of invention indications to be recorded in the SEP databases. This will provide implementers additional information about how relevant these SEPs are for the standard at issue. This in turn will contribute to support a smoother licensing process with SEP holders.

Supporters of this proposal maintain that the required information would help enable SEP holders to determine FRAND royalties for their SEPs, for example based (among other factors) on the weighted patent count instead of the patent count only. This is considered advantageous to the owners having more valuable SEPs in their portfolios. It would be particularly valuable if the classification is done by a trusted, independent organisation, as intended. They also argue that the resulting classification of the SEPs would help to resolve questions regarding the weight of different patents if raised in a court case. Patent pools could also consider such information when setting up their model of royalty distribution between the participating SEP holders, making such pools more attractive for owners of highly relevant SEPs.

Concerns have been expressed by some members as to how criteria for the proposed categorization for the type of invention could be defined without too much subjectivity. It has also been mentioned that the willingness of the independent bodies (e.g. patent offices) to perform such challenges must be investigated, and that the related fees would further increase the general cost burden for SEP holders. Some members of the expert group expressed the view that this type of classification would require detailed and specific knowledge about the relevant standard, for example in order to identify if a patent under question related to an optional or mandatory feature. Some members simply believe that disparate weight should not be given to different SEPs reading on the same standard.

# 4. Validity of SEPs

### 4.1 Introduction to validity of SEPs

While the foregoing two sections were concerned with the improvement of the available information regarding the essentiality of declared SEPs, particularly with a standard is finalized and approved and a patent is granted, there exists yet another major uncertainty regarding the status of SEPs – validity. SEPs that have been granted and successfully checked for essentiality may still be invalid, even if evidence of invalidity has not yet been presented or found. While this is a known uncertainty common to all patents, in the case of SEPs it may be of particular importance, because SEPs are likely

to be licensed and the validity of one or more SEPs may impact licensing negotiations with many parties. Therefore, additional measures may need to be considered to increase the level of reliability with respect to a SEP's validity.

In this section 'Validity of SEPs' measures are presented and discussed which could establish a higher degree of reliability of the validity of SEP.

### 4.2 Require SDOs to generalize practice of sharing technical information with patent offices

**Proposal 19**

Generally, the principles of transparency and openness, on which standards development is based, require that documents submitted in the context of standardisation are made available to all relevant bodies of all WTO Members. For this reason, some SDOs – for example, ETSI – make internal documentation of standard development processes available to patent offices. However, not all relevant SDOs do this. As a consequence, examiners may grant a patent which is invalidated later in court because certain prior art was not available to the relevant patent office during its examination.

***To improve this situation it is proposed that SDOs should be encouraged or required to systematically make draft standards, written contributions, studies and other written submissions to an open standard development process available to patent offices, so that as appropriate, such information can be considered as prior art in patent prosecution, especially for declared SEPs.***[57]

According to the supporters of this proposal, there is a benefit to SEP holders resulting from the strengthened presumption of validity of granted patents, which reduces the chance that these patents would be invalidated in court, while at the same time, it would reduce the risk for implementers to take a licence for erroneously granted patents or spend time and money on validity litigation.

Concerns were expressed that introducing such an obligation could slow down the standardization process to the extent that participants will first want to secure their contribution through a patent application. It was also questioned by some members, if the proposal should rather be addressed to patent offices instead of SDOs.

[57] An SDO that does not make draft standards, technical contributions, and other relevant documentation available to patent offices should not be considered to be working based on an open standards development process within the meaning of Annex 2 to Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation.

### 4.3 Encourage SEP holders to have in-depth prior-art searches done for their SEP applications and bring any resulting and relevant prior-art to the attention of the relevant patent office

**Proposal 20** ★★★☆☆

Another proposal relates to the observation frequently in SEP litigations, it is argued that the SEPs at issue are invalid, regardless of whether they are true SEPs. In many cases one or more of the litigated SEPs are declared invalid.

In general, it is estimated by one source that approximately 75% of all granted German patents would be partially or fully invalidated if challenged in court.[58] This seems to be in line with the results of oppositions at the EPO, which show that about 27% of the opposed patents are revoked and about 40% maintained in amended form, mostly with a narrower scope of protection.[59] This corresponds to the results of accepted IPRs in the US, where 29% of the patents are found to be invalid and 7% partially invalid. When validity of patents is challenged before a US District Court more than 40% of the patents are invalidated.[60] One study found that SEPs in the telecommunication area are likely to be more scrutinized and four times as likely to be litigated compared to other patents.[61] A recent study measured the impact of ETSI giving EPO examiners access to the ESTI database with standardization documents since 2004 on the EPO granting rate of patents in the technical areas relevant to standardization. The study found that this led to a reduction rate of about 19 percent in the grant rate compared to the grant rate of the same patents by the United States Patent and Trademark Office ("USPTO"), where examiners do not have access to these documents. This seems to confirm that having access to additional prior art for specific categories of patents reduces the number of invalid patents.

In view of the above, it may be advantageous to have in-depth prior-art searches conducted by the SEP holder, with the resulting and relevant prior-art being presented to the relevant patent office(s), for consideration during the patent prosecution process. This is expected to improve the quality of issued patents and decrease the likelihood that patents are found invalid when tested in court.

***Therefore, the proposal is made that holders of alleged SEPs should be encouraged to have in-depth prior-art searches done for their SEP applications and bring any relevant prior-art to the attention of patent offices for consideration during the prosecution of the SEPs.***

Any newly found prior art should be brought to the attention of the relevant patent offices as early in the prosecution process as possible, so that it can be considered by the

[58] Henkel, J., Zischka, H., '**How many patents are truly valid? Extent, causes, and remedies for latent patent invalidity',** *European Journal of Law and Economics*, 48 (2), 2019, pp. 195-239
[59] https://www.patentprogress.org/2018/05/01/a-little-more-than-forty-percent/
[60] https://www.patentprogress.org/2018/05/01/a-little-more-than-forty-percent/
[61] Bekkers, R., Catalini, C., Martinelli, A., Righi, C., Simcoe, T. 'Disclosure rules and declared essential patents', *NBER Working Paper 23627*, National Bureau of Economic Research, 2017.

examiner. This proposal is independent of the already existing possibility for third parties to submit to patent offices any relevant prior art in the context of third-party observations or opposition proceedings.

Supporters of this proposal argue that these additional searches will likely strengthen the relevant patents and increase the chance that SEPs will be found valid, if tested in court. If SEP holders would systematically do these in-depth prior-art searches, it may result in less litigations claiming the invalidity of SEPs, which may accelerate SEPs licensing negotiations and save legal costs. Although the proposal will not eliminate all litigation, it is expected to contribute to more smooth SEP licensing in general.

On the other hand, it was mentioned in the discussions of the group that questioning validity is often used as negotiation tactics to 'game the system'. While an in-depth prior art search might help to reduce this, it could likely not be eliminated, and validity would still be contested in courts.

**Proposal 21** 

These searches could be done by specialized search companies or by commercially available (AI) search tools.

### 4.4 Provide legal clarity for SDO efforts in support of opposition procedures

**Proposal 22** 

It is observed that given the high number of SEPs held by different SEP holders, implementers individually have insufficient incentives to challenge the validity of SEPs in court or through the patent offices' opposition proceedings.

***Therefore, this proposal provides that SDOs should encourage their members to use the patent offices' opposition proceedings to oppose the granting of potential SEPs.***

In line with the general benefits of opposition procedures, the process would focus re-examination efforts on the most relevant patents and may elicit information on prior art from parties most likely to have it.

The supporters of this proposal have pointed out that the proposed clarification would benefit SEP holders with strong SEPs as compared to others who are trying to inflate their SEPs number by filing patent applications with non-inventive content. At the same time, if the opposition supported according to the proposal is successful, the patent applied for will not be granted. Thus, implementers will not have to take a licence for those patents.

Some members are concerned that the proposal may affect cooperation among SDO participants. More specifically, SDO participants may not work together well and constructively if they do not trust each other and fear that other participants will seek to have their patents invalidated. In light of the fact that SDOs need to foster a

collaborative environment for successful standardization, not encourage members to take action against each other, this proposal could backfire and discourage members from contributing their technologies during the standardization process. Finally, it seems unlikely that SDO members will make experts available to support oppositions against another member's SEPs.

**Proposal 23**

***SEP declarations could be subject to a small fee that supports SDO-appointed experts' involvement in the opposition proceedings concerning declared SEPs.***

### 4.5 Introduce fast third-party validity challenge procedures before independent arbitration panels

**Proposal 24**

Litigation regarding the validity of SEPs may take many years to get to a (final) verdict and the lawsuit will cost the parties a significant amount of time and money. Moreover, until a final verdict is issued, licensees have little if any clarity and certainty about the validity of the SEPs at issue. This situation does not foster a smooth licensing climate.

***This proposal is intended to address this issue by creating a system that allows implementers to challenge the validity of patents listed in the SDOs SEP database through a fast challenge procedure before an independent arbitration panel. The decision by the panel will be non-binding unless the parties agree otherwise.***

One approach for forming the independent arbitration panel could be the random selection of three patent experts from a pool of experts, all of whom are selected by an independent body hosting the independent arbitration panel. The arbitration panel cannot invalidate a SEP as this can only be done by courts, but parties may select this arbitration option *in lieu* of litigation to avoid the high cost of a lengthy litigation. The party that loses the challenge bears the costs of the proceedings and pays reasonable out of pocket costs of the other party. In case one of the parties is not willing to accept the decision by the panel, that party can bring the case to court.

This proposal might help SEP holders by reducing the risk of delaying tactics being used by implementers or frivolous claims by self-declared SEP holders. It would also potentially reduce the risk for the SEP holder to be dragged into costly and time-consuming lawsuits to defend the validity of its SEPs. For the implementers, on the other hand, the proposal would offer clarity on the validity of SEPs within a short period and could avoid costly and time-consuming legal proceedings.

Some members argue that the validity of a patent can ultimately only be determined in a court of law, and since this option will always be available to a licensee the proposed challenge procedure would not be effective. According to the present proposal, the same SEP could be the subject of multiple validity disputes with different parties which could

lead to higher transaction cost as compared to an invalidity action the result of which would be available to all implementers.

**Proposal 25**

***A possible way to incentivize implementers to use this faster and cheaper validity challenge procedure would be to make them pay a reasonable compensation to the SEP holder for SEPs found valid by the relevant court in case they have not used the challenge procedure first***. The prospective licensee would not have to pay such compensation if it succeeds in invalidating one or more SEPs.

**Proposal 26**

***Alternatively, this validity challenge procedure could be made mandatory before going to court***.[62]

### 4.6 Investigate use of AI/ML algorithms to support cost-efficient validity checks

**Proposal 27**

Reference is made to ***Part 3.5*** on patent pools of this contribution, where a proposal is outlined how validity checks could be made for patents which are submitted for adoption in a patent pool using specialized tools based on AI/ML. If those tools prove to provide useful results, such tools could, of course, be used in the context of validity checks performed according to the foregoing proposals.

[62] In the latter case, using the procedure would be mandatory, but still remain non-binding, if the parties do not both accept the outcome. While they still may choose to go to court, if the third-party validity challenge procedures have a reasonable high level of reputation, its findings would send a strong signal to the market and could be used as evidence in court proceedings.

# PART 3.2 – LICENSING IN THE VALUE CHAIN

## 1. Introduction

One of the most disputed questions in the context of SEP licensing is whether, as a result of their FRAND commitment or their obligations under competition law, SEP holders are under an obligation to grant FRAND licences to entities at any level of the value chain requesting such licences ("license to all") or whether they can select the level in the value chain where they grant FRAND licences while other actors in the value chain only have the right to access the technology ("access to all").

While the IPR Policies of some SDOs, such as the IEEE,[63] are mandating a 'license to all" approach to their members, the IPR Policies of other SDOs, such as ITU[64] or ETSI,[65] leave room for interpretation on the issue of whether they support the "access to all" or the "license to all" approach. For these IPR Policies authors disagree on whether the "access to all" or the "license to all" approach should prevail.[66] Several courts outside the EU have considered that all standard implementers who are willing to take a licence on FRAND terms are entitled to a SEP licence, but it is important to consider the specific aspects of these cases and the standards that were at stake.[67] In the EU, while one German court has stated that it follows from the FRAND commitment (as

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[63] See https://standards.ieee.org/about/policies/bylaws/sect6-7.html. A SEP holder has to make licenses available to "have made, use, sell, offer to sell, or import any Compliant Implementation that practices the Essential Patent Claims for use in conforming with the IEEE Standard", where a Compliant Implementation is defined as "any product (e.g., component, sub-assembly, or end-product) or service that conforms to any mandatory or optional portion of a normative clause of an IEEE Standard."

[64] See https://www.itu.int/oth/T0404000002/en. A SEP holder has to commit "to grant a license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable terms and conditions to make, use and sell implementations" of the relevant standard.

[65] See https://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf. A SEP holder has to commit to grant licenses to make, use and sell systems and devices fully compliant with a standard, including the right to have customized components and sub-systems made for use in such systems and devices.

[66] For papers in support of "access to all", see for example the essays by Martinez, Juan, *GRUR-Int* 2019, p. 633 and Huber, Bertram, '*Why the ETSI IPR Policy Does Not and Has Never Required Compulsory "License to All": A Rebuttal to Karl Heinz Rosenbrock'*, https://ssrn.com/abstract=3038447. For papers in support of "license to all", see for example the essays by Thomas Kühnen and Karl Heinz Rosenbrock. Kühnen, Thomas, *JIPLP*, 2019, p. 964 and *GRUR*, 2019, p. 704 and Rosenbrock, Karl Heinz, '*Why the ETSI IPR Policy Requires Licensing to All, August 2017'*, available at http://www.fair-standards.org/wp-content/uploads/2017/08/Why-the-ETSI-IPR-Policy-Requires-Licensing-to-All_Karl-Heinz-Rosenbrock_2017.pdf

[67] Order of the United State District Court for the Northern District of Illinois, Eastern Division of 26 July 2013, In re *Innovatio IP Ventures LLC*, 956 F. Supp. 2d 925, 2013. Judge Holderman found that: 'a RAND licensor such as Innovatio cannot discriminate between licensees on the basis of their position on the market.' Opinion of the United States Court of Appeals for the ninth circuit of 28 September 2012, *Microsoft Corp.* v. *Motorola Inc*, 696 F.3d 872. In *Microsoft Corp. v. Motorola Inc*, Judge Robart found that a 'SEP holder cannot refuse a license to a manufacturer who commits to paying the RAND rate.' Findings of Facts and Conclusions of Law of the United States District Court, Norther District of California, San Jose Division, of 21 May 2019, *Federal Trade Commission v. Qualcomm Incorporated*, Case No.17-CV-00220-LHK, p. 125, , available at https://www.ftc.gov/system/files/documents/cases/qualcomm_findings_of_fact_and_conclusions_of_law.pdf. This judgment is under appeal. In *FTC v. Qualcomm*, Judge Koh found that 'under Qualcomm's FRAND commitments to two cellular SSOs, the Telecommunications Industry Association ("TIA") and Alliance for Telecommunications Industry Solutions ("ATIS"), Qualcomm is required to license its SEPs to rival modem chip suppliers.' *v.*judgment

understood in its competition context) that a SEP holder must grant a licence to any implementer of the standard who is willing to take a licence on FRAND terms,[68] the matter has not been fully settled yet as neither the Court of Justice of the European Union ("CJEU") has been called upon to take a formal view on these points nor has the Commission issued a decision specifically focusing on this issue. Note, however, that in a recent letter sent to the German regional courts where Nokia filed infringement proceedings against Daimler, the Federal Cartel Office ("Bundeskartellamt") has invited them to suspend their proceedings and refer several questions regarding the level of licensing in the value chain to the CJEU for a preliminary ruling. [69] The issue is still open.

There are different schools of thought on this issue. Proponents of the "access to all" approach consider that the FRAND commitment does not compel SEP holders to license all parties using their patents that would request a licence; it is rather a mechanism to ensure that those who want to use standardized technology can access that technology. By contrast, proponents of the "license to all" approach claim that SEP holders must license all entities wishing to obtain licences regardless of their level in the value chain.

The arguments advanced by the proponents of these approaches are well-known. On the one hand, proponents of the "access to all" approach argue that the SEP holders should be free to license their patents at a single level of the value chain and that they have the contractual freedom to determine where to license despite submitting FRAND declaration to the relevant SDO. They also claim the fact that SEPs have been traditionally licensed at the end-product level citing the example of mobile communication devices.[70] It must be noted, however, that end product level licensing is not always the case in technical areas outside of cellular communication. They argue that licensing at the end product level reduces transaction costs as all the relevant SEPs are implemented in the end product, whereas components may only implement some of the SEPs. Another argument often advanced to support licensing at the end product level is that it facilitates monitoring the sale of licensed products and the collection of royalty. Finally, it is sometimes argued that a "license to all" approach would harm innovators, as it would drive enforceable royalties downwards.

On the other hand, proponents of the "license to all" approach often consider that components (e.g. modems) best reflect the value of standardised technology and that therefore SEPs should be licensed at the component level. They consider that most

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[68] Judgment of the Düsseldorf Court of Appeals of 22 March 2019 in Case I-2 U 31/16, ECLI:DE:OLGD:2019:0322.2U31.16.00, para. 205, (https://www.justiz.nrw.de/nrwe/olgs/duesseldorf/j2019/2_U_31_16_Teil_Verzichts_und_Schlussurteil_20190322.html).

[69] See https://www.juve-patent.com/news-and-stories/cases/federal-cartel-office-issues-opinion-in-connected-cars-case/

[70] This document makes frequent references to wireless communication standards and mobile communication devices as these have been the focus of many SEP-related SEP licensing issues. SEP licensing relates, however, to a broader set of standards and applications than those mentioned.

SEPs, for example for wireless communication standards, are implemented at component level, and that component suppliers are therefore the logical counterparts in licensing negotiations. By contrast, they argue licensing at the end product level would allow SEP holders to capture the value created by other components (e.g. cameras in mobile devices) or technologies that are unrelated to the relevant SEPs (e.g. software that relate to the operating system of smartphones). Another line of argument is that while manufacturers of some devices (e.g. smartphones) have significant knowledge of mobile communication technologies, this may not be the case with respect to manufacturers of other connected products. Moreover, while licensing at the end product level is common practice in the mobile device industry, that may not be the case in other industries (e.g. vehicle manufacturing) where OEMs traditionally expect to be delivered components that are free of third-party rights. [71]

It is important to note at the outset that there may be no single answer to the question at which level of the value chain FRAND licences should be offered/taken and this Part should not be interpreted as suggesting that one approach is necessarily superior to the other. As will be seen below, the response to this question may depend on a variety of factors, including the types of products at stake, industry practice, the extent to which SEPs are all implemented in components, transaction costs and licensing efficiency. It should also be noted that, as EU law and international law is not fully harmonized on some of the issues that may be raised regarding the level of licensing of the value chain (e.g. patent exhaustion etc.); this may create additional complexity in creating solutions that may be uniformly applicable.

Against that background, this Part first contains an introductory part explaining the traditional approaches to SEP licensing (section 2). Then, it addresses what are typically the key considerations for SEP holders and component suppliers with respect to the level of licensing in the value chain (section 3). It then suggests a number of principles that could guide the licensing of SEPs in the value chain (section 4). Finally, it discusses how these principles could be implemented in practice (sections 5 and 6).

## 2. Existing approaches to SEP licensing

Since the 1980s, a variety of SEP licensing programmes have been developed for audio and video technology standards where the licences were targeted at end user products, e.g. consumer products such as TV sets, set-top-boxes, CD/DVD players, DAB+ receivers, as well as mobile phones. With respect to audio and video compression technology standards, like MPEG1/2/4-Video and HEVC, where all relevant SEPs are used in encoders/decoders, different licensing schemes are used. For example, the MPEG LA patent pool for the MPEG2-Video standard offers licences directed at the device level for consumer products incorporating these encoders/decoders, whereas it offers licences directed at encoders/decoders for all other products. For the HEVC standard both the MPEG-LA patent pool and the HEVC Advance patent pool are

[71] Pohlmann, Tim, *Patent and Standards in the auto industry*, 31 March 2017, available at https://www.iam-media.com/frandseps/patents-and-standards-auto-industry

offering licences directed to HEVC products sold to end users, but the MPEG-LA pool allows chip and module makers to pay royalties on behalf of their licensed customers. For the 802.11 WiFi standard Via Licensing offers a pool licence to manufacturers of end user products that implement this standard.

Under the licensing programmes directed at end user products, SEP holders focus their licensing efforts on end product manufacturers. Component makers are often not targeted by SEP holders and they can sell their components without any restrictions to both licensed and unlicensed end product makers. SEP holders or patent pools may make public statements or statements to individual component makers to that effect. A variation of this approach is when SEP holders inform components makers that they are free to sell their components to end product makers only to the extent the latter holds a SEP licence. This means that component makers had to ask their customers whether they had obtained a licence from the relevant SEP holder(s).

In both situations component makers typically sell their components with a notice to their customers that the supply of their components did not come with any direct or implied licence under any essential patents for the relevant standard and that their customers may need to obtain licences for the use of the components in their products. Although it may be argued that this approach does not create legal certainty for component makers, it has worked reasonably well for them in those markets.

This does not mean, however, that licensing at the component level did not take place, even in industries where SEP licences are regularly concluded at end product level. In addition to the above example of component level licensing for non-consumer products compliant to the MPEG2-Video standard by MPEG-LA, there are other examples of SEP licences at component level. In its Motorola decision, the Commission observed that "Motorola [had] entered into licensing and cross-licensing agreements covering some of its telecommunication SEPs, including the Cudak GPRS SEP, with a number of chipset manufacturers, including Chi Mei Communication Systems … and Qualcomm."[72] In her judgment in *FTC* v. *Qualcomm*, Judge Koh also found that Qualcomm had previously licensed its modem chip SEPs to other chip producers and received modem chip-level (as opposed to handset-level) licences to other SEP holders' SEPs[73]. For example, Qualcomm had received modem chip licences from Ericsson. Other modem chip suppliers, such as Samsung, confirmed that they grant chip-level licences[74]. Besides the licences referred in these cases, other examples of SEP licences at the component level can be found.[75] For instance, on 6 July 2020, Huawei and Sharp

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[72] Commission Decision of 29 April 2014, Motorola – Enforcement of GPRS Standard Essential Patents, Case AT.39985, C(2014) 2892final.

[73] Findings of Facts and Conclusions of Law of the United States District Court, Norther District of California, San Jose Division, of 21 May 2019, *Federal Trade Commission v. Qualcomm Incorporated*, Case No.17-CV-00220-LHK, p. 127, *v.*available at https://www.ftc.gov/system/files/documents/cases/qualcomm_findings_of_fact_and_conclusions_of_law.pdf

[74] See footnote 85, p. 128.

[75] See, for example, 'InterDigital, Cinterion extend patent agreement, include 4G coverage', available at https://www.telecomengine.com/interdigital-cinterion-extend-patent-agreement-include-4g-

concluded an agreement whereby Sharp grants Huawei and its Affiliates a complete and exhaustive licence for its SEPs with regard to Huawei telematics control units (TCUs), telematics modules and telematics chipsets, and release and/or waive any rights against Huawei clients.[76] Finally, SEP licences regarding wired communication protocols such as Ethernet PHY standards defined in IEEE 802.3 or the CAN FD standard defined in ISO 11898-1 and widely used in the automotive and industrial market are traditionally granted on component (chip) level.

The question of the licensing level has become a highly debated issue recently, first in the mobile phone industry with respect to the refusal by a major SEP holder, which is also a supplier of components (chips), to license its competitors on that component market.[77] The issue emerged again when SEP holders for wireless communication standards (2G/3G/4G) started to approach automotive manufacturers, requesting that they take a licence for their SEPs. A number of lawsuits between SEP holders and a major European automotive manufacturer and its component suppliers are currently pending in Germany[78] and the US,[79] and complaints have been filed by the automotive manufacturers and some of its suppliers to the Commission.[80]

## 3. Key considerations for SEP holders and component suppliers

In this part, we examine the considerations that SEP holders and component suppliers will respectively take into account when they consider at which level of the value chain licences should be offered/taken. As will be seen, SEP holders and component suppliers may not necessarily be aligned on this issue as their licensing objectives may be different. In general, SEP holders will strive to maximize their licensing income from their SEPs and implementers in turn will strive to minimize their cost of licensing SEPs they need for their products.

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coverage/; 'InterDigital Signs Enfora To Worldwide 2G And 3G Patent License Agreement', available at https://www.fieldtechnologiesonline.com/doc/interdigital-signs-enfora-to-worldwide-2g-0001. This pres release mentions that the license covers Machine-to-Machine (M2M) modules, M2M devices and PC Cards.

[76] See http://www.fosspatents.com/2020/07/breaking-sharp-grants-automotive.html

[77] See, for example, *Federal Trade Commission v. Qualcomm*, footnote 85.

[78] Nokia filed 10 lawsuits against Daimler at the German regional courts of Düsseldorf, Mannheim and Munich I; and Sharp sued Daimler before the German Regional Courts of Mannheim and Munich I.

[79] Complaint filed at the United States District Court, Northern District of California on 10 May 2019, *Continental Automotive Systems, Inc. v. Avanci, LLC et al*., Case No. 19-cv-2520. Continental has initiated legal proceedings against Avanci (a patent pool comprising wireless SEP licenses, which has developed a connected car licensing program) and some of its members in the United States. Continental's lawsuit alleges that Avanci and its members have engaged in an anticompetitive conspiracy to deprive component suppliers of the ability to conclude FRAND licenses. The proceedings have now been transferred to the Northern District of Texas.

[80] Daimler and several of its component suppliers have filed complaint to DG COMP on the ground that by refusing to license its 2G/3G/4G SEPs to suppliers of standard-compliant components for automotive vehicles Nokia has breached Article 102 TFEU.

### 3.1 If SEP holders were to choose the level of licensing what factors would be decisive for them?

If a SEP holder, which for the purpose of discussion we assume to be a net-collector of royalties, were to choose the level of licensing in a value chain, it would not only consider the cost of licensing (e.g. the cost of litigation, cost of monitoring and checking the submission and accurateness of royalty reports and royalty payments), but also several other business considerations.

#### 3.1.1 Licensing efficiency

As the number of companies to license tends to differ at the different levels in the value chain, SEP holders may opt to license at the level where the number of potential licensees is smallest in order to reduce transaction costs associated with licensing.

#### 3.1.2 Licensing effectiveness

A SEP holder will aim to license at a level where the whole (or almost whole) of its SEPs are implemented. In this respect, SEP holders will generally wish to avoid two scenarios described hereafter as they may be a source of complexities.

First, although some commentators have promoted this approach,[81] SEP holders will be wary of a scenario where they would have to grant licences to suppliers at all levels in the value chain. For instance, in a scenario where the value chain included three tiers of suppliers (a chip maker (Tier-3), a module maker (Tier-2) and a telematics unit maker (Tier-1)) and the end product maker, the SEP holder would first have to grant a licence to the Tier-3 supplier, in this case the chip maker. This licence would be limited to the SEPs used in the chip. When the chip maker sells this component to the tier-2 module supplier, these SEPs would become exhausted. If the Tier-2 supplier uses additional SEPs in its module, the SEP holder would have to grant it a separate licence. This process would repeat for the Tier-1 supplier, which may need another licence for the SEPs it uses in its subsystem in addition to the SEPs licensed to the Tier-2 and -3 suppliers. If the end product maker would use additional SEPs in its end product as well, it would also need its own licence for those SEPs. In the above situation a SEP holder would have to grant four licences for different sets of SEPs to different companies, instead one licence for all its SEPs to the end product maker or one of its suppliers (where all SEPs are implemented). This would significantly increase the negotiation costs of the SEP holder. Moreover, the licences to the component makers at each level would have to be accurately defined and delineated from each other both with respect to scope and with respect to SEPs used in order to avoid issues as double dipping (collecting royalties twice for the same SEPs) and exhaustion. A final difficulty is that one would need to figure out the portion of the FRAND royalties that would be

[81] Kühnen, Thomas, *JIPLP*, 2019, p. 964.

born for each of the components.[82] The cost of enforcing this solution would be significant and, therefore, the risk of hold-out would also be high.

Second, while a scenario where the SEP holder would only license at one level of the value chain would be an improvement on the earlier scenario, it may still present difficulties for the SEP holder if the licensing takes place high in the value chain (e.g. at Tier-3 level). In that case, the Tier-3 would obtain a full "license" under all the SEPs of a SEP holder. When the supplier sells for example a chip, the licensed SEPs used by the chip maker would be legally exhausted, that is the SEP holders could no longer assert the same patents against any downstream user of that chip (otherwise this would result in double dipping). In addition, the SEP holder would have to grant the Tier-3 supplier the right to pass-on via the Tier-2 and Tier-1 suppliers to ultimately the end product maker a right or licence to use all other SEPs of the SEP holder used in the end product. In other words, when the Tier-3 supplier sells its components there would be legal exhaustion for the SEPs used in its component and contractual exhaustion for other SEPs used in the end product by this pass-through licence.

Besides the challenges that may arise in developing this legal construct, the SEP holder may be concerned that the Tier-3 supplier would give insufficient consideration to the value of the SEPs that it does not implement itself. If it would also have to pay the full cost of the licence, but potentially not being able to pass-on this royalty to its customer due to its weak bargaining power, this supplier may run the risk of making a loss and it, therefore, may use various tactics including hold-out, to minimize the royalty payments. Although some of these issues could be addressed through mechanisms described below, SEP holders will prefer to license at a lower (i.e. downstream) level in the value chain, where all the SEPs of a licensor are implemented.

### 3.1.3 Licensing differentiation

As FRAND royalties for various standard-compliant products in the different IoT verticals may be different, SEP holders may consider that licensing should take place either at the end product level or at a level where the supplier knows where the components it produces will be eventually used. SEP holders may therefore opt to license at a lower (downstream) level in the value chain.

### 3.1.4 Possibilities for cross-licensing, grant backs and technical cooperation

A SEP holder will also take into account its business strategy, i.e. its existing and future markets and its dependence on other parties' technologies for the fulfilment of that strategy. SEP holders, which are also end product makers, may argue that licensing at component level may negatively impact their IP position towards competitors operating at the same end product level and purchasing licensed components. As the SEPs used in these components are exhausted by the sale of these components, this will influence the

[82] Also note that when components at upstream level change, for example due to integration of additional functionalities at chip level, the number of SEPs used may change. This would necessitate a new license for the tier-3 supplier with a new definition of licensed product and a new FRAND royalty. This in turn may have consequences for the downstream licenses for tier-2 suppliers and beyond.

relative SEP strength that the SEP holder may have over the competitor purchasing the licensed components and thus may influence its ability to conclude cross-licences. In addition, when cross-licences already exist between a SEP holder and another end product maker, complex compensations may need to be applied all the way back to the component maker to account for the fact that the other end product maker is already licensed under the SEPs of the SEP holder.[83]

## 3.2 If the value chain participants were to choose the level, what are the issues that they would consider?

When it comes to complex products with multi-level value chains, many parties are involved and their interests may not necessarily be aligned, for example, on the issue which party should take the FRAND licence and bear the costs of the licence. Thus, component suppliers may not necessarily speak with one voice on some issues, and may have other views as end product makers.

From a component supplier standpoint, the following elements are, however, likely to be important:

### 3.2.1 Existing business practices and/or indemnity arrangements

In some industries, in particular the automotive manufacturing industry where cars include hundreds or thousands of parts, the OEMs have traditionally relied on a system where their suppliers must procure parts that are free of third-party rights, combined with a system of indemnity. Automotive OEMs would like this licensing approach to be maintained and, therefore, argue that their suppliers should be the ones that should be approached for taking communication technology SEP licences. As traditionally suppliers were responsible for the full design of their components and thus whether their design would infringe any third-party patents, indemnity in these circumstances made sense. However, if component suppliers have no option but to design their products in compliance with a standard, their products will necessarily infringe a number of SEPs. In that case, the traditional patent indemnity approach that the supplier absorbs all cost for SEP licences may no longer be appropriate. Due to the increasing number of standards used in components/modules and resulting increase in royalties (for wireless communication standards alone the aggregate royalties may easily exceed USD 20), the total cost to be absorbed by components suppliers may increasingly burden their business, if license costs cannot be fully passed on to OEM manufacturers.

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[83] Certain experts have the opinion this situation will, however, be rare in the IoT space as most of these cross licenses are concluded between telecommunication infrastructure equipment makers. These infrastructure equipment makers may expand their business into IoT markets and develop and sell infrastructure equipment for applications in various IoT verticals, like road/city infrastructure for autonomous vehicles. Cross licenses will continue to be concluded between these infrastructure equipment makers, including for these new areas and the argument of the possible negative impact of component level licensing on cross licenses will still hold. It is not likely, however, that many cross licenses will be concluded between infrastructure equipment makers and products makers in these IoT verticals, such as car makers or healthcare device makers. For these types of IoT products, licensing at end product maker level or at tier-1 level (or even higher level up) will not have a different impact, if any, on cross licenses between infrastructure equipment makers.

### 3.2.2 Sales to a variety of buyers

When suppliers of components sell these products to many different buyers, they may seek to obtain their own SEP licence, as they cannot know for certain whether suppliers or end product makers lower in the value chain incorporating their components, will take a licence. This concern is particularly valid when component suppliers are under contractual obligation to indemnify some of their customers and, therefore, would have to pay part or all of the SEP royalty for products delivered to those customers.

### 3.2.3 Need to be able to lawfully implement the SEPs

Component suppliers may be concerned that they cannot lawfully develop and manufacture products which implement SEPs without (i) either obtaining a licence or (ii) having guarantees that actors higher or lower in the value chain have obtained a licence that will allow them to use the SEPs without undue restrictions.[84] Given the uncertainty linked with (i) and (ii), they may prefer to obtain their own FRAND licence.[85]

### 3.2.4 Better understanding of standards and SEPs, and better ability to negotiate

Suppliers using SEPs often argue that they may be better positioned to negotiate licences with SEP holders than the end product manufacturer, in particular when the end product manufacturer merely assembles products acquired from a range of suppliers. The suppliers may also have SEPs themselves, which they may use to set-off part of their royalty payments or to enter into cross-licences with other SEP holders. When value chains in IoT verticals are considered, such as connected cars, Tier-1 suppliers typically have more SEPs and better understanding of SEPs than car manufacturers, and thus may have more opportunities to cross-licence than car manufacturers. However, connected car manufacturers might increasingly participate in standard-setting relevant to their industry and, consequently may, if they have made proper R&D investments, declare (or acquire) more SEPs themselves, which may increase their opportunities for cross licensing.

### 3.2.5 Antitrust problems

Such problems may arise when the midstream manufacturer is in competition with the SEP holder and, for implementing the licence, would have to disclose its customers to this competing SEP holder. Licence agreements, however, typically include provisions that information collected by a SEP holder from its licensees should be kept strictly confidential and not be used for any purpose other than checking licensee's compliance

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[84] Judgment of the Federal Court of Justice in Germany (Bundesgerichtshof – BGH) of 24 October 2000, X ZR 15/98, *GRUR 2001*, 407 sub I 3 b. As confirmed by the Federal Court of Justice, under German law, every seller must sell its goods free of third party intellectual property rights. Article 42 of the Convention on Contracts for the International Sale of Goods also requires the seller to deliver goods, which are free from any right or claim of a third party based on intellectual property.

[85] Borghetti, Jean-Sébastien, Nikolic, Igor and Petit, Nicolas, '*FRAND Licensing Levels under EU Law*', available at https://ssrn.com/abstract=3532469. Supporters of SEP holders argue that this last concern with regard to (ii) may not pose a problem in practice.

with the terms and condition of its licence. Many, if not all, major SEP holders have Chinese walls between their licensing departments and their commercial departments. Similar problems may also arise when SEP licensing is done at end product level, and the same solutions can be applied.

# 4. Principles for licensing in the value chain

In this section, a few principles are discussed that could be used to help finding a satisfactory solution for SEP holders and implementers in the value chain.

## 4.1 Licensing at a single level in a value chain for a particular licensed product (or case of application)

SEPs may be implemented in components and products made at different levels in the value chain. From an economic perspective, it may be more efficient if all relevant SEPs are licensed at a single level in the value chain ("the licensing level"). Licensing at one level, rather than at multiple levels, will substantially reduce transaction costs. Unless adequate measures are taken, licensing at multiple levels in the value chain may increase the risk of "double dipping", which will result over-compensation for the SEP holder. It may also lead to under-compensation for the licensor if potential licensees at different levels of the value chain try to push the royalty burden to other levels in the value chain to minimalize their own royalty.

## 4.2 A uniform FRAND royalty for a particular product irrespective of the level of licensing

The value of a SEP licence should not depend on the level in the value chain where the licence is taken. When, for example, a licence for SEPs that are fully implemented in an end product is granted to an OEM for a certain FRAND royalty, that royalty should not change if that same SEPs were alternatively licensed to a Tier-1 or Tier-2 supplier for a product that also fully implements those SEPs. In other words, FRAND is FRAND regardless of the licensing level ("principle of neutrality").

When SEPs of a licensor are implemented at different levels in the value chain the principle of neutrality can still be applied if combined with the first principle of licensing at one single level in the value chain. In that case, a licensee at the selected level will be granted rights to and pay a FRAND royalty for all SEPs a SEP holder that are used in the applicable end product.

When the royalty payment is set independently of which companies in the value chain are licensees, the choice of licensing level would depend on factors, including licensing efficiency, licensing effectiveness, licensing differentiation, possibilities for cross-licensing, grant-backs, technical cooperation etc. as outlined in section 1 above. In many cases, this will lead to licensing at more downstream levels in the value chain, where all or almost all SEPs are implemented.

A potential licensee at the targeted licensing level in the value chain will seek to negotiate the best possible FRAND royalty for all SEPs with a SEP holder. If that potential licensee has SEPs or other patents that might be of interest and value to the SEP holder, it may negotiate a lower royalty by giving a grant-back licence or even enter into a cross-licence with the SEP holder. However, from a valuation perspective that should not impact the value of the SEPs of the SEP holder. As different companies operating at the targeted licensing level may have different patent strengths, the net royalties may differ from company to company. Companies may use this as a commercial advantage.

### 4.3 The FRAND royalty is a cost element in the price of a non-finished product and should be passed on downstream

If licensing is targeted at a level higher up in the value chain and a licensee at that level would pay a royalty for all SEPs used at the applicable end product, the challenge would arise as to how the related cost (or value) can be passed down in the value chain.

The solution would be to move away from the approach were the royalty comes out of the profit margin of a manufacturer after it has made its business case and set its profit margin without taking this royalty into account. If a licensee at an upper level in the value chain would have to pay the FRAND royalty for all SEPs out of its profit margin, it would often completely erode this profit margin and may even create a loss. Instead, it would be better to pursue to an approach where the full royalty is considered as a cost element that is part of the bill of materials in the same manner as the cost of all hardware/software components used in its products. In that case the manufacturer includes the royalty in its cost price and passes it on to its downstream customer. The manufacturer could – but would not necessarily have to decide to lower its profit margin voluntary and thus absorb this royalty partly by itself based on commercial considerations. Pursuant to this approach, the royalty paid at the licensing level may be passed on wholly or partially to the next level until it reaches the OEM, which again may pass it wholly or partially on to the end user. Thus, the supplier taking the FRAND licence would not have to absorb the (entire) cost of the licence fee, hence hurting its profitability. A pre-condition for this approach to work well, is that the manufacturer at the targeted licensing level should have a reasonably good estimate of what the royalty for all SEPs of a SEP holder might be in order to take that into account as a cost in its business plan.

If a downstream customer of the licensed component manufacturer was to seek indemnity and demand that the component manufacturer absorbs the full royalty, the licensing principles would not work. In these circumstances, suppliers would not be willing to pay a royalty for all SEPs used in the end product.

# 5. Creating a SEP licensing environment based on the three licensing principles outline above

## 5.1 Endorsement of these principles by the Commission

**Proposal 28** ★★★★☆

***The Commission could endorse the first licensing principle (one licensing level), second licensing principle (neutrality principle) and the third licensing principle (ability to pass down the value chain a FRAND royalty) in a communication, guidelines for FRAND licensing or any other policy instrument***. This would influence the behaviour of market players having to grant (or obtain) SEP licences and also courts and judges dealing with SEP licensing disputes. Endorsing those licensing principles may already address some of the most disputed aspects of the current discussions of where to license in the value chain.

By endorsing these principles in a communication or set of guidelines, the Commission would likely influence licensing negotiations as these principles could be taken into account by judges in the context of licensing disputes or by competition authorities when they are called to intervene in such disputes. Although these principles could be applied by SEP holders and licensees spontaneously if they became industry practice, their application could initially be facilitated through some form of horizontal and vertical coordination through the auspices of an independent body and the control of competition authorities.

## 5.2 Facilitating horizontal and vertical coordination

**Proposal 29** ★★★☆☆

For the first licensing principle (one licensing level) to work in practice, ***a degree of horizontal coordination between SEP holders and implementers to determine level of licensing may be needed.***

In a first phase, SEP holders (potentially invited through a call for participation by a facilitating body[86], see proposal 30 below) could make a proposal for the licensing level they would like to target in the relevant value chain. This proposal could be published for review by relevant implementers in that value chain.

In a second phase, one or more meetings between SEP holders and representative implementers[87] (facilitated by the same facilitating body) may be held to discuss and agree on the proposal.

[86] The facilitating body could initiate this process out of its own initiative, upon request of one or more SEP holders or one or more implementers.

[87] This could possibly be done through an implementers/licensee pool in accordance with the structural reform proposal described in Part 3.5 on patent pools.

The discussions should be held in strict compliance with competition laws.[88] It would be recommended to have an antitrust lawyer present in all the horizontal coordination discussions. The EU could also have an observer present at these meetings. In any event, no coordination on licensing fees should take place, although individual SEP holders should be free to announce their fees to the market if they wish.

To support the horizontal coordination discussions a reasonably clear picture of the relevant SEPs should be available. Essentiality checks would be needed to obtain this SEP landscape (see Part 3.1). These SEPs could be mapped on the relevant components/products in the value chain concerned, in order to obtain an estimate of the percentage of SEPs that are implemented at the different levels in this value chain. Seeing at what level in a value chain most SEPs are implemented may be helpful for the discussions. This mapping may be efficiently done at relatively low cost by means of tools that determine the overlap of the SEP (claims) with descriptions of the component or product categories at the various levels in the value chain. Other market related information, like the estimated number of licensable companies at the different levels of the value chain may be helpful too.

Similarly, the discussions could be facilitated if an estimated reasonable aggregate royalty for all SEPs relevant to each of the licensed products in that value chain was available, so that the companies operating at the different levels in that value chain can take this information into account when considering the appropriate level of licensing.

To make the licensing principles work in practice, the level of licensing should ideally be determined as early as possible and preferably before the market for each licensing product for an IoT vertical takes off. Determining the level of licensing through horizontal discussions is not likely to work after individual SEP holders have started to execute their individual licensing programmes and have already concluded licences with companies at the level of licensing of their choice, unless of course such discussions are used as a way to settle licensing disputes and avoid protracted litigation.

For the licensing principles to work in practice, the horizontal coordination discussions should have a successful outcome. If no agreement can be reached within a reasonable period of time, the matter would be resolved through bilateral negotiations that may be held at different levels in a value chain and, in case of disputes, may be solved by mediation, arbitration or litigation. The licensing principles discussed in section 4 could still inform these processes in order to avoid fragmented licensing with companies at each level in the value chain having to negotiate licences for the SEPs they are using in their components/products. The latter could lead to inefficiencies for both SEP holders and implementers or to a licensing situation, where the different SEP holders would target companies at different levels in the value to take licences for all their SEPs.

[88] A discussion of the competition law issues that would arise from horizontal and vertical coordination is beyond the scope of this Part. These issues would have to be carefully considered should the proposal suggested in this section be implemented.

The outcome of the horizontal coordination meetings would represent a voluntary arrangement between licensors and implementers and would not mandate the agreed level of licensing. In case an individual company, be it a SEP holder or an implementer, did not accept this outcome (as it should be free to do), pressure from companies at different levels in the value chain, who are disadvantaged by that refusal, may incentivize the dissenting company to revise its position. There might be an indirect disciplinary effect within a value chain on companies dissenting with a licensing level acceptable for all other parties.

**Proposal 30**

***The horizontal coordination discussions could be facilitated by an existing or newly to be formed independent body, licensing administrators (as an additional service to their current role as pool administrators) or SDOs (with no involvement themselves)***.

**Proposal 31**

***Once the horizontal coordination meetings have resulted in a licensing level acceptable to both SEP holders and implementers, vertical discussion meetings may be needed in the relevant value chain to support implementation of the third licensing principle (licensing cost pushed downward).***

The meetings could be used to generate understanding of the concepts of legal exhaustion for SEPs used in the component of the supplier at the licensing level and the rights this supplier passes-through to its customer and its customer's customers for the SEPs not used in the component, but used in the applicable end product[89]. In these circumstances, it should be made clear that suppliers at the licensing level would only be prepared to accept this and pay the full royalty if they are able – should they so wish – to pass this royalty to their customer as a cost in their bill of materials. Should their customers force them to absorb this cost fully, the whole approach would not work.

In case these vertical discussions were unsuccessful, it would also undermine the agreed outcome of the horizontal discussions. In the absence of agreement between SEP holders and implementers as to the level of licensing, the level at which the licensing takes place would be decided by SEP holders and in case of disagreement with SEP implementers, it would have to be decided by national courts. Unless all courts follow the same approach on this question (e.g. following a judgment of a CJEU), this may result in fragmented licensing at different levels by SEP holders with all the complexities that this may create.

[89] The SEPs licensed by a SEP holder for use in the implementer's component are exhausted when that component is sold, which means that the SEP holder cannot enforce these patents or demand any royalties from any downward customer in the value chain. The other SEPs of the SEP holder used in the end product are typically not exhausted by this sale, because they are not used in the component itself. For these SEPs the implementer does not have a license, but it may pass on an implied license under these SEPs to its customers and customer's customers until it reaches the end product level.

**Proposal 32**

***The same independent body facilitating the horizontal discussions could also*** facilitate any vertical coordination discussions.

The body facilitating the horizontal coordination discussions could also facilitate the vertical coordination discussions. To this end the facilitating body could invite representatives of the manufacturers at different levels of the value chain to a meeting or meetings. Such meetings could be used to explain the benefits of licensing at a single level in the value chain, where a licensee would pay the full royalty for the stack of SEPs of a SEP holder used in the end product. As in the case of the horizontal coordination meetings, these vertical coordination meetings would need to be held in strict compliance with competition laws.

**Proposal 33**

For patent pools, the Commission and the US Department of Justice have already formulated guidelines***. The same bodies could formulate guidelines for the horizontal and vertical coordination discussions.***

Any guidelines for horizontal coordination meetings that would be formulated or explicitly approved by the Commission or similar enforcement body elsewhere could be expanded to cover the vertical coordination meetings too.

# 6. Principles for mitigating the consequences that may result from the choice of a level on licensing in the value chain

As noted in section 3, SEP holders and component suppliers may have different concerns and objectives when it comes to the choice of the level of licensing.

**6.1 If licensing at the end-product level (or higher level where all relevant SEPs are used) prevails,** component suppliers may be concerned that they may not be sufficiently protected to lawfully produce their components. One possible approach would be for the SEP holder to grant the end product manufacturer the right to "have" some of the components that are fitted into its product "made" by third-party suppliers. In practice, two categories of have made rights can be distinguished:

### 6.1.1 Have made rights that come with conditions[90]

Under this approach,[91,] the licensee is entitled to have a third-party manufacturer make components based on the licensee's own design and solely for supply to the licensee.[92,93]

[90] In some businesses these kind of have made rights are called "basic have made rights".

[91] Under U.S. law, a license to "make, use and sell" *inherently* includes a right to have made, unless the have made right is explicitly excluded or limited. See Decision of the United States Court of Appeals for the Federal Circuit of 22 May 209, *Corebrace, LLC v. Star Seismic, LLC*, No. 08-1502. See also Decision of the United States Court of Claims of 17 April 1964, *Carey v. United States*, 164 Ct. Cl.

With this type of have made rights, the third-party manufacturer can only act as an "extended work-bench".

- These have made rights may not satisfy component suppliers in multi-level supply chains for the following reasons. First, they may not give the Tier-1 component supplier (or higher level where all relevant SEPs are used) sufficient freedom to operate as it would be allowed to supply only to the licensee.[94] In addition, they would not give the component maker any legal or commercial certainty as this have made right would terminate if the licence to the end product manufacturer was to be revoked, for instance, because the licensee is not in good standing.[95] Finally, component suppliers may argue that these have made rights do not allow them to purchase components from Tier-2 or Tier-3 suppliers as these have made rights would not apply to them.

- A conditional have made right included in a licence to for example a mobile phone maker would not allow it to purchase a standard baseband chip from a supplier under the have made right as the standard baseband chip is not specifically designed by and for the mobile phone maker.

- Some of these problems may, however, be addressed by relying on what we referred to as unconditional have made rights.

### 6.1.2 Have made rights that come without conditions[96]

Under this approach, the licensee would be granted unconditional rights to have components made by a third-party manufacturer[97,98].

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304, 326 F.2d 975. The latter case states that a patent licensee's right to "make" an article includes the right to engage others to do all of the work connected with its production.

[92] While in Germany the notion of "have made rights" is associated with the concept of "extended work bench", according to US case law (see the *TCL* v. *Ericsson* case below), a component manufacturer operating under have made rights "is not allowed to sell such product to other third parties."

[93] The license undertaking under the ETSI IPR policy allows a licensee to have customized components and sub-systems made to licensee's own design for use in its equipment, i.e. a conditional have made right. See: https://www.etsi.org/images/files/IPR/etsi-ipr-policy.pdf

[94] For instance, final order and injunction of the United States District Court, Central District of California of 22 December 2017, *TCL* v. *Ericsson*, Case No. 8:14-CV-00341 JVS-DFMx (overturned on appeal). The Court provided that: '12. "Have Made" means the right to have a Third Party make a product for the use and benefit of the party exercising the have made right provided all of the following conditions are fulfilled: (a) the party exercising the have made right owns and supplies the designs, specifications and working drawings supplied to such Third Party; and (b) such designs, specifications and working drawings are, complete and sufficient so that no substantial additional design, specification and working drawings are needed by any Third Party; and (c) such Third Party is not allowed to sell such product to other third parties.

[95] A similar argument could, however, be made in case the license would be granted to the Tier-1 supplier. It would not give legal certainty to the end product maker as the license to the Tier-1 supplier could be terminated.

[96] Certain industries and business sections use different terms for these rights like "Extended have might rights". The content of these rights may vary in those business sections.

[97] The IEEE IPR Policy requires a SEP holder to undertake to grant licenses 'to make, have made, use, sell, offer to sell, or import any compliant product (e.g. component, sub-assembly, or end product)', i.e. an unconditional have made right. See https://standards.ieee.org/about/policies/bylaws/sect6-7.html

- In case the licensee is, for example, the end product manufacturer, these unconditional have made rights would allow the Tier-1 supplier to supply general or specific purpose components based on its own design to the licensee. It would also entitle the Tier-1 supplier to purchase components it needs itself for use in its own components from Tier-2 and Tier-3 suppliers. The Tier-1 supplier could sell these general components also to other licensed or unlicensed end product manufacturers. The end product manufacturer exercising the have-made right, could also allow the have made manufacturer to sell the specific purpose components to licensed or unlicensed other end product manufacturers, where the sale to unlicensed end product manufacturer would be for the risk of the have-made manufacturer. The licensed end product manufacturer, in particular smaller implementers, would benefit from the higher the sales volume of the Tier-1 supplier as this will lower the component price for the licensee.

- It could still be argued that this approach offers no legal certainty to the component makers as the have made rights would terminate should the licence to the end product manufacturer be revoked. However, if Tier-1 suppliers operate in this approach under unconditional have made rights from multiple licensees, termination of the licence to one end product manufacturer would not terminate the operations from the component supplier as it still could supply to other end product manufacturers. Also, the risk would be the same for the end product manufacturer in case the licence would be granted to the Tier-1 supplier.

### 6.1.3 Non-asserts upstream

Instead of granting have made rights to address the issue of creating legal or commercial certainty for suppliers, it has also been proposed to grant non-asserts to suppliers upstream to the licensing level. These non-asserts, in the USA often called covenants-not-to-sue, should protect these suppliers against any enforcement actions for patent infringement by the SEP holder.[99] A disadvantage of using non-asserts for SEP holders is that they would no longer be able to exert additional pressure on an unwilling licensee through its suppliers. For that reason, non-asserts are sometimes formulated as covenants-to-sue-last with the effect that the SEP holder will not assert or sue the supplier unless all non-legal actions against an unwilling licensee have been exhausted without a licence being concluded.

Some SEP holders avoid using a non-assert or covenant-not-to-sue provision where there is a concern that it could be construed as equivalent to a licence for the purposes

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[98] See also Decision of the United States Court of Claims of 17 April 1964, *Carey v. United States,* 164 Ct. Cl. 304, 326 F.2d 975 which states that a patent licensee's right to "make" an article includes the right to engage others to do all of the work connected with its production.

[99] Some courts, especially in the USA, have concluded that a non-assert is equivalent to a license, which in that case would cause exhaustion of patents. See, for example, Kacedon, D. Brian, Luneack, Matthew J. and Paul, John C., 'Court Finds an Agreement Not-to-Sue Is a Patent License Despite Language to the Contrary', *LES Insights,* 14 June 2016, available at https://www.finnegan.com/en/insights/articles/court-finds-an-agreement-not-to-sue-is-a-patent-license-despite.html

of exhaustion. They may also wish to avoid that the ongoing infringing activity at component level higher up than the licensing level is seen as being authorized, even in an implied manner, because that could also lead to exhaustion. Instead, some SEP holders give comfort to a component manufacturer higher up than the licensing level by stating that the SEP holder will approach first another party for licences under its SEPs and only come back to the component manufacturer under defined circumstances, and further explicitly stating that the activity of this component manufacturer is neither authorized nor licensed. This approach should on the one hand give the component manufacturer higher up than the licensing level sufficient comfort for its activities and should on the other hand give the SEP holder sufficient comfort that it does not run exhaustion risks for its SEPs.

### 6.1.4 Royalty free licences upstream

**Proposal 34**

***Another alternative to using have made rights and covenant-not-to-sue or to-sue-last to give legal certainty to suppliers is to grant royalty free licences to suppliers in the levels in the supply chain upstream of the licensing level; such licences would depend on the existence and the payment of a licence downstream***. These licences would be a consequence of a licence that the component/product manufacturer at a more downstream licensing level has concluded for the relevant SEPs and being a licensee in good standing. It would have to be royalty free as long as any further payment by an upstream supplier would lead to an unjustified double dipping. Since the licence upstream would depend on the payment of a downstream licence, it could not lead to an exhaustion in favour of the downstream licensee. The legal dependencies of these royalty free licences from the royalty bearing licence may be considered in greater detail and could be clarified in an EU regulation.

**6.2 If licensing at the component level prevails**, the possible negative consequences that could be felt by SEP holders could be addressed by the principles listed in section 4, as these principles would ensure that (i) licensing would only take place at one level of the value chain, (ii) the level of the FRAND royalty would not depend on the level of licensing (hence, avoiding tactics aimed at encouraging licensing at the level of the value chain were compensation would be lowest); and (iii) the royalty would be considered as part of the bill of materials of the supplier taking the licence (hence, avoiding a situation where the component supplier in question be unable to pay the royalty because it exceeds its profit margin).

### 6.2.1 Differentiated royalties

If licensing were done at component level, where all or almost all relevant SEPs are used, as may be the case in Tier-1 or Tier-2 modules, it would make charging different royalties for different applications of these licensed products based on different incremental values created at end product level easier but may still raise some concerns. The Tier-1 supplier usually knows for what applications its customers are going to use

its modules, which makes it possible for it to report and pay different royalties to a SEP holder based on the sales to the different type of customers. For component suppliers further upstream some additional mechanisms may be needed, like, for example, those discussed below.

### 6.2.2 Limited exhaustion - in rem

**Proposal 35**

When a licence is granted at a high level in the supply chain and a licensor may want to charge an upstream implementer different royalties for the use of its components in different end products. Upstream component makers frequently use distributors to sell their components, which make it hard for them to know in which products their components will ultimately land. If the upstream component maker is entitled to get a licence, he might not have to accept different royalties for different uses of his products and might not be forced to bind his customers to any restrictions on the use. However, the patent law in most countries leads to an exhaustion of rights after a product has been sold by a licensee regardless how the buyer will use it.

***In order to avoid a royalty that would have to be determined, for example, on the basis of a use with an average profitability, a change in patent law could allow to cause an exhaustion that is only limited to a specified use. With such a change, the licensee could be obliged to deliver his components with a sign (logo, number or other link) for each particular application (end product*). *Thereby, the destination of the components could be monitored, if the licensee would follow the additional obligation to record these different applications in the patent register in the relevant country or countries.***

In that case a SEP holder can prevent exhaustion of its SEPs in situations where the components are used in a different application than the intended application by using a so-called “in-rem action”, which can be invoked against any downstream user of the component. A change of patent law in this sense in the relevant countries could be initiated by an EU regulation.

### 6.2.3 Different uses by a special technical design

**Proposal 36**

***To allow for different royalties to be charged for chips depending on the type of end product, in which they are going to be used, supplier products could be provided with technical measures enabling the product for use in a particular type of end product only.***

The technical measures could, for example, be in the form of a (software) code embedded in the product, where the code indicates the type of end product for which the supplier product is intended. The end product should be able to detect this code and only “accept” a supplier product with a code for this type of end product. The additional

cost for both the supplier and the end product manufacturer for introducing these technical measures in their devices should be low in order to be acceptable for them. To avoid that each supplier uses its own (software) codes locking-in end product manufacturers to their products, there should be a central organisation, for example, a certification body, that issues these codes. This approach would make it possible for SEP holders to grant licences at the level of supplier products, while preserving the ability to charge different royalties for the same products depending on the type of end product, in which these are going to be used.

### 6.2.4 Different connectivity rates

**Proposal 37**

Different applications may require different connectivity rates. For example, a connected refrigerator will likely require a lower connectivity rate than a self-driving vehicle. Chips providing higher connectivity rates may be more complex and more expensive than chips providing lower connectivity rates. It, therefore, may be possible that chipmakers will manufacture and sell connectivity chips that are dedicated for applications requiring connectivity rates within a certain range. ***In that case, SEP holders could license their SEPs at chipmaker level and charge different royalties for the different chips depending on the connectivity rates of these chips***. This would substantially reduce the issue of chipmakers not being able to determine in which end products their chips will ultimately be used. It would also avoid the need for any technical measures as described above.

# PART 3.3 – FAIR, REASONABLE AND NON-DISCRIMINATORY TERMS AND CONDITIONS

As discussed in Part 2, SEP holders normally commit to licensing their SEPs under fair, reasonable and non-discriminatory ("FRAND") terms and conditions. We first discuss the determination of *fair and reasonable* ("FR") terms and conditions for the licensing of SEPs.[100] Then we discuss the concept of "non-discrimination" ("ND"). Determining whether licensing terms and conditions are FR may require investigating whether they are non-discriminatory ("ND") and *vice versa*.

## 1. Introduction to Fair and Reasonable Terms and Conditions

A licence typically includes one or more compensation terms, such as monetary payments (royalties), cross-licences, and/or other terms and conditions that confer value on both parties. Terms and conditions of the licence, such as the scope, duration, transferability and non-assertion or standstill provisions, to name only a few, contribute to define the value of the licence.

The value of a SEP licence can be determined at different points in time. Once after an implementer has expressed its willingness to take a licence, an offer has been made, but not all terms and conditions of the licence have been negotiated. Alternatively, when all terms and conditions of the licence have been negotiated and agreed. Or, in case of dispute, when the judge needs to assess the terms and conditions in the licensor's offer and the licensee's counteroffer.

Assessing the value of a SEP licence offer can require an analysis of the SEPs (including essentiality and validity) and factors such as relevancy, geographical coverage of the patents and the monetary compensation demanded for the licence. Other factors, for example, the duration and transferability of the licence may influence the value of a licensing offer as well. However, it is noted that many terms and conditions may not be part of the initial FR licensing offer, but are only determined during the negotiations following this offer.

Determining the value of a SEP licence once concluded may involve a holistic assessment of all rights that the licence confers to the licensee. Terms and conditions of the licence, e.g. the scope (i.e. licensed products and jurisdictions), duration, transferability, etc., may contribute to define the value of the licence. It is noted that the FRAND licensing commitment is irrevocable.

For simplicity, in this Part we will generally refer to the FR value of a *unidirectional* SEP licence (or licence offer), (a) for which all licensing terms and conditions, such as duration and scope, are given and (b) irrespective of the form of compensation. We will

[100] For the avoidance of doubt, in this Part we do not distinguish between a FRAND commitment and a RAND commitment (i.e. a commitment to license on reasonable and non-discriminatory terms).

describe methods that may help determine the value of such a licence. Such methods are not exhaustive and do not present all possible methods for determining a licence's value.

The focus of this Part is the determination of a FR value of a licence (or offer) for either a SEP or a SEP portfolio. Because SEPs may be licensed on a portfolio basis or in some instances may be the subject of a cross-licence, which may further complicate the assessment of the licence value. This Part is not intended to address all valuation issues arising out of the various forms of SEP licensing.

The discussion in this Part takes as given one of the principles discussed in Part 3.2 on the licensing in the value chain, namely, that the FR value of a licence (or offer) to a SEP or SEP portfolio should be independent of the level of the value chain for the licensed products at which that SEP or SEP portfolio is licensed.

## 2. What are Fair and Reasonable Terms and Conditions?

As mentioned in section 1, whether the terms and conditions of a SEP licence are FR may be a determination made based on the totality of the provisions of the licence agreement, considering the specific circumstances of the parties to the agreement. The monetary provisions of a licence are for the most part based on a determination of royalties to be paid by the licensee.

Given a licence's other terms and conditions, an offer falls outside the FR range if the SEP holder's compensation exceeds the incremental value that the patented technology adds to the licensed product. A licensing offer may also fall outside the FR range if it fails to remunerate the SEP holder for the value-added created.

If a standard comprises multiple SEPs or SEP portfolios, the FR terms and conditions for each SEP or SEP portfolio should only reflect the value of the specific technology protected by the SEP or SEP portfolio. Furthermore, the terms and conditions applying to the licence offer for an individual SEP or SEP portfolio cannot be considered in isolation. Specifically, the individual cost of the licence for the licensee should be consistent with an FR *aggregate royalty* for the stack of SEPs that reflects the overall added value of the standardised technologies to the licensed product.

Some members in this group consider that the economic value that the patented technology adds to a licensed product may differ from the economic value that such a technology adds to another licensed product. This may be because different products rely on the technology in different ways, or because the technology enhances the value of different products differently.[101] In their opinion, given that the FR value of a SEP

[101] This is a commonly accepted principle in economics. As stated in Allenby et al., 'Ultimately, patents have value to the extent to which the product features enabled by the patents have economic value in the marketplace. … What a firm is willing to pay for a patent should be determined, at least in part, by the incremental profits which the features enabled by the patent can create. Similarly, the license fees or royalties charged for use of a patent should depend on the flow of incremental profits to the firm practicing the patent under license.' Allenby, Greg M., Brazell, Jeff, Howell, John R., and Rossi, Peter E.,

licence must bear a relationship with the economic value of the licensed use of the patented technology, the compensation for each licensed product should, within the limits defined by the non-discrimination obligation of FRAND (see below), reflect the specific value that the patented technology adds to the product in question. This does not mean that the FR value of a SEP licence is necessarily higher for products sold at higher prices or for products for which consumers have a higher willingness to pay, since the higher prices and/or willingness to pay may be based on other factors unrelated to the use of the SEPs.

Two primary considerations involving the monetary aspects of a SEP licence are: (i) the royalty structure and (ii) the valuation of the licence. More detail regarding approaches and methodologies used to address these two items are set forth below.

## 3. Royalty Structure

The terms of a licence agreement governing royalties are one of the primary aspects of the agreement. A *royalty* can be structured in different ways: as a one-time lump-sum payment, periodical instalment payments, payments after reporting of sales volumes or turnover, etc. or combinations of any of this.

**The determination of a royalty can be done in different ways**, but it **typically** requires identifying a *royalty base* and a *royalty* applied to that base. There is considerable disagreement among industry players regarding how to identify the appropriate royalty base, and what a fair royalty should be. Ultimately, however, a combination of these two factors must result in a royalty amount that fits within the bounds of FR, when taken together with the other terms and conditions of the licence agreement. See Annex 7 for insights from other areas of valuation of intellectual property.

### 3.1 Royalty Base

A royalty base is the unit-base on which the royalty is applicable.

There are differing views as to the right approach. The royalty base may be established using one or more of the following: (a) the value of the sales of the entire end-product incorporating the patented technology,[102] (b) the value or volume of sales of the smallest saleable patent practicing unit incorporating the patented technologies (the *SSPPU approach*), (c) the value of the sales of the end product but applying caps, (d)

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'Valuation of Patented Product Features,' *Journal of Law and Economics*, 57(3), 2014, pp. 629 – 663. See also Trajtenberg, Manuel, 'The Welfare Analysis of Product Innovations, with an Application to Computed Tomography Scanners,' *Journal of Political Economy*, 97(2), pp. 444-479; Stiroh, Lauren Johnston and Rapp, Richard T., 'Modern Methods for the Valuation of Intellectual Property', *NERA*, 1998; Hiller, R. Scott, Savage, Scott J. and Waldman, Donald M., 'Using aggregate market data to estimate patent value: An application to United States smartphones 2010 to 2015', *International Journal of Industrial Organization* 60, 2018, pp. 1-31.

[102] The value of sales could in principle be calculated in different ways, depending on whether unit prices are defined as ex-factory prices, FOB prices, net selling prices (NSP), average selling prices (ASP), retail prices, etc.

the value of sales of intermediate products, like modules, (i.e. between the SSPPU and the end product), or (e) using a combination of the previous approaches.

These different options for the royalty base are available whatever the level at which the SEPs are licensed: the SSPPU approach can be used to "calculate" FR royalties payable by the end product manufacturers, and the end product value approach can be used in circumstances where licensing takes place at an intermediate or even at the SSPPU level of the value chain.

### 3.2 Royalty

The royalty base and royalty are inextricably dependent on each other, and neither is in and of itself determinative of the ultimate royalty amount. For instance, a narrower royalty base could be associated with a higher royalty and *vice versa*. Much of this analysis and interplay is market driven.

The royalty can be set as a percentage of the royalty base (*ad valorem* royalties)[103] or a per-unit payment,[104] where the total royalty could be calculated, for example, for the number of SSPPU units, for the number of units of the end product or any intermediate level (product per-unit royalties).

In practice, SEP holders and implementers may adopt hybrid royalty schemes, for example, *ad valorem* royalties subject to (*per-unit*) *royalty caps*.[105] The choice of royalty may have implications for the cost of licensing, since monitoring use may be more difficult with *ad valorem* rates than with per-units.

There is some disagreement among practitioners about the relative merits of *ad valorem* and per-unit royalties.

- The royalty burden under *ad valorem* royalties will depend on the unit price of the product used as royalty base. Implementers selling more expensive units will pay relatively more. Moreover, prices of the same product may vary from country to country and be different from one model to another. Under per-unit royalties, all implementers will pay the same royalty, irrespective of the price commanded by their products.
- *Ad valorem* royalties will be passed on to the next level of the value chain to a lesser extent than per-unit royalties, since the higher the degree to which they are passed the greater the total royalty burden.[106]

[103] For example, X% of the unit value of sales of the SSPPU or Y% of the unit value of sales of the end product.
[104] For example, €Z per SSPPU or end product unit.
[105] For example, X% of the unit value of sales of the SSPPU or Y% of the unit value of sales of the end product subject to a €Z per SSPPU or end product unit cap.
[106] See Llobet, Gerard and Padilla, Jorge, 'The Optimal Scope of the Royalty Base in Patent Licensing', *Journal of Law and Economics*, 59.1, 2016, pp. 45-73.

- When components and end-products are produced in fixed proportions (e.g. one unit of a component per unit of the end product), then the choice of royalty base is irrelevant when using per-unit royalties, since the number of units of the component and the number of units of the end product are directly proportional (e.g. identical when there is a one to one relationship between components and end products).

# 4. Valuation Methods

In this section, we describe some methods for the determination of the FR value of a licence. This list of methods is not exhaustive and other methods may be used. We will abstract from the form of compensation, including the choice of royalty base and royalty as monetary compensation, making instead reference to the determination of the FR value of the licence.

The determination of an FR value of a SEP licence may be based on several approaches, including: the *ex ante* approach, the comparable licence agreements approach, the top down approach, and the present value-added ("PVA") approach.

No method is perfect. The choice of method or combination of methods depends on the circumstances (e.g. whether the valuation takes place in the context of a bilateral negotiation or within an arbitration or a litigation process) as well as on the available information. Section 5 discusses how to approach the selection of an appropriate valuation method in a concrete case. In many instances, it may be preferable to use several methods at once, or to start with one method and use another as a cross-check.

Note that different valuation methods offer different insights as to what may constitute a FR royalty. For example, the Top Down approach, which starts from the aggregate royalty, may be appropriate to account for the risk of royalty stacking.

### 4.1 The Ex ante Approach

Under this approach, the FR value of a SEP licence may be determined by reference to the additional value of the patented technology as compared to the value of the next best alternative prior to standardisation (i.e. *ex ante*). The principle underlying the *ex ante* approach is that a FRAND royalty should reflect the additional contribution of the patent as distinct from any additional value that the standard confers upon the patent. Thus, this approach is called the *ex ante* approach.

For the avoidance of doubt, the *ex ante* approach does not require that SEP values are determined *ex ante*. They can be established *ex post* but by references to the conditions applying prior to standardisation, i.e. *ex ante.*

There are different ways to apply the *ex ante* approach. Several methods are described below.

Where "comparable" licensing agreements have been entered prior to the adoption of the standard, the *ex ante* approach could be implemented by reference to these

agreements.[107] In such a case the relevance of available *ex ante* licensing agreements may be assessed along multiple dimensions (such as the size and quality of the underlying SEP or SEP portfolio, duration, geographic scope, payment structure, other non-royalty terms, etc.)[108]

A challenge to this approach are SEPs that do not exist *ex ante*, but are filed during the standardisation process for technologies specifically developed with the technical requirements of the standard. No *ex ante* licences are available for these SEPs.

In the absence of the *ex ante* licensing agreements by SEP holders an *e -ante* approach may be implemented by reference to circumstances that prevailed prior to standardisation, including the availability of alternative technologies.[109] In principle, this approach is also capable of dealing with situations involving patents that did not exist *ex ante*. Some claim, however, that if technologies differ along many dimensions and cannot be compared in practice, the identification of the next best alternative may prove infeasible.[110]

The *ex ante* approach may also be implemented when SEP holders made *ex ante* declarations about the value of their SEPs or about the FR aggregate royalty for standard implementers.

It is important to distinguish between:

- *Announcements by a SEP holder itself*: If a SEP holder has made an announcement of a royalty for its SEPs or an aggregate royalty for the SEP stack, such an announcement could provide some guidance for an implementer to make its investment decisions for relevant products. In some instances, such announcements may be viewed as specifying the licensing commitment that the SEP holder has made, and could be considered an enforceable pledge.

- *Announcements by other SEP holders*: If the SEP holder has not made such an announcement, using other companies' announced royalties (or aggregate royalties) is subject to the same concerns as using comparable licences (see below). The probative value of other companies' statements

[107] See Swanson, Daniel and Baumol, William, 'Reasonable and Non-discriminatory (RAND) Royalties, Standards Selection, and Control of Market Power', *Antitrust Law Journal*, 73(1), 2005, pp. 1-58.
[108] See below for a discussion of the comparable methods. See also Part 3.3 on FRAND terms and conditions.
[109] A well-known conceptual framework to account for such *ex ante* circumstances is the construct of a "hypothetical negotiation", which estimates the likely outcome of a negotiation between the parties taking place at a specific point in time considered '*ex-ante*'. There are numerous debates about the proper implementation of such a "hypothetical negotiation" framework, including the question whether information that has only become available ex post should be reflected; see Siebrasse, Norman V., and Cotter, Thomas F., 'A New Framework for Determining Reasonable Royalties in Patent Litigation', *Florida Law Review*, 68, 2016, p. 929.
[110] See Layne-Farrar, Anne, Llobet, Gerard, and Padilla, Jorge 'Preventing Patent Hold up: An Economic Assessment of Ex Ante Licensing Negotiations in Standard Setting', *AIPLA Quarterly Journal*, vol. 37 (4), 2009, pp. 445-478.

may be conditional on the fact that (1) their announcements are indeed FR, (2) they are similarly situated to the SEP holder under dispute, and (3) the other company's announcement is descriptive of (or consistent with) its actual licensing offers.

Irrespective of who makes them, such statements may be driven by opportunistic considerations. This possibility needs to be factored in. If *ex ante* statements form estoppels, they will likely no longer be made, or when made, these statements will likely fall into the extreme ends of the spectrum.

Some consider that an *ex ante* approach, when feasible, may provide a valuable insight since they cannot comprise hold up value. Others argue that this approach may lead to the under-compensation of SEP holders, since the *ex ante* valuation is performed once the competing technologies (i.e. the patented technology and its best alternative) have already been developed (i.e. it is not really *ex ante*).[111]

**Proposal 38**

***It is proposed that incentives are introduced for SEP holders to publicly announce meaningful ex ante statements increasing the usefulness of these statements for the determination of FR terms and conditions.***

SEP holders should be encouraged to publicly announce their most restrictive licensing terms.

**Proposal 39**

Participants in standard development may also declare their reasonable aggregate royalty for a standard in a specific vertical. Declarations of reasonable aggregate royalty should bind the declaring company – a SEP holder's licensing offers should be consistent with a reasonable share of the reasonable aggregate royalty it has announced. The company's share in the aggregate royalty should be assessed using objective criteria. A company's own view of what share its patent portfolio commands in the aggregate royalty of the standard should be given little weight.

Both types of declarations (most restrictive terms and aggregate royalty) should be treated as clarifying the material content of the SEP holder's FRAND obligations. It is proposed that the EU should sanction licensing practices that are inconsistent with previously made unilateral declarations as a breach of a FRAND commitment. At the same time, this clarification should provide incentives for SEP holders to issue such declarations. The clarification should thus provide a certain level of reassurance to a SEP holder offering licences on terms that are consistent with previously made unilateral declarations. In order for a SEP holder to benefit from this reassurance, it should make an irrevocable declaration publicly available in accordance with the

[111] See Bertram Neuhror, 'Dynamically Efficient Royalties for Standard-Essential Patents', *Journal of Competition Law & Economics*, Vol. 16 (3), 2020, pp. 289-305.

policies of an SDO that provides for voluntary declarations of announced licensing terms.

**Proposal 40**

***A platform for posting unilateral announcements of licensing terms could be created (at the incentive of the EU/ Commission and/or under the auspices of SDOs).*** The Commission should recognize the value of early announcements, including as a means of informing standardization decisions.

**Proposal 41**

If a company has declared sufficiently **specific most restrictive licensing terms** (e.g. a percentage of a specified base, or a per unit royalty) during or before the development of the standard to which the patent(s) is (are) essential, licensing terms that do not exceed these declared most restrictive licensing terms should be presumed not to be abusing a dominant position created through a standardization decision occurring after the declaration. If a company has declared a sufficiently **specific reasonable aggregate royalty** for implementers of the standard (e.g. a percentage of a specified base, or a per unit royalty) during or before the development of the standard to which the patent(s) is (are) essential, a SEP licensing offer that is compatible with the *ex ante* announced aggregate should be presumed not to be abusing a dominant position created through a standardization decision occurring after the declaration.

At least one member disagrees that the Commission should sanction licensing practices that are inconsistent with previously made unilateral declarations as a breach of a FRAND commitment.

### 4.2 The Comparable Licences Approach

This method determines the FR value of a SEP licence by reference to the terms and conditions of comparable licences.[112] This approach may allow to determine the FR royalty by reference to the set of royalties applied in those comparable licences.

Some factors that may be considered when assessing comparability include: (a) the technological complexities of the standards, (b) the SEPs or SEP portfolios; (c) the licensed products; (d) the royalty structures; (e) the identity of the licensees and their position in the product markets where they operate (whether they are "similarly situated"); (f) other licence terms, such as the term of the agreement and geographical coverage, or the existence of cross-licences or other forms of compensation; (g) the comparable rate falls in a similar timeframe, etc.

Rarely, there are licence agreements satisfying *all* these factors. However, not all those factors need to be satisfied for licences to be considered comparable. The royalty may

[112] See Part 3.3 on FRAND terms and conditions for a more detailed discussion of the comparability under the ND criterion.

be assessed against the entire set of comparable agreements, or single licences selected by either party. An alternative is to use the set of comparable licences to define an FR range and then allow the parties to negotiate within that range.

Using these factors, a set of licences may be selected as most closely comparable. If there is no licence that is deemed sufficiently comparable to provide a reliable indication of a reasonable royalty, the method cannot be used. Provided that there is a non-empty set of comparable licences, these factors may then be taken into account for the determination of a reasonable royalty by reference to the entire set.

This approach has some limitations. Some members consider that the use of the factors to select comparable licences and account for differences between licences is prone to arbitrariness. To address this concern there are suggestions in the literature to use formal empirical analysis, which may include regression analysis and matching techniques.[113] Some members consider that empirical methods may require a large number of comparables. This is the reason why in practice a heuristic approach may be unavoidable.

Some practitioners have criticised the use of this approach for the following reasons:[114]

- Firstly, the party with better access to comparable licence agreements, whether licensor or licensee, may be able to select arbitrarily from these agreements by means of "cherry-picking" those that are more favourable to its position.[115] [116]
- Secondly, comparable licences could have been concluded on terms that were not FRAND due to e.g. the risk that hold-up or a hold-out characterises existing licence agreements.
- Thirdly, while the comparable licences approach may be easier to implement in mature markets with many existing licensing contracts, it is of more limited value in new markets and/or in situations characterised by fundamental economic or technological change.

These concerns may be factored into the assessment of whether the comparable approach is appropriate for use in a given situation. Additionally, another approach

[113] Sidak, J. Gregory. 'Using Regression Analysis of Observed Licenses to Calculate a Reasonable Royalty for Patent Infringement', *Criterion Journal on Innovation* 2, 2017, p. 501.
[114] See, for example, Leonard, Gregory K. and Lopez, Mario A. , 'Determining RAND Royalties for Standard-Essential Patents', *Antitrust*, 29(1), 2014, pp. 86-94.
[115] Note that lack of transparency over other licenses' terms and conditions may raise concerns regardless the method that is used to determine the FR value of a SEP license, as it makes it more difficult to observe non-discrimination. Part 3.3 on FRAND terms and conditions dealing with non-discrimination addresses transparency over other licenses' terms and conditions in greater detail and discusses reform proposals that aim to improve this transparency. Such increased transparency may overcome, or at very least allay the concern discussed here.
[116] This sort of manipulation should in principle be limited by the effective enforcement of the ND obligation. See Part 3.3 on FRAND terms and conditions for a detailed discussion of the ways in which such ND obligations can be effectively enforced.

(such as the Top-Down Approach) may be used jointly with this approach as a cross-check. Furthermore, an effort should be made to require SEP holders to disclose the range of royalty terms they have negotiated. Adjustments could be possible if there is sufficient transparency over the set of comparable licences and large enough samples of comparable licence agreements are available.

The implementation of the comparables approach should be complemented with an assessment of the reasonableness of the *implied* aggregate royalty, i.e. the aggregate royalty for the relevant standard.

Calculating the *implied* aggregate royalty requires assessing the strength of the patented technology (i.e. the SEP or SEP portfolio in question) relative to the entire standard (i.e. all SEP reading on that standard) for each relevant standard-compliant product. It requires that a reasonably good estimate of the total number and relative value of the SEPs available at the time the assessment is done. This can may done using the same criteria that should be used to *apportion* the aggregate royalty under the top down or PVA approaches.

### 4.3 The Top Down Approach

The top down approach determines an appropriate FR value for a licence by assessing, in a *first* step, the aggregate royalty for all relevant SEPs, and then, in a *second* step, apportioning that aggregate royalty to individual SEPs or SEP portfolios.[117]

#### 4.3.1 The Aggregate Royalty

Different methods may be used to determine the aggregate royalty including the following:

*Apportioning the net profits of the SSPPU manufacturer*.[118] The first step is the identification of the SSPPU and a determination of the net profit of this SSPPU. Then, the aggregate royalty may be set as a fraction of the net profit of that product.

Some practitioners have criticised this method for reasons beyond the use of the SSPPU.[119] In particular, they claim that the price of the SSPPU need not be independent of the royalty (a higher royalty will normally translate into a higher price and, therefore, will not reduce the net profit of the SSPPU). They also criticise that the method assumes SEP holders' claims for royalties are necessarily junior to the claims of all other input suppliers, since it allocates the profit that is left after all these other input suppliers have been paid (i.e. it is a variation of the residual valuation method). Lastly, they argue, this

[117] See also the Japanese PTO Guide to Licensing Negotiations involving Standard Essential Patents. Guide to Licensing Negotiations involving Standard Essential Patents, p. 41.
[118] This method was applied in *In re Innovatio*. See Leonard and Lopez, *supra* note 126.
[119] See, for example, Putnam, Jonathan D. and Williams, Tim, 'The Smallest Salable Patent-Practicing Unit (SSPPU): Theory and Evidence', *SSRN*, 2016. See also Layne Farrar, Anne, 'The Patent Damages Gap: An Economist's Review Of U.S. Statutory Patent Damages Apportionment Rules', *Texas Intellectual Property Law Journal*, 26, 2018, pp. 31-47.

apportionment approach also makes the royalties dependent on the economic efficiency of manufacturers, as well as on their bargaining power vis-à-vis their customers, and their pricing strategies.

The supporters of the SSPPU argue that (i) the owners of patents cannot claim more than what their patented inventions protect; (ii) they should not be entitled to claim for the value added by the manufacturer itself; (iii) licensing at the SSPPU level is much less complicated than at the end product level and (iv) reference to the value of the end product may create an anchoring bias as described by behavioural economists. Other members consider that anchoring bias happen with reference to the value of any product.

*Using public statements by licensors*: SEP holders may have historically made public statements about the reasonable aggregate royalty for a licensed product compliant with a standard. Regardless of the timing of such statements (i.e. before, during or after standardisation), they may be then used to help establish the aggregate royalty. This may be subject to the same concerns regarding opportunistic behaviour set out above in relation to the *ex-ante* approach.

*Determining the implied aggregate royalty using comparable licences for the same standard-compliant licensed product or for another standard-compliant licensed product or a similar licensed product using a related standard* (e.g. using the aggregate royalty for 4G smart phone licences to determine the aggregate royalty for 5G smart phone licences, maybe taking other factors into account as well). This may be subject to the same comments set out above in relation to the comparable approach.

*Apportioning the Present Value-Added created by the SEP*. The *Present Value-Added* may be determined by using different methods.

### 4.3.2 Determining a reasonable aggregate royalty using one or more known valuation methods in a consultative process between SEP holders and implementers

**Proposal 42** ★ ★ ★ ★ ☆

This approach is partly based on the approach generally used by patent pools in setting a rate for a product or products licensed by the pool. A standard may be used in different applications, like in different IoT verticals, and each application may involve different product categories. The markets for these applications may start at different points in time after approval of that standard. For each product category a reasonable aggregate royalty has to be determined and preferably before the market for such product starts. The consultative process may be facilitated by a body (which should not participate itself in those meetings), which may be the relevant SDO, or another existing or newly established body for that purpose.[120] This body should trigger the consultative process

[120] The meetings should be held in strict compliance with competition laws. The European Commission, the US Department of Justice and competition authorities in other major countries could formulate guidelines for these discussions. To secure compliance with anti-trust laws and these guidelines, it is advised that an anti-trust counsel is present at all the meetings to ensure that no subjects are being

for each new emerging product category whether in an existing or new vertical taking into account the specific additional economic value created through the respective application of the standard.

***The process for determining a reasonable aggregate royalty for the first product category can be started once a reasonably clear picture of the SEP landscape for the relevant standard has emerged[121]. The facilitating body may issue a call for SEP holders having at least one true SEP as confirmed by an independent external evaluator to participate in meeting to determine a reasonable aggregate royalty for this first product.***

***SEP holders may develop a proposal for a reasonable aggregate royalty using the approaches described above. As both net collectors and net payers will likely be present among the participating SEP holders, the balance between the different interests may result in an aggregate royalty acceptable to these SEP holders.***

***The process and voting rules for approving a reasonable aggregate royalty should be designed in a way that it doesn't give unjustified leverage to one or more SEP holders. Voting by qualified majority, therefore, seems more appropriate than voting based on unanimity.***

***These voting rules should be designed in such a manner as to avoid that one group of licensors with shared interests, such as the group of net-collectors or net-payers, would have a decisive vote. This may be achieved by introducing weighted voting, for example based on the estimated total number of true SEPs of each licensor and with weighting factors that are selected in a manner, which avoids that the one or the other group of SEP holders may have a decisive vote.***

***SEP holders should participate in those meetings to find an acceptable reasonable aggregate royalty in good faith. Selling one or more true SEPs for the sole purpose of acquiring more seats and thus votes at those meetings, should not be considered good faith behaviour.***

***The proposed reasonable aggregate royalty is publicly announced for review by the relevant implementers. The facilitating body may organize one or more meetings between SEP holders and representative implementers to discuss feedback on the proposed reasonable aggregate royalty, which may lead to adjustment of this royalty, if deemed justified. The finally agreed royalty may be published to provide guidance to both implementers and SEP holders.***

The agreed aggregate royalty provides guidance for the individual SEP holders to determine a fair and reasonable royalty for their individual SEPs or SEP portfolios

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discussed that would be in conflict with the competition rules. The European Commission may also attend these meetings as an observer.

[121] For the first product additional structural proposals have been made as described in Part 3.1 on transparency to create this reasonably clear picture of the SEP landscape quickly after approval of the standard. For later products this picture will have become clearer.

taking into account this aggregate royalty. This may smoothen licensing negotiations with implementers and may avoid litigations based on their royalty offer not being considered FRAND by an implementer.

Knowing a reasonable aggregate royalty for the total SEP stack enables implementers to take this royalty into account in their business plans. If so, it may smoothen licensing negotiations, which may start a shorter or longer time after implementers have begun to commercialise their products. Payment of the royalty for any past-use sales is accounted for and should not create a significant financial burden for the implementer.

In principle, the above outlined approach for determining a reasonable aggregate royalty may be based on a voluntary process, in which SEP holders and implementers participate on a voluntary basis. Even though not all SEP holders may participate, an aggregate royalty agreed by a (large) group of SEP holders may influence the royalty set by any non-participating licensor for its SEP or SEP portfolio and its negotiations with implementers. This aggregate royalty may also be considered by judges in handling SEP licensing disputes.

It has been argued that SEP holders and licensees may have difficulty in reaching agreement on the reasonable aggregate royalty, because they may have different interest and may operate in different business models. Disagreeing SEP holders may neglect the outcome or may challenge the outcome on various grounds, including anti-trust. It may be similarly argued that implementers may have difficulty in accepting the aggregate royalty as may have been agreed by SEP holders or in getting SEP holders accepting any adjustments of this royalty.

**Proposal 43**

***To incentivize SEP holders to agree on a reasonable aggregate royalty within a reasonable time after the first meeting (e.g. 6 months), at the expiry of that reasonable time without agreement, an independent arbitration panel of experts may be entrusted to determine this aggregate royalty.***

Such an arbitration panel may consist, for example, of three members, who may be randomly selected from a pool of experts in FRAND licensing. Experts may be admitted to this pool by a non-governmental organisation, such as WIPO or ICC, hosting and supervising these panels, if feasible.

To make the outcome of the arbitration panel binding and enforceable in a large number of countries, the proceedings of the panel may be developed in compliance with the requirements of the New York Convention on the International Enforcement of Arbitral Awards[122], to which 163 countries are a signatory. At least one member has noted,

[122] Jorge Contreras proposes such a set-up and proceedings for a similar arbitration panel for solving FRAND disputes between a SEP holder and an implementer. See Contreras, Jorge, 'Global Rate-Setting: A solution for Standard-Essential Patents', *Washington Law Review*, 94, 2018, pp. 701-757.

however, that the arbitration outcome cannot be binding on implementers, if they did not participate.

**Proposal 44**

***In case the SEP holders would agree on a reasonable aggregate royalty within a reasonable period, but thereafter the SEP holders and implementers would not agree on the proposed or an adjusted aggregate royalty within a reasonable period of, for example, 4 months, the case could be handled by the same arbitration panel as described above.***

### 4.3.3 Apportionment

In a second step, the aggregate licence value should be apportioned among the various SEPs or SEP portfolios according to their contribution to the relevant standard.

Apportionment could be done by one of the following methods or combination thereof.

All apportionment factors remain proxies of the relative value of the different SEPs or SEP portfolios that are declared as being essential to the standard.

- *Patent counting or essentiality counting*. This method requires in a first step to establish the number of SEPs declarations. It is well-known that counting declared SEP is problematic, since a fraction of those patents may not be truly essential. Therefore, in a second step it is necessary to estimate the number of patents confirmed or deemed[123] essential. Some members consider that counting the number of confirmed or deemed essential SEPs is a suitable apportionment method.
    - Some members consider that also truly essential SEPs may significantly differ in terms of their economic value and the technical contribution they make to the standard. These members, therefore, consider that a third step is

[123] Apportionment may be done by counts of patents deemed (or believed) to be essential, even if the essentiality of individual SEP was not checked by an independent evaluator. Such techniques are based on sampling or applying some acceptable estimate of the share of truly essential SEP among the declared SEP. This was done, for example, in the Judgment of the England and Wales High Court of Justice, Chancery Division, Patents Court, of 5 April 2017, *Unwired Planet* v. *Huawei*, Case HP-2014-000005, [2017] EWHC 711 (Pat). In this judgment, Judge Birss compares two different apportionment methodologies, which both use a count of declared SEP for the LTE standard with different adjustments to take into account the problem of over-declaration. While one method multiplies the number of declared SEP by a share that is believed to represent a credible estimate of the proportion of true SEPs among declared SEPs (based on studies of previous standard generations), the other method (underlying the judge's chosen approach) relies on a "relatively quick assessment" (see para. 345) of the declared SEP families by a technical expert. Both methods are intended to provide a plausible estimate of the total share of true essential SEPs, rather than a credible judgment about the essentiality of individual declared SEPs. A report for the European Commission has also analysed the usefulness of estimates of the share of true SEPs for the purpose of apportionment. It concludes that analysing random samples of declared SEPs would be a reliable and appealing alternative to a thorough assessment of individually declared SEPs. See, Regibeau, Pierre, De Coninck, Raphael and Zenger, Hans, 'Transparency, predictability, and efficiency of SSO-based standardization and SEP licensing', *A Report for the European Commission*, 2016, p.61

necessary. This will be to account for patents that cover more important technical aspects of a standard. This may be done using different methods. In some instances, it may be possible to identify portions of the standard that are believed to be more important or valuable, and to give a greater weight to patents that are confirmed or deemed to be essential to these portions. Alternatively, or in addition, patent counts may be weighted by quantitative indicators of patent quality or value, such as forward citations as described below.

- ✓ Forward citations. Forward citation counts are correlated with numerous other indications of patent value in such a systematic way that it is empirically established that forward citations correlate with patent value in large patent populations. However, the use of forward citations has been criticised for a number of reasons. Firstly, this correlation may have limited predictive value for the precise SEP or SEP portfolios that integrate a given standard. Secondly, while citations are widely used indicators of patent value in the academic literature, their use for patent valuation in negotiation and litigation is more recent and much more limited. Thirdly, the relationship between citations and value may be regarded as speculative, since it is not based on a direct assessment of the technical merits of the patents at stake. The assessment of citations needs to be controlled for the situation that citation patterns may vary across jurisdictions. It also needs to take into account patent age as otherwise old patents would always be regarded as more valuable than young ones, since citations tend to grow over time.

- *Contributions*. Counts of technical contributions to standard development may provide a rough indication of a company's role in the development of the standard. Using counts of technical contributions for the purpose of apportionment has been criticised because (i) they reflect the involvement of a firm in the standard setting process rather than the economic value of the technology, and (ii) empirical evidence indicates that technical contributions are even more heterogeneous in terms of technical significance or value than patents, undermining the usefulness of a count.[124]

Each of these apportionment method is subject to criticisms. Responses to these criticisms generally fall into four categories. Some consider that all of them should be dismissed. Others argue that only essentiality counts should be taken into account. Others consider that while all these methods of assessing the number and strength of SEPs have their advantages and disadvantages, the choice of the appropriate methodology should be driven by the type of data available and that assessing the robustness of the apportionment exercise to the choice of methodology should be

[124] Baron, Justus, 'Counting standard contributions to measure the value of patent portfolios - A tale of apples and oranges', *Telecommunications Policy*, 2019, p. 101870.

common practice. Finally, some consider that, while none of these methods may be perfect, a combination of them may be appropriate, especially if there is no other plausible reason why they are correlated other than value.

### 4.3.4 The Present Value-Added Approach

**Proposal 45** ★★★☆☆

***The goal of the Present Value-Added approach under this proposal is to estimate the aggregate royalty for an implementation of the standard as a fraction of the (appropriately discounted) future incremental value generated by the application of the technology covered by the SEPs in that implementation.*** The underlying philosophy is to determine the increase in the value of the licensed product that is specifically attributable to the SEP or SEP portfolio. As long as the full value added in the value chain is captured, this approach can be applied to any licensed product whether end product, intermediate product or SSPPU.

The Incremental Value of the Patented Technologies

The incremental value generated by those technologies is given by the additional customer demand for the licensed product that can be attributed to the patented technologies in question. Part of that incremental value is appropriated by consumers; while other parts are appropriated by end product manufacturers, component manufacturers and IP holders.

The fraction of the incremental value appropriated by each stakeholder group will depend on, among other things, the terms and conditions applied by IP holders, the degree of competition and the relative bargaining power of manufacturers at various levels of the value chain (e.g. at the end product and component markets).

The incremental value of the patented technologies can often be calculated directly. The incremental value of the patented technologies may be given by the increase in demand (i.e. the increase in the willingness to pay for the standardised product of consumers) after controlling for all other factors that do influence that demand. This can be done by means of (i) choice modelling or conjoint analysis; and (ii) demand estimation models.[125] See Annex 6 for a brief explanation of those techniques.

Alternatively, one can estimate it indirectly. This can be done by reference to the observed price for the licensed product. This method can only be implemented once the market for the licensed product is in operation because it is only then that a price can be observed. Importantly, unless implementers pay royalties, such a market price will not reflect the value of the licence.

[125] Those techniques, which are explained briefly in Annex 6, serve to identify the effect on demand of the use of the patented technologies, i.e. they separate that effect from the effect of other factors (including other technologies) that may also have a positive impact on demand.

The methodology then proceeds in two steps:

- First, one should estimate the impact of the patented technologies on the price of the product if such price is observable. This estimate is called the "incremental price". It may be calculated by comparing the price of two otherwise identical products, which differ in the use of the patented technologies. Alternatively, since it is often difficult to observe products with and without the patent technologies simultaneously, the impact of the patented technologies on the market price may be estimated using econometric techniques, such as hedonic price regressions.

- Second, since the incremental price thus calculated is a fraction of the incremental value of the patented technologies, to calculate the incremental value of the patented technology using the incremental price as an input one needs to make use of an economic model. These models rely on assumptions on the shape of the demand function as well as on the nature of competition.[126] The output of this calculation is the incremental value of the patented technology for the licensed product in question.

The value of a licence to an SEP Portfolio

In order to determine the value of licences to each individual technology, the aggregate licence value should be further apportioned between the various SEP holders, in accordance with the relative strength of their respective SEP or SEP portfolios. For this any of the methods (or combination of methods) described in section 4.3.3 may be used. In addition, in some cases (i) choice modelling or conjoint analysis; and (ii) demand estimation models may also be used to estimate the respective apportionment, if the granularity of the available data permits.

Assessment

The main virtue of this method is that it tries to estimate the value of a licence to the patented technologies that conform to the standard directly. Its main pitfalls are that it may be difficult to implement in practice since in case the incremental price or demand is not directly observable, substantive economic knowledge is needed to estimate the proxy variables.

See Annex 5 for an example of this approach.

## 5. Selecting Appropriate Valuation Methods

Each of the valuation methods described in this Part has its pros and cons. The choice of which valuation method may appropriately be used to determine a reasonable aggregate royalty for a stack of SEPs depends on the answers to some key questions.

[126] Importantly, the model needs to reflect the facts of the case at hand. In particular, it needs to reflect the royalties actually paid, if any.

**When is the valuation to be done?**

The point in time when a valuation is to be done may limit the number of valuation methods that can be used in practice. Valuations may be done at different points of time reflecting the fact that the standard may be applied at different points in time to different IoT verticals, which in turn may emerge at different points in time after the standard has been set. The valuation for the first IoT vertical in the market can be done after approval of the standard but prior to the market takes off for an IoT vertical. It can also be done later in time but still in the relatively early phase of the development of the market. It can be done in a later phase when the market has already further developed or even has reached a more mature level. The same holds for other IoT verticals marketed later.

**What information is required and what is the availability of that information at the time of the valuation?**

All valuation methods require some input data. That data should be available at the time of the valuation. If the required data is not available, the relevant valuation method cannot be used. If only limited data is available, it may make the outcome of the relevant valuation method less reliable. To illustrate this, if a valuation is to be done based on the comparable licences approach after adoption of a standard, but before the launch of the market for a standard-compliant product, it is not very likely that any comparable licence information is available, in which case this method may not be easy to use. If the valuation is done at a stage, where for example only one comparable licence would be available, that one data-point may make the outcome less reliable.

**Who is going to do the valuation and for what purpose?**

The purpose of the valuation may also influence the choice of the valuation method to determine the aggregate royalty. As explained in the relevant structural reform proposal, a reasonable aggregate royalty for a certain product may be determined *ex ante* by an independent body or group of SEP holders to provide guidance to (i) SEP holders when setting the royalties for their SEPs or SEP portfolios so that they are consistent with the reasonable aggregate royalty, and (ii) implementers that are interested in participating in the market for this product. It can also be done *ex post* by a SEP holder or a potential licensee during licensing negotiations in support of the licence offer and licence counter-offer, respectively, or by a judge as part of a litigation to settle a dispute about the FRAND royalty for a licence under a specific SEP or SEP portfolio. Further, the aggregate royalty valuation can be done during the formation of a patent pool.

Whatever valuation method is used, that valuation method would not provide an exact number as output. Given the spread in the data for the various input parameters used in valuation, the outcome is typically a range and not an exact number.

What holds for determining an appropriate valuation method also holds for determining what appropriate apportionment method could be used for allocating the aggregate royalty to the different SEPs or SEP portfolios.

In selecting an appropriate apportionment method, the same key questions have to be considered. When has the apportionment to be done? What information is required for the apportionment method and is that information available at that point in time? What is the purpose of doing the valuation and apportionment? In determining, for example, how the aggregate royalty of a patent pool should be allocated to the participating licensors, they could agree to a simple, easy to use method of counting the number of SEPs of each licensor. An individual SEP holder may, however, choose to use a weighted patent count or use alternative apportionment methods (e.g. based on the number of contributions made).

Various closely interlinked factors may influence the choice of an appropriate valuation method and an appropriate apportionment method. This may create some challenges for SEP holders, implementers, courts, arbitrators and other interested parties to select an appropriate valuation and apportionment methods for the specific case, for which they have to do a valuation.

Some members have created the overviews shown in Annex 8 that may give some guidance in selecting an appropriate valuation method and an appropriate apportionment method taking into account the purpose of the valuation case at hand.

For each valuation and apportionment method and for specific valuation cases at hand the overviews show what possible information may be available, where this information may be found and what the relevancy, objectiveness and robustness of that information is considered to be. It also shows the complexity level of the relevant method to be used based on the available information and the overall suitability level for the case at hand. The values given to the various elements shown in these overviews are those of the members who have created these overviews and are based on their expertise and experience. These members realize that undoubtedly there will be others that may argue why one or more elements should have a different value than the one shown in the overviews. These members believe that by discussing these overviews in a wider group of stakeholders one can arrive at generally acceptable overviews that may provide useful support to all who have to do SEP valuations in selecting appropriate valuation and apportionment methods for their cases.

## 6. Introduction to Non-discriminatory Terms and Conditions

The concept of "non-discrimination" ("ND") is an important part of a SEP holder's commitment to license its SEPs under FRAND terms and conditions but has not been the subject of the same level of analysis as the "fair and reasonable" ("FR") part of the FRAND commitment. In its 2017 communication,[127] the Commission stated that: "*The non-discrimination element of FRAND indicates that right holders cannot discriminate between implementers that are 'similarly situated'. Given that FRAND is not one-size-*

[127] Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee: Setting out the EU approach to Standard Essential Patents, COM (2017) 712 final, 29.11.2017, p. 7.

*fits-all, solutions can differ from sector to sector and depending on the business models in question*."

Thus, the analysis of the ND condition in the context of a FRAND promise requires (i) an evaluation of all licence terms and conditions offered or granted to licensees that are "similarly situated", and (ii) a comparison with terms and conditions offered to the potential licensee, so as to ensure that the latter is not being treated less favourably. A similar analysis is required for a finding of discrimination under Article 102(c) TFEU, which prohibits dominant firms to engage in anti-competitive discrimination. The application of Article 102(c) TFEU requires a second condition, which is that the different terms and conditions offered to licensees in the same market put certain licensees at a competitive disadvantage. Of course, the latter requires that the "market" be defined in a way that limits the analysis to competitors only, as opposed to, for example, all companies that may sell a defined set of products.

Whether this second condition is required for a breach of the ND part of the FRAND commitment when considered in the context of a breach of contract or obligation is still an open question, it nevertheless is reasonable to consider avoidance of competitive disadvantage as one of the main purposes of the ND prong of the FRAND commitment; the goal being to prevent intentional distortions of competition in the downstream markets for standard-compliant products. Moreover, to the extent that in the EU, SEP holders will likely be subject to obligations under both their FRAND commitments and Article 102(c) TFEU, the underlying requirement that different terms and conditions offered to licensees in the same market put certain licensees at a competitive disadvantage will in any event apply.

A notable difference between non-discrimination as used in FRAND and the prohibition of discrimination contained in Article 102(c) TFEU is that Article 102(c) TFEU only applies to firms holding a dominant position. In practice, most SEP holders are likely to be considered as holding a dominant position because a SEP is by definition "essential" and there is therefore no alternative to it for implementing the standard.[128] However, as in cannot be excluded that a SEP holder does not hold dominant position, the assessment of dominance under Article 102(c) TFEU should be made on a case-by-case basis.[129]

Whether a SEP holder's treatment of certain licensees is in violation of the ND obligation may be subject to heightened scrutiny when the SEP holder charges higher prices to firms competing with its own standard-compliant products; or when price discrimination has the potential effect of blocking entry by a competitor. While this enhanced scrutiny is justified, this issue is in principle better addressed under Article 102(b) TFEU, rather than under Article 102(c) TFEU, as the former legal basis seeks to

[128] The owner of declared SEPs need not hold a dominant position, unless its patents are truly essential. Even a truly essential patent may not confer a dominant position, if implementing the standard is not essential to compete effectively in an appropriately defined market.

[129] Opinion of Advocate General Wathelet of 20 November 2014, *Huawei* v. *ZTE*, C-170/13, ECLI:EU:C:2014:2391, para. 57 and 58.

prevent attempts by dominant firms to leverage their market power in one market (in this case the upstream market for the licensing of their SEPs) to exclude rivals in another market (in this case the downstream market for standard-compliant products). Competition law principles may govern much of the analysis with regard to the ND aspect of FRAND, but concerns about the effect of a SEP holder's disparate treatment of licensees on the overall standard development activities and adoption of standardized technologies also needs to be taken into account. For instance, standard implementers (who will need a SEP licence) have a legitimate expectation (in part based on the SEP holder's FRAND commitment) that they will have access to SEP licences on terms and conditions that do not place them at a competitive disadvantage as compared with their competitors. While discriminatory licensing terms that violate competition law are almost certain to violate the ND obligation of the FRAND commitment, the FRAND licensing requirement may bar certain discriminatory conduct that could be permissible under competition law.

## 7. General remarks on assessment of non-discrimination

It is generally agreed that the obligation to provide ND terms and conditions for a SEP licence does not require that precisely the same terms and conditions be offered to all licensees. It is equally well-understood that the ND commitment requires the licensor to treat similarly situated parties in a similar manner. Further, the ND limb of the FRAND commitment needs to be looked at in conjunction with the FR limb.[130] Differences in specific terms, including royalty, are typically acceptable when they do not significantly affect licensees' ability to compete with each other and are objectively justified; in the case of a dispute, such "differences" are assessed by a court to determine whether they fall within the parameters of the licensor's FRAND obligation. In fact, a SEP holder should be allowed (and indeed required) to respond to different market situations by offering different licensing terms.

Determining whether a specific licensing offer conforms to a SEP holder's ND obligation typically involves at least two steps. First, a comparison between the licensing offer and the licensing terms and conditions of other licensing agreements entered into, or offers made, by the SEP holder, if such licensees are similarly situated. And second, to the extent terms may differ, an analysis of the justification for and an assessment of the total effect of such differences. It is important to maintain some level of flexibility in the interpretation of the ND commitment so that licensors can accommodate the licensees' specific needs and situation; and yet, it is uncertain how much flexibility licensors may have in offering different terms and conditions while

[130] See Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet* v. *Huawei*, UKSC 2018/0214, [2020] UKSC 37, para. 113, , available at https://www.supremecourt.uk/cases/docs/uksc-2018-0214-judgment.pdf: 'The choice between regarding the non-discrimination obligation as "general" or "hard-edged" is a matter of interpretation of the FRAND undertaking in clause 6.1 of the IPR Policy. The obligation set out in that provision is that licences should be available "on fair, reasonable and non-discriminatory … terms and conditions". In our view, the undertaking imports a single unitary obligation. Licence terms should be made available which are "fair, reasonable and non-discriminatory", reading that phrase as a composite whole.'

staying within the bounds of the non-discrimination obligation. There exists no clear guidance on this issue in legal doctrine or jurisprudence.

The presence or absence of "discrimination" must be assessed based on the totality of the terms and conditions of a licence agreement, and not by comparing one isolated term in an agreement with its counterpart in another agreement. Thus, in most instances the assessment of whether a licence agreement or offer satisfies the ND conditions constitutes a fact-specific and situational analysis. A SEP licence includes a variety of terms and conditions, each of which may be heavily negotiated before an agreement is reached. Royalty or other forms of monetary compensation are only one aspect of the licence. The final agreement contains terms that taken as a whole, address the business needs of the parties and the extent to which they are willing to compromise in order to grant or obtain licence rights. Each of these terms, if compared in isolation, may have disparate effects on different licensees. However, the licence as a whole may not be discriminatory. The difficulty, of course, is how to make this assessment, and what factors to consider.

Given that making a determination regarding whether a licensing offer or agreement is ND is based in large part on comparing terms and conditions given to licensees that are similarly situated, some level of transparency with respect to existing licences is required. Lack of transparency as to the terms and conditions that were concluded with other licensees due to non-disclosure obligations may make it impossible for licensees and licensors to verify that the ND limb of the FRAND commitment is satisfied. As it stands now, they may be compelled to initiate legal proceedings in order to gain access to earlier agreements since, for the most part, only the licensor has full visibility to the terms and conditions of its other licences.[131] Selective disclosure of individual licences by the SEP holder, whether during a licensing negotiation or in litigation, raises the possibility that the SEP holder withholds licences that offer more advantageous terms and conditions as compared to the licence at issue and therefore impedes an objective assessment of whether the ND obligation has been met.

The first step of the ND analysis – i.e. the comparative assessment of terms and conditions – requires undertaking two separate inquiries. First, the set of similarly situated licensees must be identified. Second, the terms and conditions of the licences granted or offered to those licensees must be compared with those of the licence offered to the potential licensee. Not a great deal of guidance exists on either of these two issues, but court decisions that have tried to address them can be instructive.

In connection with the delineation of the set of similarly situated licences, according to one decision,[132] companies need not be "head-to-head" competitors to be similarly

[131] Judgment of the CJEU of 16 July 2015, *Huawei* v. *ZTE*, Case C- 170/13, EU:C:2015:477, para. 64. 'In the absence of a public standard licensing agreement, and where licensing agreements already concluded with other competitors are not made public, the proprietor of the SEP is better placed to check whether its offer complies with the condition of non-discrimination than is the alleged infringer.'

[132] Final order and injunction of the United States District Court Central District of California of 22 December 2017, in *TCL* v. *Ericsson*, Nos. SACV 14-341 JVS, CV 15-2370 JVS, 2018 WL 4488286

situated, but not every company that uses the same technology is necessarily similarly situated. Further, the more dynamic or volatile the market for a product, the broader the notion of "similarly situated" should be interpreted. Clearly, this provides for a broad range of potential conclusions in any given situation.

Multiple factors may be considered in comparing terms and conditions holistically such as the geographic scope of the licence and the products covered by the licence, licensee's sales volumes, certainty of royalty payments, other contractual terms that confer additional benefit on one party or the other, to name a few. This analysis is further complicated by the fact that each agreement is negotiated based on the specific economic interests of the parties at a point in time and may contain other unique terms such as cross-licences, grant backs or other specific business terms. It is, therefore, very difficult to "unpack" complex agreements in order to compare their relevant terms and conditions to determine whether the ND obligation has been complied with.

In many instances, the analysis of comparables tends to focus on their royalty terms and, therefore, on whether having licensees paying different royalties is discriminatory, even if they are considered FR. In fact, most court decisions address the issue primarily with respect to the monetary terms of the licence agreement, i.e. the royalty terms offered by the SEP holder.[133] For example, in the judgment in *Unwired Planet* v. *Huawei*[134] the court of appeal agreed that a licensor may choose to accept less favourable royalty terms than the FRAND licensing terms, but that a licensor is not required to offer the same terms to all other licensees and potential licensees. In the German case *Sisvel* v. *Haier,*[135] the court emphasized that unequal terms could be offered if objectively justified.

These decisions are well grounded in economics. Differentiated pricing, i.e. charging different royalties to similarly situated licensees – can, but need not, be a violation of a SEP holder's ND obligation. For example, non-uniform pricing may be considered a violation of the ND obligation if, taken together with other terms and conditions of the licence agreement, it has an adverse effect on the licensee's ability to compete, or has the potential to cause competitive harm *vis-à-vis* the licensee's competitors. At least two questions are relevant to this determination: (i) whether the differences in terms and conditions affect licensee's ability to compete, and (ii) whether those differences can be justified by different circumstances. The two prongs are intertwined – differential treatment resulting in a larger impact on the licensee's ability to compete needs to be justified by more substantial differences in the circumstances.

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(C.D. Cal. Sept. 14, 2018). Judge Selna released a corrected public version of his opinion nine months after its initial release. This judgement has been overturned on appeal.

[133] For example, Judgment of the Dusseldorf Higher Regional Court ("Oberlandesgericht Düsseldorf") of 13 January 2016, *Sisvel v. Haier*, I – 15 U 66/15, sub B V 2 d cc bbb; Judgment of the England and Wales Court of Appeal of 23 October 2018, *Unwired Planet* v. *Huawei*, [2018] RPC 20, [2018] EWCA Civ 2344, para. 195-207. *v.v.*

[134] Judgment of the England and Wales Court of Appeal of 23 October 2018, *Unwired Planet* v. *Huawei*, [2018] RPC 20, [2018] EWCA Civ 2344, para. 195 and 196.

[135] Judgment of the German Federal Court of Justice ("Bundesgerichtshof – BGH") of 5 May2020, *Sisvel v. Haier*, Case No. KZR 36/17, para. 102.

## 8. Existing licensing practices and discrimination concerns

Most disputes implicating the ND prong of FRAND concern: (i) differences in the royalty terms offered to different licensees, and (ii) differences in the enforcement of patents depending on the licensee's position in the market (for example, depending on whether they are competitors of the SEP holder or whether they are end product manufacturers versus suppliers).

The members have identified below various existing practices that may give rise to an allegation of discrimination. However, as mentioned above, in each of these instances, the specific terms at issue need to be evaluated in the context of the licensing agreement as a whole to determine whether competitive harm has occurred. For example, it may be considered non-discriminatory to reduce a royalty because the licensor is obtaining other value from the licensee (for example, a more rigorous audit procedure, an agreement to publicly support the licensor's licensing campaign, including agreeing to issue a press release, among other benefits), or to offer a discounted royalty in exchange for a minimum annual commitment, which provides added benefit to a licensor in terms of certainty of a minimum payment each year.

It should be noted that the fact that larger players in a specified market generally enjoy economic benefits when compared to smaller competitors is not necessarily a discriminatory practice. For one thing, the licensing of a larger player often has non-quantifiable benefits for the licensing program, in many cases resulting in more licensees taking licences. Also, one can compare this situation with the inherent cost benefits associated with manufacturing processes, where fixed costs can be apportioned to larger numbers of products sold, components can be sourced at lower cost when sourced in large quantities, thus marketing and sales expenses will be lower per device. A SEP licence to a licensee with very large volumes may fit a similar pattern in terms of the cost-benefit analysis and should not be considered discriminatory, if offered to all players in that specified market. This includes specific offers like volume discounts, licence caps, and royalty free licences for small volumes.

### 8.1 Non-discriminatory practices

Some general practices that are not seen as discriminatory standing on their own include:

**Volume Discounts** – Generally, volume discounts granted to all similarly positioned licensees in a specific market are considered ND, but they may have an impact on competition depending on the size of the discounts.

**Annual Royalty Caps** – Caps are also acceptable as ND if offered to competitors that are similarly situated. They do not necessarily raise discrimination concerns unless they are offered in a way that greatly favours one or more licensees without any added benefits to the licensor that would justify the differentiated treatment.

**Lump Sum Payments** versus Running Royalties – Lump sum payments offer certainty in payment and a minimum expected amount of revenue. Thus, they are often discounted as compared to a running royalty. The extent of the discount is important and needs to be analysed in light of other benefits gained by the licensor. It must be noted that when agreeing to lump sum payments both licensor and licensee are taking certain risks that their business expectations may or may not be met. The acceptance of this risk taking may be one factor to consider when comparing lump sum agreements with running royalty agreements.

**Preferential terms to incentivize licensees** to take licences at an early stage of a licensing program (e.g. time-limited discounts) should also not be considered discriminatory, if they are offered to all players in a specified market and if the discounts offered are not causing antitrust concerns. Licensees who are willing to take licences very early in a licensing program save both effort and cost on the side of the licensor and it should not be considered discriminatory to return part of these cost savings to willing licensees.

**Selective Enforcement of Patents** – If a licensor chooses to pursue certain implementers for a licence and others (who are similarly situated) are not approached, the licensor may be considered to be engaging in discriminatory behaviour. However, it is well understood that licensors in most cases do not have the resources, and cannot be expected to, pursue all implementers at the same time. It is reasonable for a licensor to approach licensees in an order and within timeframes that are workable from a business perspective, and not licensing all should not be considered discrimination. On the other hand, if there exists evidence of selective enforcement in a way that might lead to intentional skewing of competition, this type of situation should be further scrutinized.

Although the above practices (among others) may not be considered discriminatory, they could have an adverse effect on SMEs and other companies that may not be able to benefit from certain more favourable monetary terms (such as volume discounts). One approach to alleviate this problem would be to consider them to be not "similarly situated" to those that can benefit from the payment structures that translate into lower rates. Thus, the SMEs and smaller companies could be considered one "market" for purposes of licensing offers, and whether or not a licensor is discriminating within this "market" should be determined based on review of the totality of licensing terms offered or entered into with others in that "market". At the same time, SMEs may benefit from terms that are uniquely favourable to their situation, such as lower or no licence fees being charged for lower volume sales up to a certain amount per year.[136]

### 8.2 Practices that may help promote non-discrimination

While determining whether an SEP holder has violated its ND obligation requires a fact-specific analysis, SEP holders can engage in practices that may be relied on to

[136] Examples for possible terms favourable to SMEs can be (i) reduced royalties for small (yearly) volumes of licensed products, or small (yearly) volumes licensed royalty free. While such terms should be offered to all licensors, they are of particular benefit to smaller market players.

demonstrate compliance with the obligation and show that there is no competitive harm. Some proposed practices that SEP holders may adopt are set forth below:

- **Using standard licensing offers for all potential licensees**. Even though some terms and conditions may be further negotiated, offering the same terms and conditions to all licensees at the outset evidences the SEP holder's intent to not discriminate among licensees (note that a different set of standard conditions may apply to differently situated licensees).

- **Making the standard licensing offer publicly available.** Publication of the standard licensing terms and conditions offered by the SEP holder (for example, on the company's website) not only promotes transparency, but can also be considered as having given notice of the availability of a licence, and the details of the offer, to licensees. As such, licensees will be hard pressed to argue that they were not aware that a licence was available and under what conditions. (See also proposal 54 in Part 3.4 on negotiations and handling disputes.)

- **Publishing a list of licensed patents, or a list of patents declared by the licensor to be essential to the relevant standard.** Many patent pools publish lists of patents certified as essential and included in the pool licence. Individual SEP holders may also make publicly available the list of essential or declared patents to promote transparency and facilitate bilateral negotiations. Such a practice may also support their non-discrimination obligation due to the consistency of information provided to all licensees. (See also proposal 50 in Part 3.4 on negotiations and handling disputes.)

- **Publicly disclosing existing licensee information**. Public disclosure of the identity of licensees in good standing and disclosure of licensing terms in existing contracts, to the extent possible in light of non-disclosure obligations agreed upon with the licensee.

## 9. Measures to potentially reduce ND disputes and litigations

Additionally, the members have made some proposals that could be taken to reduce disputes regarding the ND obligation and lessen the potential for litigation. Hereafter some of these proposals are listed. Additional guidance is provided in Annex 9.

### 9.1 EU to provide guidance on meaning of ND within FRAND context

**Proposal 46** 

***The EU could provide guidance on the meaning of the ND within the FRAND context to assist SEP holders to meet the ND obligation.***

### 9.2 A confidential repository of SEP license agreements

**Proposal 47**

***A confidential repository of SEP licensing agreements could be established to be used by courts, competition authorities, public arbitration boards, or trusted persons to promote transparency***.[137] Having access to the terms and conditions of prior agreements would facilitate a comparison among terms and conditions offered to multiple parties, which is a key aspect of the ND assessment.

### 9.3 The development of a methodology to assess compliance with ND obligations

**Proposal 48**

***A methodology may be developed (by the EC, SDO, pool or private third party), which would provide an objective range – a sort of safe harbour – within which a licence would be considered in compliance with the ND obligation.***

It is unclear for the SEP holder and the implementer which royalty – taking into consideration external (market and players) and internal (terms of an agreement) factors – is considered ND until a court has decided on the issue. Therefore, the methodology aims at providing guidance on the ND-prong *principally* for the parties before and during licensing negotiations (by providing an up-front identification of an objective ND royalty range), but also *ultimately* for the courts, if no agreement could be reached. The members supporting this proposal consider that the application of the methodology might lead to judicial harmonisation and as such legal certainty regarding the application of the ND prong,[138] by avoiding subjectivity as much as possible.

In this methodology the terms and conditions of the compared licence, i.e. the licence or offer that is being analysed to determine whether it complies with the FRAND commitment, will be benchmarked against all licensing agreements and offers made by the licensor (i.e. the "comparable set"). The first step of the analysis consists in identifying all terms and conditions included in the compared licence and the licences in the comparable set. The second step requires identifying the subset of terms and conditions that actually drive the royalty compensation. In a third step, the methodology involves identifying all similarly situated licensees. Annex 9 describes alternative approaches for the practical implementation of the second and third steps of the methodology. The ND test is then simple. How does the royalty payment in the compared licence compare with the offers that are part of the set of similarly situated ones identified in the methodology?

[137] Structural reform proposal: „*Confidential repository of SEP licensing agreements*" - details for this proposal can be found in Part 3.4 on negotiations and handling disputes.

[138] Taking into consideration the Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet* v. *Huawei*, UKSC 2018/0214, [2020] UKSC 37, para. 49-91) regarding its power of jurisdiction regarding injunctive relief and the spill-over effect to other jurisdictions regarding its argumentation such harmonization may be welcome.

Annex 9 might be used as a steppingstone for a more scientific and case-specific development of the methodology leading ultimately to a more objective approach of ND in a SEP-licensing environment.

# PART 3.4 – NEGOTIATIONS AND HANDLING DISPUTES

For a license agreement between a SEP holder and an implementer to be concluded, the parties need to reach agreement on various terms and conditions of the license. Some of the key topics to be discussed in order to reach an agreement include: (i) what are the alleged SEPs to be licensed by the licensor and are they truly essential, valid and infringed, (ii) what are the products to be licensed under these SEPs, (iii) what are the terms and conditions for this license, including a fair and reasonable royalty, and (iv) do these terms and conditions result in discrimination towards the implementer or its competitors?

The above topics have also been addressed in some detail in the previous Parts. This Part sets forth some proposals to (i) improve the negotiation process itself and (ii) help facilitate the handling of disputes that may arise during license negotiations. It should be read in conjunction with the part on transparency.

## 1. Development of a Commission led framework for IoT licensing with commitments undertaken by industry

**Proposal 49**

Given the voluntary nature of standard development, and the delicate balance of interests at play, some members propose that the Commission explores "co-regulation" solutions to facilitate negotiated outcomes. Commitments undertaken by industry under a Commission-led framework for IoT licensing could have several advantages over direct regulation: industry commitments can be global in nature (and not just restricted to the EU), cut across multiple SDOs (and standards), and provide a monitoring tool for the Commission to gather evidence on good/bad behaviour in the market.

Such a "co-regulation" structure could rest on three pillars:

i. Better information to assist licensing negotiations (both in terms of publicly available information and the quality of information communicated under NDA during negotiations);
ii. A framework to facilitate "good faith" negotiations; and
iii. Dispute resolution tailored to licensing of standard essential patents in the IoT space

The Commission could explore this with some of the major SEP holders. It is hard to give more detail as to exactly how to do this, but similar initiatives have been taken in the past and could be informative. If the Commission could obtain major SEP holders' commitment to certain principles, this could impact the behaviour of other SEP holders as well.

Certain members have expressed concerns that it might be an extremely difficult and lengthy process to come to a framework for IoT licensing that is specific enough to provide practical guidance to both SEP holders and implementers for negotiating and concluding SEP licences.

## 2. Improving SEP licensing negotiations

Licensors of SEPs relating to standards used across the various IoT verticals are expected to negotiate licenses for a broad spectrum of different products, and with a larger group of companies doing business in these industries. Also, product companies in the different IoT verticals may have to negotiate licenses with more SEP holders as their products will likely use more standards than before. It is therefore more important than ever that licensing negotiations run as smoothly as possible, so that parties may conclude licences on FRAND terms and conditions within reasonable periods of time. This section sets forth some proposals to improve the negotiation process itself.

The guiding principle in negotiations between a SEP holder and an implementer is the FRAND licensing commitment made by the SEP holder under the IPR policy of the relevant SDO. The parties must also abide by requirements of competition law related to SEP licensing. Additional guidance has been provided by courts, competition authorities and other regulatory bodies in different countries that have generated case-law and rules governing the conduct of these negotiations. In 2015 the CJEU in *Huawei* v. *ZTE* set forth conditions that should be fulfilled before a SEP holder can obtain an injunction. By defining a framework that places obligations on both the SEP holder and the implementer – the former having to demonstrate that it is a willing licensor operating in line with its FRAND licence commitment, and the latter having to show that it is a willing licensee seeking a FRAND licence – the CJEU provided more clarity regarding the SEP licensing negotiation process.

Although *Huawei* v. *ZTE* provides a helpful framework for SEP licensing negotiations, many questions remain unanswered. A number of courts in Europe have addressed some of these questions and attempted to refine the framework.[139] However, some court cases are still pending, and more cases will likely be filed in the future addressing many of these issues.

Members of the expert group have made a number of proposals to improve licensing negotiations between SEP holders and implementers, going beyond the current CJEU framework. The implementation of these proposals would either require (i) the European Union or the Member States to adopt legislation including these proposals, or (ii) the CJEU to revisit its *Huawei* v. *ZTE* judgement, when it is given an opportunity to do so.

[139] For an overview of case law post *Huawei* v. *ZTE* see: https://caselaw.4ipcouncil.com/

### 2.1 Improving the transparency of the licensing offer by the SEP holder

For SEP licensing negotiations to be most effective, it is important that both parties have access to the information needed to reach an agreement on the terms and conditions of a FRAND license. Having this information available in a timely and easily accessible manner supports a smooth and efficient licensing process. This section contains a number of proposals that aim to reduce unnecessary delays in the negotiation process between a SEP holder and an implementer.

**Proposal 50** ★★★★½

***When a SEP holder asserts its patents against an implementer, it should provide a machine readable list with up-to-date patent bibliographic data of all its known SEPs, including at least the following information: (i) priority date(s) and priority country, (ii) family members in all countries, (iii) related patent families, (iv) grant date and (v) expiration dates of each patent listed. Until a SEP holder provides this basic patent information to an implementer, the implementer is not required to express its willingness to take a license under FRAND terms.***

When asserting their patents, some SEP holders simply provide a long list of patents and patent applications without any other information, such as identification of family members or grant/priority dates. Frequently these lists include patent applications that were never granted or patents that have expired. This practice creates an unnecessary and unfair burden on implementers, who have to assess the need to take a license under these patents. Undoubtedly, SEP holders have this necessary information readily available and little effort is needed to produce the same to implementers at the start of negotiations. Efficiencies resulting from sharing this information early on benefits the licensor and the would-be licensee.

**Proposal 51** ★★★★½

***When a SEP holder asserts its patents against an implementer, in addition to the information listed under proposal 50, it should provide high level claim charts for the SEPs on the patent list or, if the SEP holder has a relatively large portfolio of SEPs, for a sufficient number of representative SEPs (without requiring the implementer to first sign a non-disclosure agreement ("NDA").***

A SEP holder typically prepares claim charts in the process of determining whether any declared SEP is essential, and before putting patents on the list of SEPs that it asserts against an implementer. Thus, it should not be a burden for a SEP holder to make high level claim charts available for all or a sufficient number of representative SEPs. Providing such high level claim charts to potential licensees at the outset of negotiations would help them better assess their need for a licence.

**Proposal 52**

***If a SEP holder asserts its patents against an implementer, in addition to the information listed under proposals 50 and 51, it should also provide access to a list of existing licensees that are licensed under the same patents, if such information can be provided on a non-confidential basis.***

Knowing which companies are already licensed under the relevant SEPs could assist an implementer in determining whether some of its suppliers or customers are already licensed. It also helps the implementer to understand how many of its competitors have already taken a licence, possibly reducing concerns about the competitive impact of taking a license. Moreover, the list of existing licensees, to the extent available, may be useful for an implementer in assessing the overall need to take a license.

**Proposal 53**

***If a SEP holder makes a FRAND licence offer to an implementer who has expressed its willingness to take a licence under FRAND terms, the SEP holder also offers to make more detailed claim charts for its asserted SEPs or for a sufficient number of representative SEPs available under an NDA.***

These more detailed claim charts will help implementers analyse the relevant SEP portfolio in relation to their products. This should streamline and accelerate the licensing negotiations.

Certain members maintain that the above proposals would create an unreasonable burden for SEP holders.

### 2.2 Implementers to seek proactively SEP licences from SEP holders who have made their standard licensing terms publicly available.

**Proposal 54**

Under the current CJEU licensing framework, before a SEP holder can seek an injunction, the SEP holder has to assert its patents against a prospective licensee and specify the basis for claiming infringement. If the prospective licensee has expressed its willingness to take a licence on FRAND terms, the SEP holder must make a FRAND royalty offer to the prospective licensee. Thereafter, the prospective licensee has to diligently respond to the offer and make a FRAND counteroffer (if it considers the SEP holder's offer to be non-FRAND). When making the counteroffer, the potential licensee has to provide appropriate security – either an amount agreed upon by the parties, or commensurate with its counteroffer. This sequence of actions needs to be performed if: (i) the SEP holder is seeking an injunction against the "unwilling licensee"; and (ii) the prospective licensee wishes to avoid being considered an unwilling licensee.

Under the current framework a SEP holder has to make the first step and assert its patents. Thus, an implementer can delay or forego seeking licences to the SEPs actively,

including in situations where such licences are available on FRAND terms and conditions. In these cases, implementers may develop and sell standard-compliant products without taking into account some of the SEP royalties they will have to pay. Since it may take some time for a SEP holder to approach an implementer to negotiate a license, a considerable amount of royalty due for past sales may have accumulated before negotiations even begin. As a result, the implementer may have an even more difficult time making the necessary payments under a negotiated licence, which may cause further incentives to delay, possibly leading to lengthy and costly litigations.

Furthermore, the unlicensed use of SEPs may distort competition and disadvantage licensed implementers.

***For those reasons, the Commission or the EU could introduce rules that require implementers to proactively seek licences, prior to commercializing standard-compliant products, from those SEP holders who have sufficiently demonstrated the essentiality of their SEPs to the relevant standard and whose standard licensing terms and conditions or standard licence agreements for those products are made publicly available through the relevant SDO.***

SEP holders should be able to register in relevant SDO databases that their standard licence agreements or standard terms and conditions are publicly available. They could for example include a link to their website, where this information can be accessed (without requiring an implementer to enter into an NDA first).

By making this information publicly available, a SEP holder could be considered to have fulfilled the first step of the negotiating framework (notifying an implementer of the relevant SEPs and how these are infringed) and the third step (offering a licence on FRAND terms and conditions for these SEPs) under the current *Huawei* v. *ZTE* framework. The implementer then has to pro-actively seek a licence to fulfil the second step (expressing its willingness to conclude a licence on FRAND terms), and also the fourth and fifth steps (responding "diligently" to the offer of the SEP holder without delay and promptly making a counter offer if it does not accept the offer of the SEP holder). Under the sixth step of this framework, the implementer would also have to provide security for payment of past and future royalties based on its counteroffer (bank guarantee or placing payments into escrow).

This proposal would incentivize SEP holders to make their standard licence agreements or standard terms and conditions publicly available, which would increase the transparency of SEP licensing. Furthermore, this up-front transparency could also incentivize implementers to seek licences, reduce unfair competition for licensed implementers and level the playing field. This proposal would also reduce the amount of past-use royalty due, which under the current framework frequently causes a major issue in SEP licensing negotiations and thus greatly prolongs discussions and leads to legal disputes.

Note that SEP holders are free to determine whether or not they want to make their standard terms and conditions publicly available. For those SEP-holders that do not make their standard licence agreements or standard terms and conditions publicly available, the current *Huawei* v. *ZTE* framework will continue to apply.

The standard licensing terms and conditions or standard licence agreement relate to a licence under the SEP portfolio of a licensor for one or more standard-compliant products. With regard to the IoT, to fall within the parameters of this proposal, a participating SEP holder has to make its standard terms and conditions or standard licence agreement available for each of the products in the different IoT-verticals as they may emerge over time after the adoption of a standard. The value added by use of the SEPs in different products may be different. If so, a SEP holder may have to adjust its standard terms and conditions or its standard licence agreement accordingly. However, implementers at different levels in the value chain may seek licences for the same products.

At least one member maintains that the obligation to proactively seek licences should only apply to manufacturers of the product category (components or end-products) for which the SEP holder has published the standard terms and conditions. To avoid the SEP holders publishing standard terms and conditions for a product category targeting companies operating at different levels in the value chain, some members believe it would be preferable to determine the appropriate licensing level in the value chain for the product category at issue before SEP holders make their standard terms and conditions or standard licence agreements publicly available. This would require, horizontal and vertical coordination as described in Part 3.2 on licensing in the value chain.

Certain members have expressed concerns that (i) this proposal would unnecessarily restrict the SEP-owners' right to decide which implementer companies they want to licence or against which implementers they want to assert their SEP portfolio, (ii) the implementation of the proposal may lead to additional litigation challenging the "sufficient demonstration" property of licence offers, and (iii) horizontal and vertical coordination, if applicable, might be challenging. In addition, any legal framework that will determine the rules for such cooperation would apply to the EU only.

**Proposal 55** ★★★☆☆

***Implementers not seeking licences from SEP holders who have sufficiently demonstrated to have true SEPs and who have made their standard licence agreements or standard terms and conditions publicly available, should be considered "holding-out licensees".***

**Proposal 56**

***These implementers should still be entitled to a FRAND licence, but they may be required to pay a penalty, for example a royalty higher than the FRAND royalty, for the period from the date of first commercialization of the licensed product to the date on which a licence agreement is concluded.***

The question may arise as to how a SEP holder publishing its terms and conditions could sufficiently demonstrate that its declared SEPs are truly essential. Two alternative approaches are presented below, both of which build upon different proposals described in Part 3.1 on transparency.

**Proposal 57**

The first approach for sufficiently demonstrating essentiality of SEPs would build upon proposal 3 which enables SEP holders with declared SEPs to voluntarily update and complement their declaration with additional information on platforms provided by SDOs (or other third parties). ***In order to benefit from proposal 54, requiring implementers to proactively seek SEP licences, the SEP holder would need to provide information that sufficiently corroborates the patent's essentiality, according to specific criteria to be determined by the SDO in accordance with the definition of essentiality under its patent policy.*** This may include a finding of essentiality by a court, or a reputable and independent third-party determination.

After a SEP holder has fulfilled the joint conditions of proposals 54 and 57 (i.e. made a FRAND standard licensing offer publicly available and sufficiently corroborated the declared SEPs' essentiality through publicly available information), the implementer may still disagree with both the declared SEPs' validity and essentiality. In such cases, in order to avoid the requirement to seek a license pursuant proposal 54, an implementer should substantiate its position that the patent is invalid and/or non-essential by submitting information to the relevant platform, satisfying the platform's reliability criteria (see Part 3.1, proposal 3 on a platform or database that will complement the SDO databases of declared SEPs). This information may be, but does not need to be limited to, a court finding of invalidity or non-infringement by a product fully implementing the standard, or a reputable independent third-party determination on essentiality.

SEP holders satisfying the requirements of this proposal should be able to seek an injunction against implementers that do not proactively seek a licence. The implementer should be able to get a licence same as other implementers who sought a licence proactively. However, this implementer will be required to pay appropriately increased royalties (compared with the FRAND royalty) for its prior unlicensed use of the patents.

Some members expressed doubts as to whether requiring increased royalties for past unlicensed use is practical under the FRAND construct. They say that FRAND is FRAND, and no court has increased a FRAND royalty in these circumstances.

Proposal 54 in combination with this proposal 57 may generate powerful incentives for SEP holders to make standard licensing offers publicly available, and provide information corroborating the essentiality of their SEPs to a publicly available platform. It may also provide powerful incentives to implementers to challenge the validity and essentiality of declared SEPs and to share reliable and objective information corroborating a claim of invalidity or non-essentiality with other implementers. The combined effect of these incentives should be to provide the public with centralized access to different sources of information regarding the validity and essentiality of declared SEPs, and to reduce duplication of different implementers' efforts in scrutinizing the validity and essentiality of declared SEPs.

Some members are concerned that the procedure described in this proposal would in effect be a parallel process with well-established invalidation proceedings, albeit based on the vague concept of a "platform's criteria for reliability". This may lead both to timing issues and to additional litigation initiated to find reliable criteria for the application the proposal.

**Proposal 58**

The second approach for demonstrating essentiality of declared SEPs is based on providing sufficient transparency on essentiality by the SEP holder making publicly available claim charts for its confirmed SEPs, i.e. checked by independent evaluators and confirmed true SEPs (see also proposal 14).

If the implementer considers one or more of these true SEPs to be non-essential and/or invalid, the implementer may challenge the essentiality and/or validity before a court or by initiating an out of court essentiality and/or validity challenge procedure for the relevant SEPs. If because of this procedure, the SEPs are confirmed to be essential and/or valid, the implementer can still obtain a licence under the FRAND terms and conditions of the SEP holder. However, if the implementer challenges the essentiality and/or validity directly in court without using these out-of-court challenge procedures first, the SEP holder may request the court to have the implementer pay a reasonable compensation to the SEP holder for its reasonable legal and court fees.

Proposal 54 in combination with this proposal 58 may generate powerful incentives for SEP holders to have their SEPs checked on essentiality and make publicly available the claim charts of their confirmed SEPs together with their standard licensing terms and conditions or standard licence agreements for the relevant standard-compliant products.

**Comments on Proposals 54 to 58**

It has been argued by at least one member that the proposed solutions will not solve the stated problem as because implementers are legally entitled to challenge the essentiality and/or validity of SEPs in court. Although this is correct, the increased transparency with respect to SEPs and as well as the licence terms and conditions or agreements should help create incentives for implementers to seek licences and disincentives for

them to litigate over essentiality and/or validity. It also requires the implementer to demonstrate that the licensor's licence offer is not FRAND.

Certain members have argued that it will be difficult to agree on the meaning of "sufficiently demonstrated" that the declared SEPs are true SEPs. In case of proposal 35 it means that the owner of the declared SEP has provided sufficient information to a publicly available platform, fulfilling specific criteria to be set forth by the SDO in accordance with the definition of essentiality under its patent policy. According to proposal 36, it means that SEPs have been checked and confirmed on essentiality by an independent body and that claim charts of the confirmed SEPs are made publicly available.

Another concern expressed by certain members is that it would take away the control of the licensing process from the licensor and move it to the implementer. The SEP licensor, however, determines itself whether it makes the relevant information publicly available and thus follows the proposal or that it does not want to make this information publicly available and follows the current licensing framework.

One member argued that the proposals make the licensing process more complex and difficult, that it would lead to more litigation and to a thicket of licensing negotiations, which both will be burdened with "hold-out behaviour". A proponent of the proposal believes that it would make the licensing process simpler rather than more complex. Instead of having to separately provide each implementer with a notice of infringement of its SEPs against each implementer individually, a SEP holder only has to do this once for all implementers by making the relevant licence information publicly available. In any event, the SEP holder would likely have this information available when it asserts its SEPs to against an implementer. According to that member, there is no evidence that the proposals would lead to more "hold-out" behaviour or litigation. If implementers start to seek licences from SEP holders, it will likely lead to a higher licensing activity for the SEP holder, but with the benefit that the average time to license and thus time to obtain compensation will likely be shorter.

**Proposal 59**

*To implement the above proposals 54 and 57/58, the European Commission (and competition authorities in other countries) should clarify the obligations arising from a FRAND commitment under EU competition law (or competition laws in other countries).* It should clarify that seeking additional remedies for infringement of SEPs is not a competition law violation if obligations regarding the transparency and availability of SEP licences have been met as outlined above.

## 2.3 Registering standard-compliant products in an SDO database before market introduction

**Proposal 60**

This proposal is linked to proposal 54 and addresses the situation where not all SEP holders have taken the opportunity to make their standard terms and conditions or licence agreement publicly available.

***If a SEP holder does not make its standard licence terms and conditions or standard licence agreement publicly available through an SDO database, an implementer should be required to record the type and model of its standard-compliant products (or services) at the time of introduction to the market in an SDO database. This information would then only be available for inspection by SEP holders who have confirmed SEPs on public record at the relevant SDO.*** By accessing this information, a SEP holder agrees not to use this information for any purpose other than assessing whether an implementer may need a licence under its SEPs for the products (or services) concerned.

An implementer should only register product information that will be or become open to the public and is not required to disclose any technical or other product details that are not open to the public. The information should be recorded in a part of an SDO database that is only accessible to SEP holders who have their SEPs confirmed to be essential by independent evaluators. A SEP holder having a SEP portfolio relevant to this type of product (or service) may initiate licence discussions with that implementer. If the product or service is not or does not become publicly available or accessible, the implementer should be required to register in the database a simple description of the product or service without disclosing any technical or other confidential details.

This proposal enables SEP holders to initiate licence discussions with implementers at the time of or shortly after the implementer starts to commercialize the standard-compliant products or services. Under the current negotiation framework the implementer typically takes no action until the SEP holder asserts its patents against the implementer. The proposal would thus result in implementers not accumulating significant amounts of past royalties to be paid for unlicensed use of the SEPs. The issue of past royalties may become a major issue in SEP licensing negotiations. Accordingly, some members expect that this proposal may reduce prolonged licensing negotiations and legal disputes.

Implementers at different levels in a value chain may register their standard-compliant products or components in the SDO database. In line with the three licensing principles formulated in Part 3.2 on licensing in the value chain, it is desirable to have licensing done at a single level in the value chain and for a royalty to be independent of the level in the value chain where the licence is taken. To determine the appropriate licensing level in the value chain, horizontal and vertical coordination must occur among SEP

holders and between SEP holders and representatives of the implementers at different levels of the value chain, likely in the form of group meetings, as described in Part 3.2 on licensing in the value chain. It would be preferable for these horizontal and vertical coordination meetings or dialogues to take place before SEP holders approach any implementers to initiate licensing discussions. If the horizontal and vertical coordination discussions have a positive outcome, it will be clear at which level of the value chain the standard-complaint products or components need to be registered in the SDO database. This should eliminate or at least avoid to a large extent the situation wherein implementers at multiple levels of the same value chain would have to register their products in the SDO database.

Some members raised the concerns that (i) it is difficult to see how an implementer can be forced to register its products if a SEP holder fails to act by not making its licensing terms and conditions available; and (ii) this proposal would be too burdensome for SEP holders and implementers.

**Proposal 61**

***An implementer who fails to register the product or service information as outlined in the above proposal would be considered a holding-out licensee. Such implementer would still entitled to a FRAND-based licence, but may be required to pay a penalty, for example in the form of a substantially higher royalty than FRAND royalty for the period from the date of first commercialization of the licensed products until the date of conclusion of a licence agreement with the relevant SEP holder.***

If an implementer at the agreed level of licensing in a value chain fails to timely register its products, it should still be able to obtain a licence at FRAND terms and conditions from a SEP holder, but it may have to pay an increased royalty over licensed products sold prior to concluding a licence with that SEP holder. In that case, it may not be fair to pass on this increased portion of the past use royalty to downstream levels in the value chain.

Some members raised the concerns that it is not clear who is going to determine that an implementer failed to timely register its products and that consequently the implementer may have to pay a higher-than-FRAND roaylty for past sales of those products.

Some members raised the concerns that (i) it is difficult to see how an implementer can be forced to register its products if a SEP holder fails to act by not making its licensing terms and conditions available; (ii) this proposal would be too burdensome for SEP holders and implementers.

## 3. Handling Disputes

For industries operating in the different IoT-verticals the lack of knowledge of and experience with SEP licensing, the lack of transparency with regard to SEPs and the

difficulty in assessing what a reasonable aggregate royalty would be for all SEPs relevant to each standard used in their products, are all factors that could trigger litigation. Measures were described aimed at increasing transparency with respect to these factors, smoothening SEP licensing negotiations and possibly reducing litigations. Nevertheless, it is unlikely that these measures will prevent litigation from happening all together.

In the sections below some members of the expert group make a number of proposals that aim to improve the manner in which disputes regarding SEP licensing issues are handled by courts, arbitrators, mediators, and parties in SEP licensing negotiations and/or to reduce the cost of litigations. The implementation of these proposals would either require (i) the European Union or the Member States to adopt legislation including these proposals, or (ii) the CJEU to revisit its *Huawei* v. *ZTE* judgement, when it is given an opportunity to do so.

### 3.1 Disincentives to use litigation as a negotiation strategy

During SEP licensing negotiations neither party should exercise unreasonable bargaining power over the other, and both parties should diligently negotiate in good faith towards concluding a license. The SEP holder should not unreasonably attempt to prevent the potential licensee from selling its products by threatening or seeking and enforcing an injunction. Similarly, the potential licensee should not unreasonably delay or frustrate the conclusion of a FRAND licence by abusing court and/or competition procedures. While after *Huawei* v. *ZTE* a SEP holder can no longer make premature injunction threats, there are no incentives for potential licensees to take a licence before the SEP holder takes legal action. In the worst case scenario where the implementer may be legally forced to take a licence, it is still entitled to a licence under the same FRAND terms and conditions offered to it by the SEP holder before the litigation.

Below are a number of proposals made by some members that address the issue of lack of incentives for implementers to conclude licenses without unreasonable delay. If implemented, the proposals may provide courts (or arbitrators, if appropriate) with some additional powers to determine royalty amounts and penalties based on the specific facts of each case. The proposals are aimed at dissuading companies from engaging in bad faith negotiations and abusing the litigation process.

#### 3.1.1 Additional payment for implementer who negotiated in bad faith

**Proposal 62**

***If a court determines that an implementer has negotiated in bad faith, the court may oblige the implementer to make a payment in addition to the FRAND royalty.***

If a SEP holder made a licence offer during the negotiations which the court determines to be FRAND, and the implementer is unwilling to accept such FRAND offer, the licensor may be entitled to, if the court deems it appropriate given all particularities of

the case, an extra payment in addition to the FRAND royalty. The proposal does not aim to limit litigation based on sound and legitimate reasons, for example, when the implementer has a good faith belief that the alleged SEP is non-essential, invalid, or unenforceable. As an example, a court may find an implementer unwilling if the implementer did not respond to a FRAND offer in a reasonable time.

An implementer may also be considered unwilling, if it initiates legal proceedings to challenge the essentiality, validity and/or enforceability of a declared SEP knowing that the SEP was already challenged unsuccessfully one or more times and if the renewed challenge is also unsuccessful. This should discourage multiple challenges of the same patents in court.

As to the extra payment, Article 13(1)(b) of IPRED does not preclude national legislation, under which a holder of an infringed IPR may claim from the infringer the payment of a sum corresponding to twice the hypothetical royalty. While Article 13(1)(b) of IPRED does not necessarily require such doubling of that hypothetical royalty, the national legislation implementing this provision should enable the right holder to demand that the damages set as a lump sum are calculated not only on the basis of the royalty foregone, but also on the basis of other appropriate factors. This can include compensation for any costs that are linked to researching and identifying possible acts of infringement (e.g. the cost for analysing products or reverse engineering software) and compensation for possible moral prejudice or interest on the sums due.

While certain members sympathize with the rationale of the proposal, other members have expressed concerns, including that (i) it would impede access to justice, which is considered a fundamental right in the EU; and (ii) there cannot be two different FRAND royalties depending on the behaviour of the implementer.

Certain members have argued that if the court decides that an implementer is an unwilling licensee, the SEP holder may seek an injunction and if the SEP holder is still willing to license, the SEP holder is no longer held to its FRAND commitment. Thus, during negotiations the SEP holder can push the implementer to accept the offered FRAND royalty or take the risk that a court may order the implementer to make a payment in addition to the offered FRAND royalty.

### 3.1.2 Automatically created escrow account for FRAND dispute in court in case implementer rejected arbitration

**Proposal 63**

***If after an implementer has declined a FRAND offer by a SEP holder and the SEP holder has declined the FRAND counteroffer of the implementer, and unless the implementer is not willing to participate in a voluntary arbitration for resolving their FRAND dispute and the SEP holder and the implementer engage in a FRAND adjudication procedure, an escrow account should be created automatically, into which the implementer should transfer (a) reasonable amount(s) agreed by the parties or (b) amounts equal to the FRAND offer of the implementer.***

Some members believe that there must be incentives for both parties in SEP licence litigations to avoid negotiation strategies. Currently, there is no incentive for an implementer to sign a licence before the court makes a decision. Interim payments from a licensee during court proceedings could incentivize a negotiated agreement. If a prospective licensee disagrees with licensor's FRAND offer and the licensor cannot accept licensee's FRAND counteroffer, either can suggest arbitration. If the prospective licensee is sued after declining to arbitrate, it could be required to make interim payments either equal to a reasonable amount agreed between the parties or equal to the implementer's FRAND counteroffer pending court resolution. The implementer can then challenge the SEP holder's FRAND royalty in court. The mechanics of implementing this proposal still need to be worked out in more detail.

One key aspect of this proposal is that an implementer actually pays the stated amounts into an escrow account instead of simply providing a security. This should incentivize the implementer to reach a negotiated solution before a decision by the court, because its accrued amount in escrow would grow progressively until the resolution of the dispute. The longer it takes to resolve the dispute, the bigger the amount in escrow.

Certain members question whether this proposal is in line with the *Huawei* v. *ZTE* framework that provides for a security with respect to the licence rate corresponding to the counteroffer made by the potential licensee. They consider a bank guarantee to be sufficient security.

### 3.1.3 Suitable royalty discount for implementer in case SEP holder behaviour triggered litigation

**Proposal 64**

***If a court establishes that an implementer has negotiated in good faith and has proven that he was "willing" to conclude a licence but it was indeed the conduct of the SEP holder that resulted in unnecessary litigation, the implementer should be allowed a suitable discount on royalties due in the first two years after entering into the agreement (and on any royalty payments due for past sales).***

Some members maintain that if the implementer can demonstrate in court that it had to initiate litigation because of "unreasonable" conduct by the SEP holder during the negotiations, measures should be taken to disincentivise such behaviour. For instance, the SEP holder could be considered unreasonable if it requires the implementer to enter into unnecessarily restrictive confidentiality agreements, does not provide the implementer sufficient information regarding the relevant SEPs to assess potential infringement and/or essentiality, or regarding the calculation of its offer or the grounds for rejecting the implementer's counteroffer. One such measure could be that after the court (or a third party) has set the applicable royalty, the implementer is granted a discount applicable on the royalties due for past infringement, if any, and the royalties due over the first two years of the licence agreement.

A member expressed concern that this proposal would affect the FRAND framework. Another member commented that the courts may address this issue by awarding costs to the prevailing party.

### 3.2 Fair determination of a licence rate in a court case

If a SEP holder and an implementer have complied with the *Huawei* v. *ZTE* framework, in particular both have acted in good faith and each has made an offer that meets the FRAND requirements of this framework, the question arises as to the royalty at which a licence agreement should be concluded if both offers don't match. However, non-matching offers should neither necessarily lead to a dismissal of the claim at the expense of the SEP holder nor to an injunction against the implementer. Otherwise, the requirements for FRAND conformity of the offers to be submitted would be exaggerated.

There are different views in the literature on how to determine the royalty in these circumstances.[140] The following two alternative proposals reflect those ideas.

#### 3.2.1 Determination of FRAND royalty by weighted mean value for FRAND offers of negotiating parties

**Proposal 65** ★★★☆☆

***If the FRAND offers of the two parties cannot be reconciled, the royalty should be determined by choosing a weighted mean value between these royalties that are considered to be equally FRAND. If the royalty thus determined does not deviate by more than 3% from one of the offers, the offer with the smallest deviation should be selected. If the offers deviate more than 3% than the mean value should be selected.***

The *Huawei* v. *ZTE* framework has two main goals: (i) to determine whether either party is willing to enter into a licence agreement on FRAND terms, and (ii) to determine the FRAND terms and conditions, including the royalty, if both parties are willing to license.

Because of the consequences of finding a party unwilling to conclude a licence agreement, such as dismissal of the case or the imposition of an injunction, a court should consider the broadest possible range within which an offer would be FRAND Otherwise, the action may be dismissed, or an injunction may be issued too quickly. The court could use the methods described in Part 3.3 on FRAND terms and conditions in order to find the most appropriate FRAND royalty. Based on that most appropriate FRAND royalty the court will assess whether a proposed royalty is so beyond this broad range of a FRAND royalty that the offering party cannot possibly be a willing licensor or licensee. Such FRAND royalties can often only be determined by an independent expert opinion. It would not be wise to assume a lack of will on the part of the SEP

[140] See Herr, Jochen and Rinkel, Christina, ‚Münchner Hinweise zur Handhabung des Zwangslizenzeinwandes', *GRUR-Prax 2020*, 93, sub II 3. The article references three opinions, i.e. of Fähndrich, Martin; Kühnen, Thomas; and Landgericht Munich I.

holder or the implementer if their offers differ to a small degree from the FRAND royalties determined by the independent expert.

A fair royalty emerges from negotiations that take place under fair conditions. If one party negotiates with the expectation that, if it cannot obtain the desired royalty from negotiation, the court would decide in its favour, these negotiations will not be balanced. If the most appropriate FRAND royalty ascertained by the independent expert opinion deviates substantially from the two offers, it cannot be assumed with certainty that either party would have concluded a licence agreement under any of those terms and conditions, including royalty. A court could, therefore, not base its decision on such offers. For example, if the court were to impose on the implementer the SEP holder's offer, it may place this implementer at disadvantage in comparison to other implementers, thus depriving the implementer of a level playing field. This will not be fair, especially if the implementer acted in "good faith".

A decision based on the SEP holder's offer would necessarily imply that this offer could only deviate to a reasonable extent from the FRAND royalty determined by an independent expert opinion. Otherwise, there would easily be an abuse of power. However, if the range within which the offers would be considered FRAND is too narrow, in order to assume the willingness of both parties, this would increase the probability of a dismissal of the action and not serve the SEP holder's interests.

For these reasons, in case of two FRAND-compliant offers, the court should not automatically choose the offer of the SEP licensor as the basis for a licence agreement. If this were the case, the CJEU would not have pointed out the possibility of an arbitration by an independent third party in its judgment *Huawei* v. *ZTE*.[141] A favour for one party would not be fair. Therefore, unless a determination of the FRAND royalty is determined by arbitration, the court would have to determine this royalty based on the royalty proposed by the independent expert using the methods described in Part 3.3 on FRAND terms and conditions.[142]

However, if the royalty determined by an independent expert deviates only slightly from the FRAND offers of the parties, the FRAND offer with the smaller deviation should be chosen. This is recognized in German competition case-law in cases where the offer of a service provider does not deviate by more than 3% from a competitively analogous price.[143] In SEP cases, this threshold could apply to the offers of both parties, so that in the event of such a small deviation, it is not the expert determined FRAND royalty but the offer that is the closest that is chosen by the court. If both offers are that close to the royalty determined by the expert, the one which deviates the least should be taken.

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141 Judgment of the CJEU of 16 July 2015, *Huawei* v. *ZTE*, Case C- 170/13, EU:C:2015:477, para. 68

142 Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet* v. *Huawei*, UKSC 2018/0214, [2020] UKSC 37, para. 158; Judgment of the High Court of Justice, Chancery Division, Patent Court (England and Wales) of 5 April 2017, *Unwired Planet* v. *Huawei*, HP-2014-000005, [2017] EWHC 711 (Pat), para. 708

143 Decision of the Federal Court of Justice (Bundesgerichtshof – BGH) of 14 July 2015, *Wasserpreise Calw II*, KVR 77/13, BGHZ 206, 229, para. 61 ff.

One member argues that finding an appropriate price of a patent licence is dependent on facts known to both parties, and therefore requires the active participation of both parties in the negotiations. The *Huawei* v. *ZTE* judgment provides for a framework in which licensing terms are determined through an iterative process. This implies that there can be a big difference between the initial offer and the final agreement. That does not and should not mean that any initial offer that differed from the final FRAND royalty is non-FRAND. An initial offer is FRAND if it is FRAND compared to what can be expected of an initial offer. Nevertheless, the prospective licensee must provide sufficient justification why it considers the initial offer non-FRAND, before forcing the licensor to consider a counteroffer. It is within the licensor' rights, and in fact obligations, to structure an overall licensing program that assures FRAND access for all implementers. If there is nothing wrong with a licensing offer, the implementer must take it or face an injunction.

However, the proponent of the proposal believes that the *Huawei* v. *ZTE* judgment does not imply that the prospective licensee has to demonstrate that the SEP-holder's offer is not FRAND, if he does not want to accept it.[144] Moreover, the CJEU judgment acknowledges that both offers may be FRAND.[145]

One member also believes that the notion of a "range" in the proposal is overly simplistic. Whether a licensing offer is FRAND depends on a large number of terms and conditions. The proposal can only deal with situations in which licensor and licensee agree on all terms and conditions except the royalty. This would make the proposal unworkable in most real-world cases.

The proponent of the proposal considers, however, that the proposal should apply to all cases where the parties disagree on the royalty. In these cases, there should be no favour for one of the parties to the case regarding the royalty. If the parties disagree on other terms and conditions, this disagreement will have to be resolved by the court before the determination of the royalty. This may mean the exchange of different offers on different terms and conditions, including royalty between the parties. After the court has determined the other terms and conditions, and if the parties still disagree on the royalty, the court will decide also on the royalty.

Certain members consider that the FRAND obligation is contractually an obligation on the side of the SEP holder. Once it made a FRAND offer (or a court has decided that this offer is FRAND), it has complied with its obligation.[146] And if FRAND is indeed

144 Judgment of the CJEU of 16 July 2015, *Huawei* v. *ZTE*, C-170/13, para. 66

145 Judgment of the CJEU of 16 July 2015, *Huawei* v. *ZTE*, C-170/13, para. 68

146 Judgment of the High Court of Justice, Chancery Division, Patent Court (England and Wales) of 5 April 2017, *Unwired Planet* v. *Huawei*, HP-2014-000005, [2017] EWHC 711 (Pat), para. 708 "a willing licensee must be one willing to take a FRAND license on whatever terms are in fact FRAND"; see also Judgment of the England and Wales Court of Appeal of 23 October 2018, Unwired Planet v. Huawei, [2018] RPC 20, [2018] EWCA Civ 2344, para. 118 to 121 and Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet* v. *Huawei*, UKSC 2018/0214, [2020] UKSC 37, para. 158; Judgment of the German Federal Court of Justice ("Bundesgerichtshof – BGH") of 5

considered a range, as these members believe, the parties can negotiate a specific royalty, but this should be seen/considered within the negotiation power of the SEP holder. The SEP holder cannot be forced to accept a royalty determined by a court (within the FRAND range), if within the range parties do not agree. If the rate proposed by the SEP holder is within the range, he should have the power to stand by his proposed rate and NOT accept the rate offered by the implementer (even the latter offer is also within the range). Within the monopolistic rights offered by patent law to the SEP holder (and limited by the FRAND obligation), the power for the SEP holder within the range to agree or not agree, cannot be levelled out by a decision by a court. From this argument, it could be deduced that once the SEP holder has complied with a FRAND obligation, its monopolistic rights cannot be touched upon. Taking away the power to negotiate a royalty (within the FRAND range) at which a SEP holder is willing to license out, would lead to an unacceptable limitation of its already minimal (monopolistic) intellectual property rights and go against the contractual freedom to conclude agreements.

In response, the proponent of the proposal would like to emphasize that not only the SEP holder but also the prospective licensee may have a negotiating power that should be respected. Implementing a technical standard is different from other inventions. During the development of the standard both SEP holders and implementers try to determine the best available technology that will be adopted in the standard without alternatives. This means that the implementers refrain from their right to develop alternative technologies. Therefore, the SEP holder cannot make use of any monopolistic right, or the standard would fail. The SEP holder is not able to implement a standard just on its own; it needs the implementers to adopt the standard and not to come up with alternatives. Thus, not only the SEP holder who gives up to use its SEP as a monopoly, but also the implementer abstains from its freedom to choose occupation, a fundamental right, by refraining from developing a competing technology. Therefore, the law cannot be interpreted to favour one of the parties.

Finally, one member believes that giving too specific guidelines to courts should be considered carefully. A court applies the law (as interpreted by the CJEU). Any additional guidelines may limit its ability to make balanced judgments.

### 3.2.2 SEP holder fulfils its FRAND obligations by making a FRAND offer

**Proposal 66**

***Alternatively, if a SEP holder has made a FRAND offer that the potential licensee rejects, and the potential licensee cannot present sufficient evidence supporting its position that the SEP holder's offer is not FRAND, the SEP holder may be granted an injunction by the court.***

May2020, *Sisvel v. Haier*, FRAND-Einwand, Case No. KZR 36/17, para. 83, referring to the cited decision of the High Court of England and Wales (J. Birss)

An implementer who was offered a licence on FRAND terms and conditions may not reject that offer and claim an abuse of a dominant position by the SEP holder in the mere hope of being offered more favourable terms and conditions that may still be considered FRAND. Following the formulation of the High Court of England and Wales, approvingly cited by the German Federal Court of Justice, "a willing licensee must be one willing to take a FRAND licence on whatever terms are in fact FRAND". The purpose of the FRAND obligation is to ensure that implementers of the standard have access to SEP licences on FRAND terms and conditions. This purpose is fulfilled when a SEP holder makes a licensing offer on FRAND terms and conditions.

The *Huawei* v. *ZTE* framework expressly reserves third party determination of licensing terms and conditions to situations in which both parties mutually agree to this. The terms and conditions of the overwhelming majority of SEP licences are determined through amicable bilateral negotiations. When national courts of the EU have used the *Huawei* v. *ZTE* framework to assess allegations that actions for injunctive relief constituted an abuse of a dominant position by a SEP holder, the courts have consistently found that either the SEP holder's or the prospective licensee's conduct was incompatible with the conduct of a willing licensor or willing licensee. This strongly indicates that willing licensors and willing licensees are able to resolve disputes regarding licensing terms and conditions without the need for a mandatory and binding third party determination.[147]

The *Huawei* v. *ZTE* framework and the subsequent jurisprudence by national courts have strengthened the incentives of parties to engage in serious and goal-oriented negotiations of licensing terms and conditions. As part of this framework, a willing licensee disagreeing with a SEP holder's licensing offer must submit a FRAND counter-offer. It is thus not enough for a prospective licensee to simply state that it does not consider the SEP holder's offer FRAND. It must itself make an offer to "conclude a licence agreement on conditions which the patentee may not refuse without violating the prohibition of abuse or discrimination"[148]. The purpose of this negotiation process is not to reduce the distance between a SEP holder's and a prospective licensee's preferred terms and conditions; but to resolve disagreement regarding the existence of a licensing offer fulfilling the SEP holder's FRAND obligations.

From an economic and policy point of view, amending this framework to provide for licensing terms and conditions to be determined by a third party even if the SEP holder has fulfilled its FRAND obligations would have negative and possibly serious consequences. Implementers' incentives to accept FRAND licensing offers for SEPs would be undermined, as there would always be a possibility to obtain more favourable terms and conditions within the FRAND range using adversarial proceedings.

[147] Judgment of the German Federal Court of Justice ("Bundesgerichtshof – BGH") of 5 May2020, *Sisvel v. Haier*, Case KZR 36/17, para. 81. 'appropriate conditions for a contractual relationship, in particular an appropriate price [are] regularly not objectively determined but can only be determined as the result of (possibly similarly) negotiated market processes.'

[148] Judgment of the German Federal Court of Justice ("Bundesgerichtshof – BGH") of 5 May2020, *Sisvel v. Haier*, Case No. KZR 36/17, para. 71

It is therefore proposed that the *Huawei* v. *ZTE* framework should be further clarified in order to provide guidance to the parties participating in licensing negotiations, and to assist courts in assessing whether parties have complied with their respective obligations.

- SEP holders should provide an initial licensing offer to an implementer that has clearly and irrevocably indicated its willingness to enter into a licence on FRAND terms and conditions. The licensing offer should spell out the relevant terms and conditions and provide sufficient explanation as to how the compensation was calculated in order to assist the implementer with making its own determination whether the offer is FRAND. The requested compensation must be FRAND in light of a good faith consideration of the elements known to the SEP holder at the time of the initial offer. Nevertheless, as FRAND licensing terms are routinely determined through an iterative process of bilateral negotiations, to which both parties must actively contribute, the explanation and calculation of the compensation that is required of the SEP holder at the time of the initial offer does not need to amount to a fully conclusive FRAND analysis.

- A willing licensee may reject a licensing offer that it does not consider FRAND. The prospective licensee may identify objective circumstances that make the initial licensing offer clearly not FRAND. If such circumstances exist, the SEP holder has not (yet) fulfilled its obligation to make a FRAND licensing offer, and the prospective licensee has no obligation to make a counteroffer. The SEP holder must then make a revised offer. If the initial offer was made in evident bad faith, i.e. the SEP holder abused its dominant position and knowingly submitted an offer that was clearly not FRAND (an offer that could not reasonably be viewed as FRAND in light of even a preliminary assessment), the implementer shall not be required to engage in any subsequent negotiations. The licensee may also indicate that it does not consider the licensing offer FRAND, even though there are no objective circumstances that show that the licensing offer is clearly not FRAND. In that case, the licensee however must make a counteroffer that it considers FRAND; and it must explain the calculation of the proposed compensation. This calculation should provide the SEP holder with the factual elements and analysis underpinning the prospective licensee's disagreement with the FRAND character of the initial licensing offer and should assist the SEP holder with making a revised offer.

- The SEP holder may respond to this counteroffer with a revised FRAND licensing offer. The requested compensation must be FRAND in light of a good faith consideration of the elements known to the SEP holder at the time of the initial offer, as well as the factual elements and analysis provided by the prospective licensee. If the initially proposed compensation continues to be FRAND after a good faith consideration of the information and analysis shared by the prospective licensee, the SEP holder may uphold the initial request, but

must provide the additional explanations to corroborate the FRAND character of the request in light of the facts and analysis shared by the prospective licensee.

- This process may continue as long as parties engage actively and add substantive facts or analysis to the negotiation. If, in light of factual elements and/or analysis produced through the process of negotiation, the implementer revises its offered terms and conditions, it should revise the amount of security accordingly in order to continue to be considered a willing licensee. The burden of producing additional facts or analysis should be shared proportionally; a party may not unilaterally request the other party to substantiate its offers at a substantially greater level of detail than it has provided itself. If at any stage of the process the SEP holder considers that the prospective licensee is not or no longer actively pursuing a licence, it may seek injunctive relief. The court must then assess whether the SEP holder has made a FRAND offer. If the SEP holder has made a FRAND offer, i.e. the prospective licensee has not demonstrated any objective circumstances that make the initial offer and any subsequent offer clearly not FRAND, and the prospective licensee has not submitted a counter-offer based on FRAND considerations that the initial offer and any subsequent offer failed to reflect,[149] the court shall grant the injunction. Otherwise, the court shall deny the injunction. At any stage of the process, the parties may, by common agreement, seek a third-party determination of the licensing terms and conditions.

One member argues that such a process would cause the court to decide upon an almost endless exchange of arguments by both parties whether they have produced additional facts or analysis. Such a management of the case could lead to endless trials with a production of new facts and analysis over and over. The proponent of the proposal argues that the production of new facts and analysis has to take place before the action for injunctive relief, i.e. before litigation. There is a potential for a (potentially consequent) iterative process of back and forth before entering into litigation, but only to the extent that each step is constructive.

### 3.3 Establishment of a confidential repository of SEP licensing agreements

**Proposal 67**

Courts having to assess FRAND offers or having to determine FRAND royalties, require a great deal of information on how SEP licences are freely negotiated irrespective of the specific valuation method used for calculating the FRAND offer or royalty. However, this information is mostly treated confidential by the parties and might only be made available to the courts to a limited extent.

149 Judgment of the German Federal Court of Justice ("Bundesgerichtshof – BGH") of 5 May 2020, *Sisvel v. Haier*, FRAND-Einwand, Case KZR 36/17, para. 71

***It is proposed to require parties to SEP licence agreements to submit these agreements (or specified key provisions of such agreements) to a market transparency office to be established, for building and maintaining a strictly secret repository of SEP licence agreements, solely for use by courts, competition authorities and possibly arbitration/expert boards and other trusted persons to be agreed upon.***

The licence agreements submitted by the licensors and licensees and stored in the repository would remain strictly secret, similar to the high standard of tax secrecy in some of the EU Member States. According to proposal only courts (excluding the parties of litigations), competition authorities, maybe public expert boards and other trusted persons to be agreed would have access to the deposited licence agreements for pre-defined purposes, including (i) assessing the value of FRAND licensing offers, (ii) determining the FRAND value of SEP licences, and (iii) determining whether there is any unjustified discrimination. It is noted that the last item is linked to proposal 47 in Part 3.3 on FRAND terms and conditions.

When compensation for the grant of a SEP licence includes a lump sum or includes elements other than monetary compensation, like grant backs or cross-licences, the parties to the agreement should submit a note explaining the market projections underlying the lump sum payment and the value of any non-monetary compensation, together with the licence agreement.

The market transparency office could be allowed to publish an annual report with high level overviews of the ranges of royalties for the different technology areas based on the SEP licence agreements received that year and the development of these ranges over time.

The Commission could introduce the above proposal through an EU regulation regarding the licensing and evaluation of SEPs. Certain members noted that licence agreements may contain highly sensitive content, which may raise concerns about having to disclose them even to a market transparency office bound to secrecy. This issue could possibly be resolved by allowing for some redactions. Another concern raised was that this proposal would create a high bureaucracy burden for licensees and licensors.

Certain members expressed the concern that the proposed annual report may affect the FRAND royalties, which could make it more difficult for negotiating parties to justify a licensing offer or counteroffer outside the range stated in the report. Such annual report should disclose what methodology it applied for comparing the different SEP licenses in determining the royalty ranges for the different technologies.

### 3.4 Independent expert committees

In this section three proposals are described that relate to the use of independent expert committees to resolve or help to resolve SEP disputes between SEP holders and implementers in efficient and effective ways, which may lead to less SEP disputes ending in costly and lengthy litigations.

### 3.4.1 Establishment of independent expert boards for determining a FRAND royalty

**Proposal 68**

If a SEP holder and an implementer are not able to agree on the FRAND terms and conditions of a SEP licence, in particular the royalty, one of the parties may start litigation. If so, the courts are currently the first and at the same time the last independent bodies, save for arbitration, to assess and determine an appropriate royalty, provided that both parties submitted FRAND-compliant offers in line with the *Huawei* v. *ZTE* framework. Judges are not trained for making such evaluation and have to consider all evidence submitted that may be relevant for their decision and are dependent on experts, who in turn have to answer all questions regarding evidence brought up in the litigation. This may make litigation proceedings difficult, highly complex and, therefore, long.

***It is proposed to establish independent boards of experts for assessing FRAND offers or determining a FRAND royalty upon request of a court or the parties negotiating a SEP licence. This assessment or determination would be non-binding on the licensor and the implementer, unless they both agree to a binding outcome.***

As determining a FRAND value for a licence is an economic and not a legal topic, experts boards may be better positioned to determine this than courts. Without being bound by requests for evidence, such boards of experts can quickly and effectively provide a reasoned assessment. Parties in the litigation may agree with the assessment or if they do not accept it, this assessment and especially its reasoning may be used and reviewed as an expert opinion in the litigation.

Also, parties negotiating a SEP licence may make use of such an independent expert board to determine a FRAND royalty for this SEP licence. They can agree to make the assessment of the expert board non-binding or binding. If non-binding and both parties agree to the assessment, it eliminates the need for judicial review. If one of the parties does not agree with the assessment, it may initiate litigation. It is noted that parties that choose to use arbitration instead of litigation to settle their FRAND dispute, are free to choose the arbitration forum that they want to use. They may use but are not obliged to use an expert board for their dispute.

These expert boards may gain special experience in assessing FRAND offers and may become trusted and reliable bodies, whose determinations are broadly accepted by the relevant industries, both on the SEP holder and the implementer side. This might reduce the number of SEP litigations that will be initiated and will also have a positive effect on ongoing SEP litigations.

An expert board decides on its assessment of a SEP offer autonomously and independently from the courts. While forming an opinion for such an assessment, a board can hear the parties independently and is the master of the procedure it wants to follow. It has no advisory function to the court during this procedure.

This procedure corresponds to the procedure for determining the invention remuneration for employees under the German Employee Inventions Act and the determination of the appropriate remuneration for certain uses of copyrighted works. Experience from German arbitration boards in patent law for the remuneration of employees is that the parties accept the proposals by these boards in between 70% to 80% of the cases.[150] See Annex 7 for more details about the German Employee Inventions Act.

The independent expert boards may be hosted by an existing organisation, for example WIPO, EUIPO, UPC, PMAC (patent mediation and arbitration centre), ICC or other appropriate body. The expert boards should not be part of the hosting body but should be based there. The hosting body should decide on the selection of the experts on this board after hearing the relevant stakeholders. Experts are preferably licensing experts and economists.

The Commission could introduce the above proposal through an EU regulation for the enforcement of SEPs. The regulation should determine that the expert boards shall be composed of competent and independent experts. The requirement to consult the expert board should apply in SEP cases to which the *Huawei* v. *ZTE* framework applies. In such cases the evaluation of a FRAND royalty is often more complex than in other cases and the need for a relatively quick assessment by the expert board is even higher. Besides every Member State could apply such a rule for non-SEP cases as well.

A member questions the need for such boards, because it should be the role of the court to hear the arguments of the experts of both sides and then make a determination. Court must deal with complex questions all the time (not only for SEP licensing, but cartel damages, medical malpractice, etc.).

Certain members commented that there is a need for guidelines for the operation of these expert boards, especially if such boards were to be hosted by different organizations in different countries. If used by courts in the various countries, there should also be uniformity in the way courts use these boards and how they rely on the assessments and determinations made by these boards. It may be difficult to achieve this harmonization. Also, different boards for different technology areas would be needed.

Another member mentioned that these independent boards may not be needed if parties in SEP licensing negotiations and courts could use the methodology as discussed in Part 3.3 on FRAND terms and conditions to determine the boundaries of a royalty to be non-discriminatory. The proponent of the proposal believes that although an algorithm can help in the non-discrimination test, it will not help in determining the fairness and reasonableness of a FRAND royalty. The latter is particularly where the help of experts is needed and if it leads to a reasoned assessment, it may often make litigation obsolete.

[150] German Patent and Trade Mark Office, Annual Report 2019, p. 57

### 3.4.2 Courts to have royalty amount questions handled by independent expert boards

**Proposal 69**

If the question of the amount of a royalty has to be answered in court proceedings, the handling of this question should be conducted in front of such an independent expert board. If the board was not consulted in advance, the court should order the parties to do so.

### 3.4.3 Establishment of a specialized mediation institute for FRAND licensing disputes

**Proposal 70**

***It is proposed to establish a specialized mediation institute for FRAND licensing disputes.***

Parties negotiating a SEP licence may not be able to resolve one or more issues themselves, which prevent them from concluding a licence agreement. Instead of bringing such disputes to court, they may bring their issues to this specialized mediation institute for a faster resolution. This specialized mediation institute should work as an intermediary in trying to bring the parties to resolve their issues.

The mediation needs to be fast and cost efficient, so that it can be used by all types of SEP holders and implementers in support of concluding FRAND licences. If the mediation is successful and the parties enter into a licence agreement, costly and lengthy litigations are avoided.

The following questions are still open: (i) whether the mediation institute should be a public or private entity; (ii) how the institute should be set-up; (iii) what its rules of operations should be; (iv) what the selection criteria for the mediators should be; and (v) who will select the mediators. However, it should be dedicated to FRAND disputes and become an expertise centre on FRAND disputes. The mediation institute could also enter into co-operation agreements with the different SDO's in the EU.

It could be considered, if the parties would agree, to let the mediation institute to maintain on a strictly confidential basis the comparable licence agreements that they would be able to see in the course of their mediation work for their own use, but not to disclose it to any other party(ies) in other mediation cases or any other party.

The proponent of the proposal suggests it could be particularly helpful for SMEs to be able to call on such mediation service to determine whether an offer an SME has received from a SEP holder is indeed non-discriminatory. The SME would then ask the licensor to provide, under NDA, to the mediator other licence agreements concluded for the same SEPs. The mediator should not allow the licensor to cherry pick which agreements to provide but ensure that the licensor provides as many relevant agreements as possible to the mediator. The mediator could then consider that totality and let the

prospective licensee know whether or not the offer it has been given is within the range of all the agreements or not. The proponent believes that licensors would be willing to comply with this process in order to come to a negotiated agreement.

Certain members argued that mediation centres already exist and are available to parties wishing to find a way out of a licensing dispute. As the mediation is a voluntary engagement between parties that may or may not have a successful outcome, it is doubted whether such institute will incentivize parties to try to negotiate rather than to litigate. One member preferred mandatory arbitration over mediation in view of the extreme positions frequently taken by SEP holders and implementers.

A member expressed some doubts that SEP holders would be willing to comply with the proposed mediation process.

Another member commented that if the current SEP licensing system with all its non-transparencies is left as is, adding a specialized mediation institute is not likely to contribute to smoother and faster licensing negotiations.

### 3.5 Expedite handling of breaches of SEP licence agreements

**Proposal 71**

SEP holders (or patent pools) are expected to undertake sufficient efforts to license as many companies making and selling products licensed by the pool as possible and once licensed to seek to it that they comply with their obligations under their licence agreements. This is done with the aim to ensure a level playing field among market participants and to avoid possible distortions among competitors.

This also entails that SEP holders, if needed, act against unlicensed companies and against licensees that are not operating in compliance with their licence agreements. If a licensee is not in compliance with its licence agreement, the licensor has to notify the licensee of the breach of agreement, which the licensee should remedy within the time period specified in the agreement. If not remedied, the SEP holder is entitled to terminate the agreement. In that case the licensor may decide to start an infringement case and seek an injunction against the implementer before court. These proceedings may take many years, including any appeals. During these years, the implementer benefits from not being licensed and not paying any royalties. This may negatively impact compliant licensees and may distort competition.

***It is proposed that SEP holders and licensed implementers should submit any unremedied breaches of SEP licence agreements to arbitration boards to get decisions on the non-compliance issues relatively quickly.***

This proposal may avoid lengthy and costly litigations and stimulate SEP licensees to comply with their obligations under their licence agreements, in particular with their reporting and payment obligations and thus create a better level playing field among licensees.

The independent expert boards as proposed in proposal 68 may be used for handling these cases as well. The decision by such independent board may be binding or non-binding, depending on what the parties have agreed. If non-binding a party not accepting the decision by the arbitration board, may still start a court action, but in that case the court may expedite the review of the case by taking into account the decision by the independent expert board.

One member questioned whether companies can be forced to use arbitration in case of unremedied breaches of SEP licence agreements. This member believes that parties to a licence agreement should be free to decide on their preferred way of dispute resolution. Another member doubts the effectiveness of this proposal.

# PART 3.5 – PATENT POOLS AND JOINT LICENSING FOR IOT

## 1. Introduction

Patent pools have a long history. One of the first patent pools was formed in 1856 for sewing machines.[151] Since then, many patent pools with different set-ups and for different purposes have been formed. In the past some patent pools were established to limit competition, to fix prices, or to resolve litigation disputes among companies.[152] In more recent times many patent pools have been formed around technology standards in large part to create easier access to patents essential to the implementation of these standards and reward companies that contributed their patented technologies to these standards. Establishing a patent pool and executing the licensing activities can be done by one (or more) of the companies participating as licensor or by an independent patent licensing administrator.

A standard based patent pool is an arrangement among multiple SEP holders to aggregate their standard essential patents ("SEPs") and to license these as a single package under standard terms and conditions to parties implementing the relevant standard.[153] Licensors participating in the pool may also be implementers of the standard and can (and in many instances, are required to) take a licence from the pool as well. The pool establishes a revenue distribution method according to which revenues collected from pool licensees are allocated to the licensors. Pools also have a process for ensuring that licensors actually have patents that are essential to the standard – they require an independent evaluation of patents submitted by the licensors to determine whether the patents are essential (often referred to as "certified patents") before these are listed by the pool as an essential patent. Patent pools may have different rules as to the patents submitted for evaluation. Some pools leave it to the licensor's discretion how many patents to submit to the independent evaluator for certification, whereas others oblige licensors to submit all patents they believe to be essential at any point in time for evaluation. Any evaluation may result in a negative finding, in which case the pool does not include the patent in its list of essential patents. There is an incentive for

[151] See Serafino, David, 'Survey of patent pools demonstrates variety of purposes and management structures', *Knowledge Ecology International*, 2007, available at https://www.keionline.org/book/survey-of-patent-pools-demonstrates-variety-of-purposes-and-management-structures.

[152] See Lampe, Ryan, and Moser, Petra, 'Do Patent Pools Encourage Innovation? Evidence from the Nineteenth-Century Sewing Machine Industry', *the Journal of Economic History*, 70.4, 2010, p. 898; and Lampe, Ryan, and Moser, Petra, 'Patent pools, competition, and innovation—evidence from 20 US industries under the new deal', *the Journal of Law, Economics, and Organization*, 32.1, 2016, pp. 1-36 for evidence on the (mostly negative) effects of these pools.

[153] Other models of collective or collaborative patent licensing have been discussed in previous studies for the European Commission as providing a potential model for SEP licensing, including royalty clearinghouses. While there have been ultimately unsuccessful attempts at creating different models of collective SEP licensing, patent pools are to date by far the most significant form of collective licensing for SEPs. See Bekkers, R. N. A., et al., '*Patents and standards: a modern framework for IPR-based standardisation*', 2014, available at http://ec.europa.eu/DocsRoom/documents/4844/attachments/1/translations/en/renditions/pdf.

licensors to have patents from their portfolio certified because the revenue sharing methodology is in most cases largely dependent on the number of certified patents. This independent evaluation process also provides licensees with more certainty with regard to the essentiality of patents being licensed through the pool, as compared to evaluations performed by the licensors themselves. In almost all instances, irrespective of how many certified patents a licensor has in the pool, the licence offered by the pool grants rights under the licensors entire portfolio of essential patents for the standard, regardless of whether the patents have been evaluated or identified by the pool.

Because of the collective nature of the activities of patent pools, they have always been subject to scrutiny by regulatory authorities. From the late 1930's until the early 1950's, multiple patent pools were considered to operate in conflict with antitrust laws and were dismantled, leading to a period from about 1955 to 1985 where hardly any patent pools were established.[154] The United States Department of Justice ("DoJ") and the Federal Trade Commission ("FTC") issued Antitrust Guidelines for the Licensing of Intellectual Property in 1995. A proposed patent pool for the MPEG-2 Video standard received a favourable DoJ Business Review Letter in 1997, and an approving administrative ("comfort") letter from the Commission in 1998. The letters outlined a number of conditions that patent pools would need to fulfil in order to avoid conflicts with antitrust laws. The Commission and the DoJ both concluded that the MPEG-2 Video standard patent pool set-up did not conflict with these conditions.[155]

According to the guidance provided by these letters, as well as others issued by the Commission and the DoJ for other patent pools, and the Commission's Guidelines on Technology Transfer Agreements[156], a patent pool should fulfil the following main conditions to minimize antitrust risks:

- patents licensed by the patent pool must be technically essential;
- technical essentiality must be verified by independent evaluators;
- patent pools may also include commercially essential patents, for which there is not an economically viable alternative when implementing a standard. It is noted that contrary to technically essential patents no fixed mechanism exists for determining the essentiality of commercially essential patents;
- licensors must retain the right to license their patents independently from the patent pool for any purpose, including for products licensed by the pool. These bilateral licences can be offered at rates that are different from the licensor's

[154] See: Barnett, Jonathan M., 'From Patent Thickets to Patent Networks: The Legal Infrastructure of the Digital Economy', *Jurimetrics Journal, 55, 2014, pp. 1-53.*
[155] Gilbert, Richard J. "Antitrust for patent pools: A century of policy evolution." *Stanford Technology Law Review* , 2004, 3. See also https://www.justice.gov/archive/atr/public/busreview/215742.htm and https://ec.europa.eu/commission/presscorner/detail/en/IP_98_1155
[156] See: https://ec.europa.eu/competition/antitrust/legislation/transfer.html

share of the pool rate, but such rates still have to be consistent with the licensor's FRAND obligation;

- pool licences should be available to all companies for the products or services complying with the relevant standard and licensed by the patent pool;
- grant backs under essential patents for the same standard from licensees are allowed as a condition for receiving a pool licence; such grant-backs need not be under the same terms offered by the pool;
- patent pools should not influence price setting of products by licensors/licensees using the patents licensed by the pool.

Patent pools operating in accordance with the above safe harbour conditions will normally not be challenged by competition authorities, but they are not immune from competition law scrutiny completely. Competition authorities may still institute an antitrust investigation into a patent pool in response to an antitrust complaint filed against the patent pool, for example by a prospective licensee.

Since these Guidelines and Letters were issued, more than fifty patent pools have been created for licensing patents that are essential to various technology standards, generally following the conditions described above. Several of these patent pools have attracted a significant share of the companies that claimed to own SEPs for the relevant standard and have concluded licences with a very large number of standard implementers.[157] These pools illustrate that patent pools may be an attractive solution for licensing SEPs owned by multiple licensors, in large part because they offer benefits for both licensees and licensors compared with the alternative of having to conclude bilateral licences with all pool licensors. By contrast, certain other pools have attracted only a small share of the relevant SEP holders, or have failed in the formation process for other reasons. Regardless of whether a pool exists for a particular standard, because most pools do not offer a licence to all of the SEPs for a given standard, bilateral licensing coexists with pool licensing.

The history of pools shows that pools can be successful where, among other things: (i) the pool is able to attract a large enough portion of the SEP holders to offer efficiencies in licensing; (ii) the pool royalty gains market acceptance among a large segment of implementers; and/or (iii) a significant number of SEP holders and/or implementers perceive that there is a benefit to licensing patents through the pool versus concluding bilateral licenses. In addition, pool success rates vary depending on the standard – for example, major SEP holders for wireless or cellular standards have established strong bilateral licensing programs for these technologies and shown a low interest in pool

[157] See: Bekkers, R. N. A., Baron, J., Martinelli, A., Ménière, Y., Nomaler, Z. O., & Pohlmann, T., 'Selected quantitative studies of patents in standards', *PIE/CIS Working Paper*, Vol. 626, 2014. Hitotsubashi University for evidence based on a sample of pools from before 2014.

licensing for telecommunication products, including mobile/smart phones; on the other hand, many of these same companies have been interested in pool licensing for audio/video codecs.[158] Finally, the bilateral licensing approach of pool licensors could also be an important factor that impacts the success of the pool. In short, there is no single formula or approach for creating a successful patent pool, as is evidenced by the varied results of such efforts in the past.

According to various industry experts and published studies, there are some potential benefits as well as disadvantages to SEP licensing through pools.

Certain studies mention the following non-exhaustive list of potential benefits of licensing SEPs through patent pools.

- Reducing transaction costs by allowing licensees to conclude only a single pool licence for multiple licensor portfolios and to avoid reporting and paying royalties separately for each licensor (i.e. having one reporting and payment process for the collective portfolio). At least one academic study suggests that these transaction cost savings are substantial.[159] Further, these cost savings often benefit both licensees and licensors.

- Offering a reasonable aggregate royalty for SEP portfolios of multiple licensors. Licensing SEPs through a pool may provide incentives for offering reasonable royalties. A pool royalty should not be too low so that the pool can attract a sufficient number of SEP holders (irrespective of their business model) as licensors into the pool; on the other hand, a high royalty will hinder the ability of the pool to sign up licensees (including licensor/licensees). This royalty should give licensors fair and reasonable compensation for licensing their SEP portfolios and offer implementers a fair and reasonable royalty for these licences. As many pools include licensors who are also implementers in need of a pool licence themselves, they have incentives to demand royalties that are considered reasonable.

- Reducing discrimination among licensees by offering licences on standard pre-set terms and conditions. Patent pool administrators are typically authorized to grant licences based on a standard licence agreement, but to also make minor pre-approved amendments to the agreement. Any other amendments to standard terms must be specifically approved by the licensors and remain consistent with the pool's general terms.

[158] A previous study for the European Commission concluded: 'All in all, pools seem to work best in clear and well defined areas such as codecs. It is less likely for a pool to be successful in more complex technologies such as complete mobile telecommunications standards.' See Blind, K., Bekkers, R. N. A., Dietrich, Y., Iversen, E. J., Köhler, F., Müller, B., Pohlmann, T., Smeets, S. J. J., & Verweijen, G. J. H., '*Study on the interplay between standards and intellectual property rights (IPRs)',* Publications Office of the European Union, 2011.

[159] Merges, Robert P., and Michael Mattioli. "Measuring the costs and benefits of patent pools." Ohio St. LJ 78 (2017): 281.

- Helping attenuate concerns over potential patent hold-up by individual licensors due to the reasonable aggregate royalties offered by patent pools.

- Providing more certainty regarding the essentiality of the patents being licensed through the pool as a result of the required independent evaluation of at least some purportedly essential patents from each licensor's portfolio.

- Reducing litigation costs for licensors by disincentivizing litigation among pool licensors and providing mechanisms for better coordination among licensors for enforcement of their patents against unwilling licensees, including possibly hiring joint counsel.

- Accelerating adoption of standardized technologies.[160,161] Patent pools are able to license implementers more expeditiously and efficiently, who can then make and sell standard-compliant products without infringing the licensed patents; this in turn results in faster market growth.

Potential disadvantages of establishing patent pools for licensing SEPs (perhaps for certain standards) may include the following.

- Holders of SEP portfolios that may be considered more valuable may be less likely to join pools if they believe the value of their SEPs is not adequately accounted for. In other words, because the average value of SEPs in different portfolios is often asymmetric, pools may not serve as appropriate licensing vehicles if they do not account for differences in portfolio values.[162]

- Pools in most cases allow for less flexibility in negotiating terms and conditions of a SEP licence, within the bounds of the FRAND commitment. A pool licence is offered based on terms and conditions pre-approved by licensors, and any substantial deviation from those terms and conditions typically must be approved by each of the licensors. Thus, it is more difficult to accommodate the specific needs and requests of a licensee in the pool context.[163]

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[160] Barnett, Jonathan, 'From Patent Thickets to Patent Networks: The Legal Infrastructure of the Digital Economy', *Jurimetrics Journal* 55, 2014, pp. 1-53, *USC Law Legal Studies Paper* No. 14-23, *USC CLASS Research Paper* No. 14-22.

[161] Gilbert, R., 'Collective Rights Organizations: A Guide to Benefits, Costs and Antitrust Safeguards', *The Cambridge Handbook of Technical Standardization Law: Competition, Antitrust, and Patents*, Cambridge Law Handbooks, doi:10.1017/9781316416723.011, p. 125).

[162] Layne-Farrar, Anne, and Lerner, Josh, 'To join or not to join: Examining patent pool participation and rent sharing rules', *International Journal of Industrial Organization* 29.2, 2011, pp. 294-303.

[163] This reduced flexibility in negotiating terms and conditions may also reduce the extent to which licensing terms are determined through bargaining. According to some economists, bilateral bargaining may overcome problems arising when licensing complementary SEPs, and concluding a significant number of licenses based on pre-determined licensing offers may curtail these benefits. Spulber, Daniel F., 'Patent licensing and bargaining with innovative complements and substitutes', *Research in Economics*, *Elsevier*, vol. 70(4), 2016, pp. 693-713.

- Patent pools may reduce (potential) licensee's incentives to challenge weak patents for non-essentiality or invalidity, because excluding these patents from the pool licence will likely not affect the pool royalty.[164]

- Pools redistributing royalty revenues by numerical proportionality to pool members' numbers of certified SEPs may incentivize opportunistic patenting strategies, which may (partly) offset the transaction costs savings generated by pools.[165]

- Some scholars have argued that contemporary pools, despite recognized advantages and built-in safeguards, present risks of producing negative effects on innovation and competition among different technologies.[166] While some economists believe that ensuring pool members are not restricted from entering into bilateral licensing negotiations with potential licensees is a sufficient condition to avoid anticompetitive effects,[167] others find that such a condition is not sufficient to prevent pools from possibly causing harm to competition if the portfolio is not limited to patents that are all essential to [the same] standard.[168]

- Not all pools reduce the risk of litigation and lead to lower royalties for implementers. Some pools attract SEP holders that would likely not assert their SEPs against large numbers of implementers on their own. Empirical evidence – which conflates pools of different types but may be particularly driven by a certain model of pools – suggests that the rate at which SEPs are asserted in court increases after inclusion into a pool,[169] and that pool licensors participated in a large share of SEP litigation cases in Europe.[170]

Some early patent pools in the consumer electronic fields for optical storage standards (CD, DVD), and audio- and video compression standards (like MPEG-2, MPEG-4, AVC and AAC) have been very successful in generating substantial amounts of licensing revenues. Based on the experience gained with these and other patent pools, some best practices for establishing pools have emerged. These practices include one or more of the following:

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[164] According to one study, this effect may lead patent pools to have a negative effect on innovation and welfare. Choi, Jay Pil, and Gerlach, Heiko, 'Patent pools, litigation, and innovation', *The RAND Journal of Economics* 46.3, 2015, pp. 499-523.

[165] Baron, Justus, and Delcamp, Henry, 'The strategies of patent introduction into patent pools', *Economics of Innovation and New Technology*, 24.8, 2015, pp. 776-800.

[166] Carlson, Steven C, 'Patent pools and the antitrust dilemma', *Yale Journal on Regulation*, 16, 1999, 359.A https://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=1478&context=yjreg

[167] Lerner, Josh, and Tirole, Jean, 'Efficient patent pools', *American Economic Review*, 94.3, 2004, pp. 691-711.

[168] Quint, Daniel, 'Pooling with essential and nonessential patents', *American Economic Journal: Microeconomics*, 6.1, 2014, pp. 23-57.

[169] Delcamp, Henry, 'Are patent pools a way to help patent owners enforce their rights?', *International Review of Law and Economics*, 41, 2015, pp. 68-76.

[170] Contreras, Jorge L., et al., 'Litigation of Standards-Essential Patents in Europe: A Comparative Analysis', *Berkeley Technology Law Journal*, 32, 2017, p. 1457.

- allocating little or no share of pool revenues to divisional patents or allocating revenues to a limited number of such patents, thereby disincentivizing the opportunistic filing of large numbers of divisional patents in order to increase a licensor's patent count;

- recognizing that pool patents may have disparate values and giving more weight in royalty allocation methods to higher valued patents;

- introducing fast and low-cost essentiality challenge procedures to incentivize pool licensors and licensees to challenge patents that are believed not to be essential;

- introducing incentives for pool licensors to make one or more of their SEPs available for litigation against unlicensed companies, thereby supporting the pool's efforts to create a level playing field.

The success of a patent pool should not be measured only by the licensing revenues, because these are to a large extent determined by the market volume for the products licensed by the pool and the royalty per licensed product. A more important indicator for the success of a patent pool is the licence coverage of the addressable market that is the share of the licensable market that is actually licensed. The development of this share is an indicator of how quickly and how well a patent pool can license all potential licensees and create a level playing field in the market. So far, patent pools have not published any licence coverage figures, although many patent pools publish lists of licensees[171] to demonstrate the success of their program.

There are various factors that may drive the success of a patent pool, including one or more of the following:

- The patent pool should offer a licensing program that is acceptable to the potential licensees and covers the licensed products for a reasonable royalty. If one or both are not found acceptable by the market, companies will likely not be willing to take licences. In such case, the patent pool may choose to adjust its licensing program terms to address the concerns of the market.[172]

- The set-up of a patent pool and the key elements of licensing programs administered by a patent pool should be as transparent as possible to facilitate licensing. Annex 10 includes an overview comparing the public websites of a number of more recently established patent pools for a number of dimensions.

- The patent pool should attract both large and small licensors to include a critical mass of SEPs. If a pool licenses a small portion of the total number of SEPs from smaller licensors, the cost savings for licensees may not be substantial.

[171] Sometimes companies object to having their name listed as a licensee on the patent pools website for a variety of reasons, including a fear that it may encourage other SEP holders to approach them too.
[172] See for example: https://www.hevcadvance.com/hevc-advance-announces-revised-licensing-structure/

Further, if licensees are not concerned about enforcement by the licensors, they may prefer to conclude bilateral licences with key licensors only or otherwise engage in "hold-out" behaviour.

- The more licensors there are in a patent pool, the more difficult it is to reach agreement on key issues relating to the operation of the pool. Thus, pool governance rules, in particular with regard to voting procedures, should be designed to allow necessary decisions to be made, particularly when in the best interests of the pool and most licensors, despite objections by certain (possibly smaller) licensors.

- The market for the products licensed by the patent pool should grow more or less in line with the projected growth underlying the business plan of the patent pool. If the market grows much slower and turns out to be much smaller in size than projected, the revenues may marginally exceed or even be less than the cost of the patent pool, especially in the early years of a licensing program, which could result in that the licensors may lose interest in the licensing program and leave the pool to license their SEPs themselves.

- The patent pool should be able to make sufficient resources available to license the number of potential licensees on a global basis. It makes a difference whether a patent pool has to license 50 large companies concentrated in a few major countries around the world or has to license 1 000 mostly smaller companies around the globe. A patent pool needs to deploy sufficient resources in a highly efficient way to successfully execute these type of licence programs.

Setting up a patent pool is generally a lengthy and costly process, especially when there are a large number of licensors. Even once it is established, the success of a patent pool is not guaranteed. Some patent pools may fail for reasons outlined above, among others. However, if set up and administered properly, patent pools can provide significant benefits for the market, such as reduction in transaction cost, more reasonable aggregate royalties, and a better ability to create a level playing field. These benefits can make patent pools an attractive option for standard-based licensing where there are multiple licensors holding SEPs.

Regardless of the success or failure of patent pools for certain standards and markets, it is possible that pools are a viable solution for SEP licensing in the IoT space for many stakeholders, including SEP holders and implementers and indeed might be the only way to licence SEPs in some IoT verticals, as explained in more detail below. Additionally, it is worth noting that several SEP holders that may not have historically participated in patent pools covering the use of certain technologies (e.g. cellular technologies) in particular markets (e.g. phones and other mobile devices), having had their own successful bilateral licensing programs for these market segments, have now

joined a patent pool established for certain new applications of wireless standards in the IoT market.[173]

## 2. Why would patent pools be particularly interesting in the IoT?

With the IoT, patent pools will most likely continue to be a significant element of the SEP licensing landscape. In part due to the continuously increasing number of declared SEPs and the more recent increase in the number of companies submitting SEP declarations (see Part 2), it is likely that many more SEP holders will participate in SEP licensing for IoT products, and more SEPs will be licensed. As a result, many view patent pools to be an attractive solution for licensing in the IoT.

As has been the case with pool licensing historically, a participating licensor's commitment to license its SEPs jointly with others through the pool for specified applications in the IoT market should in no way diminish the right of the licensor to license SEPs independently and on a bilateral basis to any party for any scope, including for the same products as licensed by the pool.

**Implementers**

As described in Part 2, it is expected that some products for various IoT applications will be technologically more complex and will likely use more standards than existing products, such as smartphones and tablets. Certain IoT products may use multiple standardized technologies depending e.g. on requirements for data-transfer between the various layers of the IoT application. Certain other IoT products, such as home appliances and other stationary devices, may incorporate only one connectivity standard and not be as technologically complex. In addition, IoT products may use standards for data security and reliability and application specific standards. Irrespective of the specific use of standards in each type of device, it is likely that companies in the IoT-verticals will be less familiar with these technologies imported from other industry sectors, and therefore less experienced in SEP licensing in general.

Companies operating in these IoT verticals will likely need licences for a substantial number of SEPs from a relatively large number of SEP holders. Sorting out the complex SEP landscape based on existing databases of declared SEPs (which are known to include numerous patents that are not actually essential) to determine the licences they need for their products and to assess what the estimated FRAND royalty for these licences and the resulting estimated aggregate royalty would be, may create significant difficulties for many of these companies, particularly if they lack knowledge and experience with FRAND-based SEP licensing. Furthermore, the transaction cost and resources needed for negotiating all these licences may be overly burdensome for some, especially SMEs. SMEs operating in various IoT verticals will be required to license relevant SEPs in order to have freedom to operate with respect to particular standards –

[173] See: https://www.avanci.com/marketplace/

many if not most of these companies will be generally not familiar with the unique issues relating to IP rights, and even more so with regard to SEP and FRAND licensing.

The substantial burden of having to determine which licences are required from which SEP holders, and having to conclude licences with many SEP holders on a bilateral basis, may create significant economic hurdles and legal uncertainty for these companies. For SMEs that may be resource and cash-strapped, such a hurdle will likely endanger the viability of their businesses. At the very least, this burdensome process may slow down the development of markets for certain IoT verticals.

Patent pools for different products (and services) in various IoT verticals have the potential to reduce the complexity and challenges for companies operating in those verticals with respect to SEP licensing. Some of the potential general benefits of pools for implementers of standards discussed above may be particularly relevant to pools in the IoT:

- Patent pools reduce the complexity of the SEP landscape for IoT products as they require licensors to perform essentiality checks of patents relevant to the products licensed by the pools. This effect is higher the more SEP holders are participating in patent pools.

- Patent pools are likely to set a reasonable aggregate royalty for all the SEPs relevant for the products licensed by the pool. This eliminates the time and efforts of implementers to assess what a FRAND royalty would be for the SEP portfolios of the licensors participating in the pool. The higher the number of licensors and SEPs in a pool, the lower the number of individual SEP holders and SEPs to deal with outside the pool, the less the need for an implementer to determine the aggregate royalty for the total stack of SEPs relevant for its products.

- Under certain circumstances, the aggregate royalty for the SEPs licensed by the pool also makes it easier for implementers to assess what a FRAND royalty could be for the SEP portfolios of the licensors outside the pool, as the pool rate may be used as a comparable licence (or benchmark) for licences to the portfolios of outside SEP holders that are similarly situated to SEP holders that have chosen to join the pool. In addition, to the extent a pool licensor and an implementer decide to negotiate a bilateral licence (for example, in order to obtain a broader set of rights in addition to the particular standard the pool is licensing), the pool royalty will provide some guidance with respect to the value of that licensor's SEPs portfolio for the pool standard, possibly facilitating the bilateral negotiations.

- Patent pools significantly reduce the transaction costs for companies in the IoT field, especially for those companies that are less familiar with the new technologies coming from the ICT field.

**SEP holders**

For holders of SEPs on standards that will be increasingly used in the various IoT verticals, like connectivity standards, licensing of their SEPs is likely to become more complex and may create several challenges. Certain characteristics of the IoT market sets it apart from markets that have historically been involved in SEP licensing, and creates new challenges and hurdles that will need to be overcome. For example:

- In the markets where connectivity standards are currently widely used, both the number of different products (smart phones, tablets, etc.) and the number of implementers, is relatively small. These markets are also characterized by a few companies with a relatively large market share generating a significant part of the total licensing revenues. The effort and cost required associated with licensing all the players in these markets are generally relatively low compared to the licence revenues that can be generated.

- In the field of IoT, each IoT-vertical has its own type of products. For example, the products used in the healthcare sector will be completely different from the products used in the energy sector. The value contributed by SEPs to these products may be different for the different type of products. This may result in a SEP holder having to offer different licensing terms for different types of products in the various IoT-verticals.

- Industries active in the various IoT verticals will have little overlap. This means that the number of companies requiring licences across these IoT verticals will be substantial and more diverse. The number of licensing negotiations a SEP holder has to conduct with all these companies will be a multiple of the number of negotiations to license companies in the traditional product sectors.

- Many SEP holders licensing in the more mature product areas, like telecoms, are commercializing standard-compliant products themselves. Implementers they approach may have SEPs or non-SEPs, for which they need or may be interested to take licences for their own products. This enables implementers to offset all or part of their liabilities, to enter into cross-licences or even become a net-collector of royalties themselves. However, many companies in the different IoT-verticals will likely not be in a similar position, unless they acquire SEPs, to mitigate part or all of their SEP exposure. Many SEP holders will likely not be active in commercializing products for the different IoT-verticals themselves, which reduces the opportunities for negotiating cross-licences or other commercial licensing deals with licensees.

The ICT industry has been engaging in SEP licensing for close to 40 years. Companies active in these sectors are more familiar with SEP licensing practices even though disputes continue to arise. There is little such experience in the IoT industry. In general, IoT-verticals have developed their own ways for dealing with patent licensing issues, much of which may not apply to SEP licensing. For example, in the automotive

industry, it is customary for end product manufacturers to demand patent-indemnity from their suppliers, and expect the suppliers to obtain necessary patent rights. Thus, SEP holders that have typically licensed end product makers will likely not be able to follow the same practice, and will have to deal with others in the supply chain. Part 3.2 on licensing in the value chain contains a more detailed discussion regarding the existing debate about where to license SEPs in the value chain. This issue is the central issue in a number of current disputes, including an antitrust complaint before the Commission and a number of litigations between SEP holders on the one hand, and automotive companies and their suppliers, on the other.

Clearly, many new challenges will exist for SEP holders licensing into the IoT-verticals, in part because of the larger number of licences that they will have to negotiate across the various IoT-verticals and for a wide spectrum of different products. In addition, the pool of licensees will be larger than was the case for traditional SEP licensing – for example, in the ICT industry – and those licensees will likely not be very knowledgeable about or experienced in SEP licensing issues. As noted above, many of these newer industries have historically handled licensing matters in a different way than SEP holders are used to. This large number of potential new licensees with little knowledge of the SEPs licensing market requires SEP holders to set-up and execute their licensing programs in a much more efficient and cost-effective manner, which is why they are likely to consider patent pools as a viable option. Properly set-up and run patent pools with a critical mass of SEPs for the various products for the different IoT verticals, offer SEP holders an attractive mechanism to streamline licensing, and provide significant benefits for licensees that would otherwise have to negotiate a large number of bilateral licences. The following general benefits of pools for licensors, discussed above, may be particularly relevant in the IoT:

- SEP holders do not have to expand their own licensing activities/resources to be able to negotiate licences with the large number of companies across the different IoT verticals on a global scale. A patent pool can handle the licensing in a more efficient and cost-effective manner than bilateral licensing by the SEP holders.

- Patent pools can license companies in the different IoT-verticals more expeditiously than SEP holders would be able to do bilaterally, in part due to their ability to offer a licence to a critical mass of SEPs for reasonable royalties and provide transparency with respect to the number and essentiality of SEPs being licensed.

- Concluding licences in a more efficient manner for products in different IoT-verticals will help the industry develop new products faster and as result, SEP holders can generate greater SEP licensing revenues as those markets grow.

# 3. Proposals for improving patent pools and pool licensing practices

This section will describe a number of proposals to improve the existing pool and pool licensing practices. It is noted that a number of structural reform proposals described in Part 3.1 on transparency of SEPs are equally applicable to patent pools.

## 3.1 SDOs to stimulate the formation of patent pools during the standardization process

**Proposal 72**

The standardization process and the patent pool formation process are usually serial processes. A patent pool process may be started after the standard has been finalized and adopted. The pool formation process is a difficult and lengthy process that can easily take 2 years or more, without guarantee that it would have a successful outcome and that indeed a patent pool will be established. This means that pool licences will not be available for a long time after the market for the new standard has started to develop. This uncertainty for implementers may hamper the development of new products and services based on such standard. If implementers already start to commercialize standard-compliant products, it also gives rise to issues with respect to the payment of royalties for products that were sold prior to the formation of a patent pool, the so-called past use royalties. Unwary of a fair estimate of a reasonable aggregate royalty for their products, implementers may sell these products without making provision for the royalties they may have to pay to SEP holders. Demands for past-use payments may create frictions and delays in licensing negotiations. It, therefore, may be advantageous if the formation of patent pools could already be initiated during the final phase of the standardization process.

***It, therefore, is recommended that the SDOs start fostering the formation of patent pools while standards are still under development. For clarity sake the SDOs should not participate in any patent pool formation discussions themselves. The actual patent pool formation discussions, if any, should take place fully outside of the SDOs and not under the responsibility of the SDOs.***

Fostering is the activity of encouraging members participating in the development of a standard and having declared SEPs to consider the possibility of forming a patent pool for that standard. Any activity going beyond pure fostering should not be handled by the SDO, but should be undertaken by a third party outside the SDO. If there would be a group of potential SEP holders that would be interested to further explore such possibility of forming a patent pool, they could involve, for example, a patent pool administrator or an experienced patent pool facilitator to facilitate the discussions about patent pool formation.

It is noted that the IEEE SDO explored the stimulation patent pool activities in 2008, but these activities went beyond pure fostering and included facilitation of the formation of patent pools. These activities were short-lived and were abandoned.

An organization that does foster patent pools is DVB, an industry-led consortium of world leading media and technology companies with a large membership, including all the major SEP holders for connectivity standards. DVB develops specifications for digital television systems, which are turned into standards by international standards bodies, usually ETSI[174]. Once specifications have become standards, they are promoted for international adoption and utilization. It is noted that after a DVB specification is adopted by a recognized standards body, like ETSI, the IPR Policy of that body applies to the standard.

The DVB has a FRAND IPR policy that deviates from the IPR policies of most other standards bodies, in that next to the usual FRAND licence undertaking by SEP holders, DVB members also agree to mandatory arbitration for a dispute with another DVB member on the terms and conditions of a licence, unless within 2 years after adoption of a specification a patent pool is formed covering at least 70 percent of all SEP holders have agreed to join a voluntary established patent pool. Driven by this FRAND IPR policy the DVB organization fosters and in certain cases also facilitates the creation of patent pools, but it does not administer the patent pool itself. This is handed over to a pool administrator.[175] As mentioned on DVB's website the aim of this fostering is " to deliver greater certainty to implementers on SEP licensing terms and enable earlier market launch of the standardized technologies" by encouraging SEP holders to form patent pools promptly after a standard has been adopted.

It is noted that over a period of many years DVB has explored different type of fostering and facilitation approaches for different types of specifications, including a streamlined low cost way of setting up patent pools for specifications, for which licensing programs would be too small to be of interest to commercial patent pool administrators. Some of these approaches were abandoned, because they were not efficient or overlapping with the work pool administrators would do anyhow in the pool facilitation process.

The DVB is referenced here for only the fostering aspects and not for any other patent pool facilitating activities that they undertake or have undertaken. The important element is that DVB organization has recognized that pool formation may take quite some time and if started after adoption of a specification (or standard), the pool may not be in time to offer licences to implementers in support of their commercial activities.

As an example, the DVB fostering of pool licensing may include activities, like creating a mechanism for early confirmation by a technology contributor of its willingness to participate in a pooling effort, facilitating information meetings of SEP holders and other interested parties while the specification is under development, and providing DVB technical expertise in helping to define the scope of a possible pooling effort.

[174] ETSI and CENELEC are members of the DVB and make DVB standards available to the public.
[175] Eltzroth, Carter, 'Fostering by Standards Bodies of the Formation of Patent Pools', 5 December 2018, Available at http://dx.doi.org/10.2139/ssrn.3296514

SDOs can build upon the experience in fostering of patent pools of the DVB organization to determine the scope and form of fostering activities that would be appropriate within the context of the standard development process of the SDO.

If based on these fostering activities, a group of SEP holders would express to be interested to further explore the formation of a patent pool, then the pool formation process can already be started before finalization of the relevant standard. Again, the process should take place not under auspices of the SDO, but should be done fully outside the SDO. If successful, a patent pool may be established and start to make licences available to implementers relatively shortly after the adoption of the standard. This provides clarity for implementers about the aggregate royalty for the SEPs of the licensors participating in the pool much earlier than when the formation of a patent pool would start after adoption of a standard. This clarity regarding pool conditions may accelerate the implementation of the standard and the development of the related product markets. This is beneficial for both licensors and licensees. It will also reduce the problems that payments of past-use royalties may create for implementers as these amounts will likely be much lower than otherwise would be the case. All this will accelerate licensing negotiations and the conclusion of licence agreements by the patent pool, so that licensors participating in the pool will start to collect licence revenues through the patent pool earlier.

It is suggested that as part of their fostering activities SDOs could modify their SEP declaration forms by asking whether the SEP holder would be willing to participate in discussions for the formation of a patent pool, if its declared patents would indeed be SEPs. The implications of expressing such willingness would have to be further investigated.

Some members argue that SDOs should not engage in fostering patent pools, as this would not be the task of SDOs. Many SDOs have deliberately decided not to take an active role with respect to the licensing of SEPs, except as to seek commitments from owners of potential SEPs to make licences available to standard implementers on FRAND terms. Some maintain that this separation of roles has allowed SDOs to focus on the development of technical standards, and to avoid being drawn into commercial disputes between members.

Since there is no indication that the non-availability of pool licences has negative effects on the (global) adoption of standards and the implementation of standardized technology, one member feels that there seems to be little need to invest membership-provided resources into activities that may benefit only a small group of SDO members.

Other members consider that this is a too limited view of what the mission of SDOs is. They set standards that meet market needs and promote the widespread use of these standards. For example, ETSI’s mission states that it produces standards that are used

globally.[176] SDOs, like ETSI, undertake marketing activities around the world to promote the use of its standards. As SEPs and SEP licensing play an important role in the use of standards, SDOs have also an interest in having SEPs and SEP licensing handled in a way that it promotes instead of harming or delaying the widespread use of their standards. Accordingly, an SDO may therefore also decide – through its governance bodies – to foster the formation of patent pools, if it considers that this activity would promote the adoption of its standards. Ensuring that SDOs don't participate in any patent pool formation discussions themselves may help avoid potential conflicts between the interest of the SEP holders in getting a fair and reasonable compensation for their SEPs and those of the SDOs in driving these rewards down to a less than fair and reasonable level in order to promote the widespread use of their standards.

Some members note that some SDOs' standards have been subject to a large number of patent pools attracting large shares of the relevant SEP holders, even though the SDO has never taken an active role in promoting or facilitating pools (e.g. ISO/IEC JTC1 – MPEG). In some cases, industry associations and special interest groups with a particular focus on the standards, but no institutional relationship with the SDO (such as the now discontinued MPEG Industry Forum) included facilitating pool formation in their mission statements. Some members recommend to explore whether consortia or special interest groups may provide a better forum than SDOs for some of the proposed activities in support of pool formation. This may be particularly relevant for formal standards bodies such as the European Standards Organizations ETSI, CEN, and CENELEC. While informal SDOs and consortia such as DVB more regularly take an active role with respect to SEP licensing, formal standards bodies tend to have more general patent policies that limit the SDO's role.[177]

SDOs can be encouraged to start fostering the formation of patent pools during the standard setting process on a voluntary basis. In its November 2017 Communication the Commission already mentioned that the creation of patent pools or other licensing platforms, within the scope of the EU competition law, should be encouraged, for example by facilitating access to pool management offers and technical assistance by SDO's.

Some members have argued that making this an obligation for European SDOs may impose a significant burden on these SDOs, which may jeopardize the leading position of Europe in setting global standards.

[176] See: https://www.etsi.org/about

[177] Baron, J., Contreras, J. L., Husovec, M., Larouche, P., & Thumm, N., '*Making the Rules: The Governance of Standard Development Organizations and their Policies on Intellectual Property Rights*', JRC Science for Policy Report, Publications Office of the European Union, ISSN: 1831-9424 (online). An example of a consortium that is directly involved in the collective licensing of SEPs related to its standards is the HDMI Forum.

Moreover, as many SDO members who are both SEP holders and important standard implementers might be strictly opposed to the formation of any patent pool covering their standard-compliant products, any obligation for SDOs would force the SDOs to act against the best interest of part of its paying membership. The structure of other SDOs (as e.g. CEN and CENELEC whose members are national standardisation bodies) might render any mandatory requirement useless.

As explained above, the recommended fostering activities would take place separately and independently from the standardization activities, significantly attenuating concerns that fostering of patent pools could interfere with the standard setting process and negatively impact the position and role of European SDOs. Furthermore, these negative effects did not materialize in the case of DVB after that body started its fostering activities. DVB is still a leading EU based body for developing digital television system standard specifications.

**Proposal 73**

***One possible way European SDOs could be directed to undertake fostering activities for the formation of patent pools prior to the adoption of a standard through a guideline, communication, or another appropriate instrument. The most suitable instrument to do that, would need to be further investigated.***

### 3.2 On demand collective licensing agencies

**Proposal 74**

Another proposal made to incentivize the formation of patent pools quickly after the adoption of a standard is the proposal below.

***Provided that at least two companies have SEPs for a standard an agency will be established by public law (in the EU) after the adoption of the standard. The agency will have the authority to grant licences under all SEPs for that standard on behalf of the SEP holders until a patent pool is established. During the existence of the agency SEP holders remain entitled to grant licences on a bilateral and voluntary basis.***

In addition to the problems of licensing in the absence of a pool described above, this proposal also deals with some "hold-out" strategies used by implementers under the *Huawei* v. *ZTE* framework. Implementers may enter into litigation in order to be able to ask the court for determining the FRAND conditions, i.e. obtaining an assessment of the FRAND royalty by a court. In the worst case scenario, implementers will have either to abandon the use of the technology or take a licence only from the SEP holder with whom they are in litigation as determined by the court. Because of the practical difficulties involved, currently, they do not need to prove their willingness to pay royalties to the other SEP holders of the used standard.

The legal rules that need to be put in place may provide for a certain period during which SEP holders could form a pool or licensing platform voluntarily. At the expiry of

that period a public body (agency) will be created to act like a patent pool on behalf of all SEP holders. The agency would have the right to grant licences to all SEPs granted by all patent offices in the EU (EU-SEPs). In this sense, the agency will act as a legal representative on behalf of all SEP holders for a particular standard.

The agency will only act upon request of an implementer. The implementer may either submit such a request voluntarily and independently, or submit such a request to avoid an injunctive relief in a litigation. Currently, when faced with an injunctive relief, an implementer can ask the court to determine the terms and conditions of the licence with the SEP holder requesting the injunction. Under the proposal, an implementer would not be able to make such a request to the court. Instead, the implementer will have the right to submit a request to the agency to take a licence for all EU-SEPs. In that case, the court would make the agency or pool party to the litigation. Since the licence would concern all EU-SEPs, the royalty would be an aggregate royalty for all those SEPs. The issue of who and how this rate could be determined, will have to be reviewed in light of the proposal 42 on the aggregate royalty. [178]

The agency may distribute any royalties collected among SEP holders at regular times, also immediately after a patent pool has been established and to a plaintiff SEP holder after it won its lawsuit.

If a certain number of SEP holders support the formation of a patent pool for the standard for which the agency has been created, the role of the agency may be taken over by such a patent pool. The necessary number of supporting SEP holders could be determined based on a certain majority or qualified majority of the EU-SEPs for that standard.

An example of such an "agency" could be found in Article 9 of Council Directive 1993/83/EEC[179] (for satellite broadcasting and cable retransmission). In addition, many European (especially northern) countries have chosen to set up mandatory or extended collective licensing and management for claiming compensation for copyright uses. Such new legal rules would apply to all standards regardless of where in the world the SDO is based, as far as the effects of the SEPs in the EU are concerned.

Before putting this solution into law, it should be tested during a pilot phase. For example, during the pilot phase SDOs may invite their participants at the beginning of the standardization process to decide by qualified majority to create a similar agency once the standard is adopted. The agency could be governed e.g. by the EUIPO. The relevant SDO should nominate the members of the agency.

[178] See Part 3.3 on FRAND terms and conditions, section 4.3.2

[179] OJ L 248 6.10.1993, p. 15 as amended by OJ L 130, 17.5.2019, p. 82–91, Council Directive 93/83/EEC of 27 September 1993 on the coordination of certain rules concerning copyright and rights related to copyright applicable to satellite broadcasting and cable retransmission, Article 9. 'Member States shall ensure that the right of copyright owners and holders or related rights to grant or refuse authorization to a cable operator for a cable retransmission may be exercised only through a collecting society.

The establishment of an agency, will create a dis-incentive for implementers to start litigation as part of a "hold-out" tactic, because in case it loses its case and has to take a licence to avoid an injunction, the implementer would have to take a licence to *all* EU-SEPs and not only under the SEPs of the licensor against whom it is litigating. The royalty the implementer then has to pay is considerably higher than what it would have to pay to the single SEP holder. Therefore, the proposal may result in that SEP holders will start to receive licensing revenues faster, because any "hold-out" tactics will not pay off.

The agency would benefit implementers because they can get SEP licences for all EU-SEPs for a standard via a true one-stop-shop (a single licence agreement, single monitoring and single royalty) and a reasonable aggregate royalty. This will significantly reduce the transaction cost for implementers, which is particularly relevant for SMEs. It also offers the benefit that it will substantially reduce the risk of discrimination.

Certain members have raised concerns with respect to this proposal, including that (i) regulatory intervention to create mandatory agencies for patents is a too strong measure for creating an incentive for SEP holders to form a patent pool; (ii) SEP holders would feel deprived of their rights to their patents; (iii) mandatory patent agencies would create strong disincentives for companies to participate in standard setting; (iv) mandatory patent agencies would result in that SEP holders only licensing their SEPs defensively, would collect licence fees through the agency contrary to their policy not to seek licence fees from other users of a standard; (v) patents are different from copyrights and collecting agencies for copyrights have many problems in various European countries especially if there is no system of independent arbitration boards to help determining a fair licence rate; (vi) the voluntary nature of the existing pools offers significant safeguards against abuse, as pools need to offer an attractive proposition to each member and licensee, who always have the option not to participate. Pools that take over the tasks of a mandatory agency would not have this participation constraint. This would leave a certain risk that pool members who hold a majority of SEPs could take decisions (e.g. on royalty, redistribution, pricing, etc.) to the detriment of individual members, although they would have the possibility of reviewing such decisions in court and, in particular, by calling on independent committees of experts (see Part 3.4 on negotiations and handling disputes) to ensure a fair distribution.

### 3.3 Collective Licensing Negotiation Groups (LNGs)

**Proposal 75** 

SEP licensors and patent pools need to still negotiate and conclude licences with a large number of implementers for the various products in the different IoT verticals.

If groups of implementers could collectively negotiate with individual or groups of SEP holders and patent pools, it may further lower the transaction cost.

***It is, therefore, proposed to develop an appropriate mechanism and controls to allow licensee negotiation groups (industry associations representing member implementers or groups of individual implementers) to jointly negotiate licences with individual SEP holders and SEP patent pools without the risk of getting in conflict with antitrust regulation.*** [180]

Clearly, the set-up and activities of licensing negotiation groups (LNGs) needs to be scrutinized by competition authorities. The mechanisms have to ensure that

- engagement of LNGs does not lead to offering additional "hold-out" options to participating implementers; and
- there is a certain/high degree of commitment that agreements reached between the LNG and the patent pool or individual SEP holder are accepted and implemented by the members of the LNG.

Like individual implementers, LNGs have to conduct their licensing negotiations in line with the *Huawei* v. *ZTE* framework to reduce the risk of "hold-out" and of being considered an unwilling licensee (group).

In case of negotiations with one or more individual licensors, the members of an LNG have to agree on a number of key licensing issues prior to the start of the negotiations. These issues may include (i) the licensed product, (ii) the level in a value chain, where companies will take licences, or (iii) an upper bound for the licence consideration acceptable to the LNG members. Absent an agreement on these issues, the risk would be too high that after the LNG has reached an agreement with the licensor(s), the LNG members will not adhere to this agreement and delay or refuse to sign licence agreements with the SEP holder(s) due to internal differences as to these key issues.

Absent such an LNG-internal agreement, an LNG would only be acceptable as a negotiation partner for SEP holders, if the members of the LNG are all operating in the same level of the value chain and accept that they cannot push the responsibility to take licences up or down in their value chains.

These issues may be less relevant if LNGs negotiate licences with patent pools. Patent pools may currently be authorized to grant standard licence agreements only for specific products that will be made and sold by companies operating at a certain level in the value chain. This would, however, only imply that the pools will not participate in the benefits of negotiating with larger industry groups and may fail to attract additional licensees.

The members of the LNG have to authorize the LNG to negotiate a SEP licence in accordance with pre-agreed conditions with the SEP holder on behalf of their members. In addition, the members need to commit in a certain/high degree to accepting the

[180] It is noted that a similar suggestion has been made in the In-depth analysis conducted by McDonagh, Luke and Bonadio, Enrico at the request of the European Parliament's Committee on Legal Affairs entitled "*Standard Essential Patents and the Internet of Things*", PE 608.854, January 2019, p. 30.

negotiated outcome of the negotiations between the LNG and the SEP holder and sign licence agreements with the SEP holder without delay or to enter into subsequent bilateral negotiations without delay in case they do not accept the outcome of the deal negotiated by the LNG. Failure to so should immediately make the non-accepting member company an "unwilling licensee".

As long as the LNG operates in line with the *Huawei* v. *ZTE* framework, the patent pool or the individual licensors agree to negotiate licences solely with the LNG and not approach LNG member companies for licences and also agree to not initiate legal action against the LNG members. If the LNG and the licensor(s) cannot find an agreement within a pre-agreed timeframe within the limits of the *Huawei* v. *ZTE* framework, the SEP holder(s) may immediately approach the members of the LNG individually.

In case a SEP holder and an LNG member are already in litigation prior to the start of the licensing negotiations, either such member should be excluded from the LNG or the litigation should be put on hold (with the consent of the SEP holder), to the extent possible, for a certain period, where the member in litigation should commit to accept the outcome of the negotiations between LNG and the SEP holder and terminate the litigation immediately after an agreement is reached.

LNGs could be particularly efficient and beneficial for the phase in the negotiations, where technical aspects, like essentiality and validity of the SEPs offered for licence are being discussed as the LNGs could pool the technical and legal expertise of their members.

By having the opportunity to pool legal, licensing and technical experts from the members of the LNG, the SEP holder or patent pool are negotiating on a more equal footing, especially when individual members are smaller companies lacking the expertise and experience in SEP licensing.

The LNGs would have the advantage that they reduce the number of licensing negotiations for both SEP holders and individual implementers. SEP holders may license a large number of implementers or even entire IoT verticals with one or a few negotiations only. It would significantly reduce transaction cost for both licensors and implementers.

Absent more details about the mechanisms and controls that need to be put in place, the definition of which is part of the proposal, some members have raised anti-trust concerns regarding this idea of introducing LNGs, mainly based on the arguments that (i) there is the risk that the LNG becomes a buyers cartel; and (ii) the risk of collective "hold-out" based on the combined market power of licensees.

Some members have also raised questions and expressed concerns about the voluntary or mandatory nature of these LNGs.

- Does a SEP holder have the right to prefer to negotiate with individual implementers instead of with an LNG, similar to the right an implementer has to negotiate with individual licensors instead of with a patent pool?

- Does an LNG member have to commit to accept the outcome of the LNG negotiated deal or is it free to still negotiate its own deal afterwards?

The proponent of the proposal considers that these concerns have been addressed in the proposal as (i) LNGs cannot force but must incentivize SEP holders to enter into negotiations and (ii) a LNG cannot force any member to accept a negotiated agreement absent an explicit commitment by the respective member.

### 3.4 Promoting pools of pools

**Proposal 76**

There are currently many patent pools for standards. Most of them are administered by a company called "licensing administrator". It is rare that all relevant SEP holders join the patent pool, because one or more SEP holders may prefer to license their SEPs themselves bilaterally or some licensors may prefer to establish a separate patent pool for the same standard. Implementers thus have to conclude several licences for a single standard. Nevertheless, the licensing through pools will still reduce the transaction cost for these implementers compared with the cost of negotiating bilateral licences with all SEP holders.

Three types of patent pools can be distinguished:

i. A patent pool for a single standard, where the pool licences the SEPs included in the pool for all types of products using this standard. Examples of such patent pools are the MPEG-2/4, AVC, DVD patent pools.

ii. A patent pool for a single standard or for a number of standards related to successive generations of technologies (mostly driven by backward compatibility requirements), where the pool licenses the SEPs included in the pool for a specific category (or categories) of products using the standard(s). An example of such a patent pool is Avanci, which licences SEPs for 2G, 2G+3G, and 2G+3G+4G standards as single packages for use in vehicles.[181]

iii. A patent pool for one or more products, where the pool licences the SEPs for as many standards or clusters of standards used in these products in a single licence for these products. An example of this type of patent pool is One-Blue, which licences SEPs for a large set of different standards combined in a single licence for Blu-ray players or recorders.[182]

[181] See: https://www.avanci.com/marketplace/
[182] See: https://www.one-blue.com/ license-programs/bd-player-recorder/

The main difference between these types of patent pools is that the first two types of patent pools look through a standard lens to the product market, whereas the third type of patent pool looks through a product lens to the standards.

As noted in Part 2 products for the various IoT-verticals will likely use multiple standards and the resulting SEP licensing situation for these products will be more complex. Implementers of these products have to consider the SEP licensing situation for multiple standards, where for each standard the relevant SEPs may be licensed by one or more patent pools and/or various companies. In that case an implementer has to negotiate a large number of pool licences and bilateral licences, which may cause the transaction cost to be very high and the whole licensing process not very efficient[183]. Also, implementers may perceive the aggregate royalty for all these pool and individual licences as unreasonably high.

A way to reduce the licensing transaction cost for implementers of products using a large number of standards and to realize a reasonable aggregate royalty for all the licences required for these products, is to establish patent pools for an as large set of standards used in these products as possible or alternatively for clusters of standards for related technologies used in these products. This creates the same benefits of a patent pool for a single standard (or couple of next generation standards), but now at a higher level for multiple standards. Stated differently, instead of bringing SEPs for one standard together in a single standard pool, one brings several standard pools together in a single product pool or pool of pools.

Setting up such a type of product pools may be complex, but it can be done as demonstrated by the One-Blue patent pool. Companies need to agree on many different aspects, like the aggregate royalty for the whole package and how the royalties collected by the patent pool are distributed among the SEP holders. This could be done for example based on the relative weight of each standard in combination with (weighted) patent count per standard. For more information about the One-Blue patent pool see documents referred to in the footnotes.[184,185]

Given the complex licensing situation for IoT products using multiple standards the product pool seems an attractive concept to reduce transaction cost and enhance the likelihood that total aggregate royalty for all standards used in a product remains reasonable.

As noted in Part 2 many IoT products in the different IoT verticals will likely use multiple connectivity standards (like the various short range, medium range and high range standards as listed). It would reduce the complexity and the transaction cost

[183] McCurdy, Daniel P., 'SEP licensing lessons from the recent past', *Intellectual Asset Management*, Autumn 2019, pp. 9.
[184] den Uijl, Simon, Bekkers, Rudi, de Vries, Henk J., 'Managing Intellectual Property Using Patent Pools', *California Management Review*, vol. 55, no. 4, summer 2013; pp. 31-50.
[185] Peters, Ruud, 'One-Blue: a blueprint for patent pools in high tech', *Intellectual Asset Management*, September/October 2011, pp. 38-41.

significantly, if for the cluster of these connectivity standards a single product pool could be formed as outline above. Once a pool for products using all these standards is formed, it is relatively easy to form pools for products using a more limited set of these standards.

The set of standards used in product/technology pool can include standards created by different SDOs and subject to different IPR policies. If the set, for example, includes one ETSI standard, for which a FRAND royalty for a licence for making and selling equipment applies and an IEEE standard, for which a reasonable rate based on the smallest saleable patent practicing unit (SSPPU) applies, these standards can be included by giving them a different weight in the royalty distribution method to be set up for that pool. Both the IPR policies have no limitations with respect to the level in the value chain where SEP holders may grant licences. A product/technology pool, therefore, can license the products or components at the level, which is agreed by the participating licensors. Participating SEP holders still have to make licences available under their own SEPs on a bilateral basis.

***In view of the above, it is proposed that for IoT products using a large number of standards, SEP holders for these standards or alternatively SEP holders for clusters of standards related to similar technology/functionality fields, are encouraged to establish patent pools for an as large number of standards used in these product as possible.***

The above proposal can be realized voluntarily by SEP holders taking initiatives for that, whether or not stimulated by industries in the various IoT verticals. Also, policy makers could stimulate the implementation of the above proposal through an appropriate instrument to do that. This would need to be further investigated.

While it may be a complex process to create such pools, it can be done as demonstrated by the One-Blue patent pool and once realized, it may offer substantial benefits for both licensors and licensees.

One member thinks that it may be more difficult to use this concept for standards that are created by different SDOs and are subject to different IPR Policies, like one standard, for which the IEEE IPR policy applies and another standard, for which the ETSI IPR policy holds. Different policies' requirements regarding the licensing terms on which a SEP holder commits to make licences available may be reflected in the weight/share given to the various standards. Different obligations regarding e.g. the level of licensing may not be reconciled within a single pool. SEP holders may, however, have the ability to limit the scope of the pool to certain uses, e.g. offer licences only for certain end products, so that each licensor may have to offer bilateral licences for other uses or on other licensing levels in accordance with its obligations under the policy of each relevant SDO. A few members have commented that it would be complex and take a long time to form this type of patent pools as it will involve many SEP holders and require complex governance mechanism.

One member has raised concerns that there is no evidence that the offering made by such a pool of pools might actually be attractive to implementers, in particular to those who also own SEP portfolios for a subset of the standardized technologies offered by a pool of pools and have a strong incentive to take bilateral licence for that subset of standardized technologies. Based on the individual interest to take or not to take licences for specific technologies, any combination offers would not be acceptable to these implementers. In such situations the potential benefits of such a proposed pool of pools would not materialize and the combined transaction and administration cost for acquiring all necessary SEP licences would likely be higher than in the "single pool" setup.

### 3.5 The use of AI/ML algorithms to support cost-efficient validity checks

**Proposal 77**

As noted in the introduction above, patent pools have been criticized for possibly shielding invalid patents from being challenged and removed from the pool. In this respect, the 1997 Business Review Letter for MPEGLA patent pool mentioned that the patent pool should only include technically essential patents and should exclude invalid and unenforceable patents. In later Business Review Letters for other patent pools, the first requirement was loosened, allowing the inclusion of commercially essential patents in the pool, and removed the validity requirement.

In general, when a patent pool includes many SEPs, licensors (and also licensees), there may exist little incentive to eliminate patents believed to be invalid from the pool as this will likely have no impact on the pool royalty or share of SEPs. Nevertheless, arguments that patent pools include many invalid patents continue to be made. In court cases involving SEPs and also IPRs instituted for SEPs (by third parties, such as Unified Patents[186]), SEPs are frequently invalidated.

It is argued by some members that patent pools should not do any validity checks as they may rely on the presumption of validity of patents granted by patent offices and that in case there is doubt about the validity licensees can use IPRs (Inter Partes Review in the US) and courts to invalidate these patents.[187] However, many implementers cannot afford the very high cost associated with these legal actions.

In view of the relatively high percentage of patents that are invalidated when challenged, it is still considered meaningful to introduce a mechanism to increase the probability that SEPs included in a pool are valid and have a higher chance to stand the validity test when challenged in IPRs and courts. This would enhance the credibility of a patent pool and support smooth and faster negotiations with implementers.

[186] See: https://www.unifiedpatents.com/sep
[187] See: https://www.iam-media.com/law-policy/patent-pools-and-validity

***It is, therefore, recommended that patent pools arrange AI/ML search tools that SEP holders can use to have novelty/invalidity searches done for their declared SEPs prior to having them submitted to an independent evaluator for essentiality checking.***

These searches can be done at low cost and in a short period of time. The outcome of these searches is only made available to the SEP holder, who can then determine whether it still wants to spend the cost for checking the essentiality of all of its alleged SEPs given the results of the search.

### 3.6 The use of AI/ML algorithms to support cost-efficient essentiality checks

**Proposal 78** ★ ★ ★ ★ ☆

Under antitrust regulations patent pools should ensure that a patent pool only includes SEPs and does not include any non-SEPs. Therefore most, if not all, patent pools require patents to be checked by independent evaluators before including them into the patent pool.[188] Patent evaluators are usually attorneys in independent patent law firms.[189] These patent evaluators have to stay strictly independent from the patent pool and avoid conflicts of interest to maintain neutrality with respect to the licensors in the pool, for which they do the essentiality checks. Typically, several firms providing such evaluation services are available in each jurisdiction where essentiality checks are done, so as to address possible conflicts of interest. Irrespective of the number of patents evaluated into the pool, the licensors undertake to grant licences under their entire portfolio of SEPs for the relevant standard, including SEPs that have not been identified by the licensor (or licensee) and have not been evaluated by the pool (yet).

The process for checking essentiality should be clear, transparent, and cost-effective. In any case essentiality checks are costly, especially for smaller companies. Using more firms to do these essentiality checks would increase competition, which may have a positive impact on prices charged for these services.

Patent pools have different approaches as to the number of countries for which they do essentiality checks. In view of the high cost, most patent pools have checks done for one member of a patent family only and assume that all other members of the same family are essential too. However, the examination process by the different patent offices may result in different patent claims in the various countries. At least one patent pool has done checks for family members in a number of major market countries and has developed a self-certification process for family members in all other countries, so as to increase the certainty that the pool includes essential patents only.[190]

[188] It has been suggested to do essentiality checks for a random selection of the declared/alleged SEPs of a licensor as an indicator for the percentage of SEPs in the total portfolio of SEPs of that licensor. However, in a patent pool context this may create conflicts with competition law requirements in that a patent pool may not include non-essential patents.

[189] It is proposed to use patent offices, like the EPO, to do these checks as is described in Part 3.1 on transparency.

[190] See: https://www.one-blue.com/patent-evaluation/

In the last couple of years algorithms using artificial intelligence/machine learning (AI/ML) have developed rapidly. These AI/ML algorithms have been developed for many applications, including for use in the patent field. These tools make use of very large commercially and proprietary patent datasets (over 100 million patents). Most of these proprietary tools are used for novelty and validity searches and results are said to be better than with traditional key words or semantic searches. Some of these tools make use of patent citation network analysis, while some others make use of free form text searches. In general, these tools provide lists of patents ranked by similarity or overlap with the patent, for which the search is done. It is important to understand that still human processing has to be done for the results obtained by these tools. It can be expected that the quality of these tools will even become better over time.

Search tools using AI/ML can potentially also be used in the process of checking essentiality.[191] Already today semantic search tools are available that can check large sets of patents against the whole standard specification or parts of this specification in a very short time. The results show patents ranked in the order of overlap with the specification or the selected part of this specification. This output can be further processed manually. The output of these manual evaluations in the traditional manner maybe used as training dataset for the machine learning capabilities of these tools to further improve the outcome of these search tools. To ensure the quality of an AI/ML tool for doing essentiality checks, it is important that sufficient training data is available to calibrate the tool for the specific standard, for which the essentiality checks are done.

***Since these AI/ML search tools have the potential to substantially reduce the cost of essentiality checks, it is recommended to investigate in more detail whether these AI/ML tools can be used for checking the essentiality for patents to be included in patent pools[192].***

For clarity sake it is mentioned that for the time being these tools are meant to support the evaluation process and not to replace the manual process that is conducted today for essentiality checks. It is expected that these tools will not make decisions on essentiality completely independent, but that human processing/checking of the results of the tool has to be done. For licensors to be comfortable in using these tools for checking essentiality, it is important that the way the tool operates is transparent, the quality of

[191] It has been suggested to use AI/ML tools for doing a first check on essentiality for the patents in the ETSI-database in order to separate the wheat from the chaff and get a better view on which patents in that database are (true) SEPs. This should help (potential) implementers of standards in determining with which companies they likely have to conclude licenses. This should be distinguished from using essentiality checks for patents to be included in patent pools. Competition authorities mandate that these checks are done for all patent families to be included in a pool in order to ensure that the patent pool does not include any non-essential patents. This means that checks for pools have to be done in a stricter way than (possibly) as a first check for the ETSI-database. Moreover, patents going into pools come not only out of the ETSI-database, but also from other sources and thus will not be subject to the same checks, if any, as patents from the ETSI database.

[192] AI/ML search tools can also be used by individual companies, especially smaller companies, to support the identification of potentially essential patents in their patent portfolios. These tools can quickly run the whole portfolios of these companies against a standard specification and/or parts thereof.

the tool is trusted, and that there is a clear process as to how licensors can appeal negative decisions about essentiality of their patents resulting from the use of the tool.

### 3.7 Right to litigate by a pool administrator

**Proposal 79**

Patent pools are expected to undertake sufficient efforts to license as many companies making and selling products licensed by the pool as possible and once licensed to seek to it that they comply with their obligations under their licence agreements. All this to ensure a level playing field among market participants and to avoid possible distortions among competitors.

This also entails that patent pools, if needed, act against unlicensed companies and against licensees that are not operating in compliance with their licence agreements. Usually it is not the pool administrator, but one or more licensors who are each a party to the litigation against an unlicensed company. Many patent pools have introduced incentives for licensors to participate as a party in such litigations. Despite these incentives, it frequently happens that some licensors are hesitant to participate in these litigations as individual company for various reasons, but would feel more comfortable making their patents available for litigations if the pool administrator would be able to litigate on their behalf. In some countries the pool administrator, if given the right by the licensors to litigate on their behalf, is considered not to have standing and also is not in a position to claim damages or ask for an injunction. These countries only allow the SEP holder to make these claims. This complicates litigation when several licensors in the pool want to take joint action against an unlicensed implementer. The pool administrator can fulfil this task in the best and simplest manner, if it would be in a position to conduct the legal dispute against the unwilling or non-compliant licensee itself.

***It is, therefore, proposed that the administrator of a patent pool should have the right to sue and have its own standing against an unwilling licensee if licensors in the pool empower the administrator to do so.***

In that case the pool administrator should be able to claim damages on behalf of the empowering SEP holders and use their SEPs for an injunction. This may simplify the enforcement of SEPs licensed by the pool, lower the transaction cost for the licensors and be more effective in creating a level playing field among licensees. If a pool administrator can litigate on behalf of the pool members, it may increase willingness of licensors to join the litigation. It may also reduce the number of licensors unwilling to participate in litigation that benefit from litigations initiated by other pool licensors, if those result in the implementer signing a pool licence (so-called enforcement free-riders). It should be understood that the pool administrator cannot start litigation on its own initiative, it will always require the authorization of the licensors in the pool to do so.

Of course, if the validity of a patent that the litigation is based upon is questioned, the patent-holder would have to become party to the litigation as well.

One member of the expert group has raised serious doubts about this proposal (i) being potentially unconstitutional, (ii) being unnecessary due to the very limited number of cases to which it would apply, and (iii) being unnecessary as pool-administrators have sufficient means to support their licensors who want to litigate against infringers of their SEPs, and have all necessary means to litigate in breach of contract cases against defaulting licensees.

As mentioned above the pool administrator should have the right to litigate only if the pool members empower it to do so. Therefore, there should be no constitutional issues. Patent pools may not be the parties that start most litigations, but still these litigations are extremely important in creating a level playing field among the industry participants. Experience has shown that successful outcomes of such litigations have substantial positive effects in that it induces other unlicensed implementers to enter into pool licences as well. Finally, pool administrators have no rights to litigate in case of defaulting licensees as they cannot start any infringement litigation themselves. The proposal aims to solve that issue.

# ANNEXES

# Annex 1

## Overview of proposals made by members of the Expert Group

This Annex contains a brief description of each proposal set forth in detail in the Report, solely for purposes of providing a high-level overview of the proposals together in one place, and as a guide to where the full description of each proposal can be found in the Report. It is strongly suggested that the reader refers to the complete version of each proposal, as contained in the Report, to understand the context and purpose of such proposal.

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| **Transparency** | SEP Databases | 1. The EU to incentivize non-EU SDOs to mandate detailed SEPs declarations for standards impacting the EU. | 2. A possible incentive for 1 is to foster the use in public procurement of standards, for which SEP declarations are made. | 3. The EU to encourage SDOs to create databases to which parties may submit additional information regarding SEPs and SEP declarations re essentiality, validity, enforceability of declared SEPs | 4.The EU to set rules to reduce liability and antitrust risks for platform sponsor | 5. The EU to fund administrative cost for hosting the platforms and assessing compliance of third party information with relevance criteria. | 6. The EU to encourage third parties charged with determining FRAND licensing terms and conditions to take additional information provided on SDO databases into account. | 49. Develop a Commission led framework for SEP licensing in IoT field with commitments undertaken by the industry |
| | Essentiality Checks | 7. Introduce essentiality checks by an independent body for those SEPs that SEP holders intend to commercialise, including an appeal procedure | 8. In order to keep the cost of essentiality checks at a reasonable level, check for one patent in major market country per family plus self-certification for other members of same family | 9. If at the time of approval of the relevant standard no patent of the SEP family has been granted in any major market country, SEP holders to have an accelerated examination of SEP family member by a patent office in one major market | 10. A SEP holder should determine whether or not it will have essentiality checks done by the independent body for, for example, 75% of its declared SEP families | 11. The patent offices are preferred bodies to do essentiality checks. If they do not want to do the checks, those can be done by a supervised network of lawyers. Coordination is needed to ensure consistent and rigorous checks in accordance with established guidelines. | 12. Consider essentiality checks using specialised support tools based on AI/ML, if process successful with regard to patent pools. | |

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| | | 13. SEP holders to bear cost of essentiality checks with possible reduced fees for SME SEP holders | 14. SEP licensors to submit essentiality confirmations plus (high level) claim charts in SDO SEP database | 15. Incentivize SEP holders to submit their SEPs as quickly as possible for essentiality check by introducing measures (i) allowing SEP holders to demand royalties for a licence from the date the SEPs were submitted for checks, or (ii) allowing for substantially reduced royalties for the time before such submission | 16. Introduce a fast challenge, non-binding, procedure before the independent body that did the essentiality check that can be used by any third party disagreeing with the essentiality of a patent listed in a SEP database. Any party may still challenge the essentiality in court. | 17. Measures to be introduced to prevent the challenging of independent essentiality confirmations for all or a substantial number of SEPs of one SEP holder as part of licensing negotiations and delay tactics. | 18. The independent body doing essentiality checks to indicate for a confirmed SEP the type of invention that the essential patent claim covers (for example as 'fundamental', 'key', or 'specific', or according to any other appropriate type of classification). | |
| | Validity | 19. SDOs to be encouraged or required to make draft standards, contributions, studies and other submissions available to patent offices, so that, as appropriate, such information can be considered as prior art in patent prosecution. | 20. Encourage SEP holders to have in-depth prior-art searches done for their SEP applications and bring any resulting and relevant prior-art to the attention of the relevant patent office. | 21. In-depth searches to be done by specialized search companies or by commercially available (AI) search tools. | 22. SDOs to encourage their members to use the patent offices' opposition proceedings to challenge the granting of potentially invalid SEPs. | 23. SEP declarations could be subject to a small fee to support SDO-appointed experts' involvement in the opposition proceedings concerning potentially invalid SEPs. | 24. Creating a system that allows implementers to challenge the validity of patents listed in the SDOs SEP database through a fast challenge procedure before an independent arbitration panel. The decision by the panel will be non-binding unless the parties agree otherwise. | |
| | | 25. In order to incentivize implementers to use the validity challenge procedure, oblige implementers to pay a reasonable compensation to the SEP holder for SEPs found valid by the relevant court, if they have not used the challenge procedure first. | 26. Make validity challenge procedure mandatory for implementers before going to court. | | | | | |

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| **Licensing in value chain** | | 28. The Commission to endorse three licensing principles: (i) licensing at a single level in a value chain; (ii) a uniform FRAND royalty irrespective of level of licensing; and (iii) ability to pass down the value chain a FRAND royalty. | 29. Horizontal coordination between SEP licensors to determine level of licensing. The level of licensing should ideally be determined as early as possible and preferably before the market for each licensing product for an IoT vertical takes off. | 30. Independent body to facilitate horizontal coordination meetings. | 31. Once the horizontal coordination meetings result in an agreed level of licensing, vertical coordination meetings in the relevant value chain to support implementation of the third licensing principle (ability to pass down the value chain a FRAND royalty). | 32. Same independent body as for horizontal coordination meetings to facilitate vertical coordination meetings. | 33. The EU to formulate guidelines for the horizontal and vertical coordination meetings. | |
| | | 34. To grant royalty free licenses to suppliers upstream the selected licensing level. Such licences would depend on the existence and the payment of a licence fee downstream. | 35. In case of licensing upstream, a change in patent law to allow for exhaustion limited to a specified application. The use can be identified on the component. The licensee may record the different applications in the patent registers in the relevant jurisdictions. | 36. To allow for different royalties to be charged for intermediate products depending on the applications, in which they are used, provide for technical measures, such as software code, enabling the use of the intermediate product for a particular application only. The codes could be issued by a certification body. | 37. SEP holders to license their SEPs at intermediate product level and charge different royalties for the different intermediate products depending on the connectivity rates of these products. | | | |
| **Valuation** | | 38. Encourage SEP licensors to announce ex ante most restrictive licensing terms and conditions. | 39. Encourage SEP licensors to also announce ex ante reasonable aggregate royalty rate. | 40. The EU or SDOs to create platform for posting these ex ante announcements. | 41. If one (proposal 38) or the other (proposal 39) announcement is made during standard development, presume the terms and conditions compatible with such announcement not abusing a dominant position. | 42. Determine a reasonable aggregate royalty using known valuation methods in consultative process with SEP licensors and implementers. | 43. To incentivize SEP holders to agree on a reasonable aggregate royalty within a reasonable time after the first meeting (e.g. 6 months), at the expiry of that reasonable time without agreement, an independent arbitration panel of experts may be entrusted to determine this aggregate royalty. | |

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| | | 44. In case the SEP holders would agree on a reasonable aggregate royalty within a reasonable period, but thereafter the SEP holders and implementers would not agree on the proposed or an adjusted aggregate royalty within a reasonable period (e.g. 4 months), the case could be handled by the same arbitration panel as in proposal 43. ★★★☆☆ | 45. To estimate the aggregate royalty for an implementation of the standard as a fraction of the (appropriately discounted) future incremental value generated by the application of the technology covered by the SEPs in that implementation, using the present value added approach. ★★★☆☆ | | | | | |
| **Non-Discrimination** | | 46. The EU to provide guidance on the meaning of 'non-discrimination' within the FRAND context to assist SEP holders to meet their obligation. ★★★★☆ | 47. A confidential repository of SEP licensing agreements to be established to be used by courts, competition authorities, public arbitration boards, or trusted persons to promote transparency. ★★★★½ | 48. A methodology may be developed (by the EU, SDO, pool or private third party), to provide an objective range – a safe harbour – within which a licence would be considered in compliance with the 'non-discrimination' obligation. ★★★★☆ | | | | |

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| **Negotiations and Dispute handling** | | 50. When a SEP holder asserts its SEPs to provide a machine readable list with up-to-date patent bibliographic data of all its SEPs, including (i) priority date(s) and country, (ii) family members, (iii) related patent families, (iv) grant date and (v) expiration dates. Until a SEP holder provides this information, the implementer is not required to express its willingness to take a license under FRAND terms and conditions. | 51. When a SEP holder asserts its patents against an implementer, in addition to the information under proposal 50 to provide high level claim charts for the SEPs on the patent list or, if the SEP holder has a relatively large portfolio of SEPs, for a sufficient number of representative SEPs (without requiring the implementer to first sign a non-disclosure agreement ("NDA"). | 52. If a SEP holder asserts its patents against an implementer, in addition to the information under proposals 50 and 51 to provide access to a list of existing licensees that are licensed under the same patents, if such information can be provided on a non-confidential basis. | 53. If a SEP holder makes a FRAND licence offer to an implementer who has expressed its willingness to take a licence under FRAND terms and conditions, the SEP holder also offers to make more detailed claim charts for its asserted SEPs or for a sufficient number of representative SEPs available under an NDA. | 54. The EU to introduce rules that require implementers to proactively seek licences, prior to commercializing standard-compliant products, from those SEP holders who have sufficiently demonstrated the essentiality of their SEPs to the relevant standard and whose standard licensing terms and conditions for those products are made publicly available through the relevant SDO. | 55. Implementers not seeking licences from SEP holders who have sufficiently demonstrated to have true SEPs and who have made their standard terms and conditions publicly available, to be considered "holding-out licensees". | |
| | | 56. Such holding-out licensees (still entitled to a FRAND licence) to be required to pay a penalty for the period from the date of first commercialization of the licensed product to the date on which a licence agreement is concluded. | 57. To sufficiently demonstrate that the declared SEPs are true SEPs, use sufficiently corroborated info on SDO platform (see proposal 3) | 58. To sufficiently demonstrate that the declared SEPs are true SEPs, make claim charts of confirmed SEPs publicly available (see proposal 14) | 59. The competition authorities should clarify that seeking additional remedies for infringement of SEPs is not a competition law violation, if obligations regarding the transparency and availability of SEP licences have been met (see proposals 50 to 53). | 60. If a SEP licensor does not make its license terms and conditions publicly available, implementers to be obliged to record type/model of product at time of market introduction into a SDO database. Only SEP holders with confirmed SEPs on public record at the relevant SDO to have access. | 61. If failing to register product, the implementer to pay penalty in addition to FRAND royalty, e.g. higher royalty over period from date starting sales to date license agreement. | |

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| | | 62. Courts to be able to oblige licensee to make a payment in addition to FRAND royalty, if implementer negotiated in bad faith.  | 63. If after declined FRAND offer and counter offer, the SEP holder and the implementer engage in a FRAND adjudication procedure, an escrow account to be created automatically, into which the implementer should transfer (a) reasonable amount(s) agreed by the parties or (b) amounts equal to the FRAND offer of the implementer.  | 64. If a court establishes that an implementer has negotiated in good faith but it was indeed the conduct of the SEP holder that resulted in unnecessary litigation, the implementer should be allowed a suitable discount on royalties due in the first two years after entering into the agreement (and on any royalty payments due for past sales).  | 65. If the court is presented with two FRAND offers that do not match, the most appropriate royalty may be determined using an independent expert opinion. If the offers differ significantly from the range determined by the expert, the weighted mean value of the latter will be selected. If any of the offers is no more than 3 percent of the weighted mean value, that offer will be selected.  | 66. If a SEP holder has made a FRAND offer that the potential licensee rejects, and the potential licensee cannot present sufficient evidence supporting its position that the SEP holder's offer is not FRAND, the SEP holder may be granted an injunction by the court (and the FRAND royalty based on the FRAND offer of the SEP holder).  | 67. Require parties to SEP licence agreements to submit these agreements (or specified key provisions) to a market transparency office, for building and maintaining a strictly secret repository of SEP licence agreements, solely for use by courts, competition authorities and possibly arbitration/expert boards and other trusted persons to be agreed upon.  | |
| | | 68. Establish independent boards of experts for assessing FRAND offers or determining a FRAND royalty upon request of a court or the parties negotiating a SEP licence. This assessment or determination would be non-binding on the licensor and the implementer, unless they both agree to a binding outcome.  | 69. If the question of the amount of a royalty has to be answered in court proceedings, the handling of this question should be conducted in front of such an independent expert board. If the board was not consulted in advance, the court should order the parties to do so.  | 70. Establish a specialized mediation institute for FRAND licensing disputes.  | 71. SEP holders and licensed implementers should submit any unremedied breach of SEP license agreement to an independent arbitration board to get decisions on the non-compliance issues relatively quickly.  | | | |

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| **Patent Pools** | | 72. SDOs to foster formation of patent pools during standardization without becoming involved in process themselves.  | 73. European SDOs to be directed to foster the formation of patent pools prior to the adoption of a standard through a guideline, communication, or another appropriate instrument.  | 74. After the adoption of the standard and at the request of an implementer to establish by public law (in the EU) an agency. The agency to have the authority to grant licences for all SEPs for that standard on behalf of the SEP holders until a patent pool is established. During the existence of the agency SEP holders may enter into bilateral agreements.  | 75. Develop an appropriate mechanism and controls to allow licensee negotiation groups (industry associations representing member implementers or groups of individual implementers) to jointly negotiate licences with individual SEP holders and SEP patent pools without the risk of getting in conflict with antitrust regulation.  | 76. For IoT products using a large number of standards, SEP holders for these standards or alternatively SEP holders for clusters of standards related to similar technology/functionality fields, are encouraged to establish patent pools for an as large number of standards used in these product as possible.  | 77. Patent pool to arrange AI search tools for SEP holders to have novelty/validity searches done prior to essentiality checking.  | |
| | | 78. Since AI/ML search tools have the potential to substantially reduce the cost of essentiality checks, it is recommended to investigate in more detail whether these AI/ML tools can be used to assist the essentiality checking for patents to be included in patent pools, without replacing the human process.  | 79. The administrator of a patent pool to have the right to sue and have its own standing against an unwilling licensee if licensors in the pool empower the administrator to do so  | | | | | |

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| Green = Proposal | Yellow= Sub-proposal | Pink= Sub-subproposal |

# Annex 2

# Dissenting opinion expressing disagreement with the report of the Expert Group on licensing and valuation of standard essential patents (E03600)

By Monica Magnusson.

A lot of effort has been put into the report of the Expert Group on licensing and valuation of standard essential patents by the group members, and it is with sadness that I write this dissent. I view these months of joint effort as a lost opportunity. To be clear, this should not be interpreted as reflecting negatively on my fellow Expert Group members, whom I hold in high esteem and with whom I enjoyed a good spirit of cooperation over the last two years. However, lacking a common position on the current situation and future challenges, the report only lists individual opinions on the current status as well as on suggestions for change. Those opinions and suggestions are often not accompanied by any empirical evidence and often include methods broadly rejected by courts.

The importance of standardisation and FRAND licensing has grown rapidly over the last three decades. With the further expansion of the Internet of Things ("IoT") ecosystem, the growth rate is expected to increase even more. The creation of an Expert Group on licensing and valuation of standard essential patents by the European Commission thus presented a good opportunity to bring expertise and new solutions to an area that has attracted considerable attention in recent years.

In my respectful view, and despite providing many ideas and proposals for further discussion with stakeholders, the final report does not fulfil its purpose. The reason for this is essentially twofold.

Firstly, the group did not identify and agree on a clear problem statement to direct its work. As a result, different individual experts set out to submit proposals to the problems they perceived warranted solving, rather than focus on topics where consensus could potentially be reached in the group – and, by proxy, where a broader base of support could be expected in the wider licensing ecosystem.

Secondly, the individual ideas and policy recommendations are often not based on empirical evidence or an analysis of best practices in the existing licensing market. On the contrary, many of its proposals rest on assumptions which, if not unrealistic, are at least questionable in their practical, legal, and commercial feasibility. This is unfortunate and surprising as the existing licensing markets for standard essential patents have overall worked very well. FRAND licensing has both enabled the broad dissemination of different critical technologies and fuelled the constant improvement

and progress of those standardised technologies via intensive R&D investments by different companies and research institutes globally.

Consequently, the report will likely add confusion to the licensing market, negatively impacting those players who rely on licensing income to sustain their involvement in the standardisation work. It also risks amplifying lobbying efforts in service of commercial interests that in the short-term stand to benefit from this unclarity while likely also to confuse or even mislead international partners looking at the Commission for thought leadership in this field.

For the reasons stated above, and despite the report containing some material that I fully support, I cannot in good conscience – as a professional with over 20 years' experience in the telecom and patent licensing environment both as licensor and as licensee – endorse the report's content or its policy recommendations. In the following this dissenting opinion is substantiated in greater detail, including examples which, while not exhaustive, seek to illustrate my concerns.

### a) Lack of evidence to support the report's assumptions, reasoning and policy proposals

Strangely, for a report by a group of experts, the report does not rely on empirical evidence to support the "structural reform proposals" presented or, in some cases, the assumptions made to reach them. This is particularly noticeable in areas where existing valuable market data available to the Expert Group was nevertheless not shared or considered.

As an example, the report pays great attention to the topic of transparency, conceiving a system where essentiality checks may be imposed on patent holders in the standard development context. Essentiality assessment is a highly complex field, and one where real-world expertise is needed given the challenges associated with setting up a sufficiently thorough and reliable framework for high-quality assessment. This topic was precisely the focus of a study conducted by the Commission's Joint Research Centre and finalised in early 2020; yet its final report was not shared with the experts despite being available and requested by several members.

Similarly, the report goes into great length to discuss theoretical models to foster patent pools targeted at the Internet of Things ("IoT"). Nevertheless, at no point during its two-year mandate did the group analyse, interview or otherwise consider the only (at the date of writing) fully operational patent pool in the IoT space (i.e. Avanci[193]). While some experts possessed valuable patent pool expertise in fields other than connectivity standards, the fact that this case study was not explored is a major omission. A better understanding of the process and

[193] https://www.avanci.com/

dynamics that helped the creation of this IoT patent pool would have provided valuable input to address the question of how different industries will, in the IoT era, deal with FRAND licensing. This stands regardless of whether you consider Avanci as a good or bad example; Lessons could have been learned from it either way.

**b) Abandoning of a consensus-based approach in favour of a catalogue of policy proposals from individual experts**

Rather than focusing on a specific set of issues where consensus could be reached among experts with different backgrounds, the report presents a catalogue of proposals put forward by the various individual experts. It is not clear in the report which expert presented what, and it is difficult to gauge the level and kind of support for different proposals given only a numerical score is attached to each of these. For example, the difference between legal and technical experts supporting a suggested legal change is lost. Furthermore, it is worth mentioning that the feasibility of a proposed solution may not apply uniformly to each sector of the industry or, even within the same sector, to every business segment where it is applied. At the end, in a proper final assessment the particular circumstances of each individual case must be considered.

As a result, given the limited consideration of the various proposals' practical and commercial feasibility, the report will likely add confusion to and risks misleading the licensing market rather than foster its efficiency. The challenge remains to find solutions with potential for broad support from licensors and licensees alike, and that can either be applied in all circumstances or that are tailored to the specific scenario they are trying to address.

Equally disturbing is the proposal requesting standard development organizations (SDOs) to encourage their members to join opposition proceedings against patents for which a licensing commitment has been made to the extent that they are essential. Encouraging members to take such action against each other would seriously disrupt the good collaboration environment. Other proposals in the report imply bringing licensing discussions into the SDOs without properly considering the anticompetitive risks of such approach.

Furthermore, the report does not consider the significant developments surrounding IEEE's 2015 IPR Policy change, not supported by consensus, in particular the material impact it had on standardisation activities. I include a reference to the recently issued Business Review Letter by the US Department of Justice in September 2020 here for your convenience.[194]

[194] https://www.justice.gov/opa/pr/justice-department-updates-2015-business-review-letter-institute-electrical-and-electronics

### c) Legitimising and mainstreaming of theoretical concepts not supported by industry practice or relevant European case law

In seeking to accommodate the views expressed by each of its (individual) experts, the report presents concepts on the same level, some of which are widely accepted in industry practice and relevant case law, while others have been explicitly rejected by courts or are never used in practice by industry. In doing so, the report equals recognised good practices with theories on licensing mainly supported by certain industry lobby groups, neglecting the impact of doing this in a high-profile report published by the European Commission.

As an example of this, the report risks leading the reader in error regarding the application of the United States' damages model of the smallest saleable patent practicing unit (SSPPU) to the valuation of a standard essential patents license. This SSPPU model has, to my knowledge, only been used in the US, where the theory was created as an evidentiary rule used in patent damage cases decided by a jury. In fact, it has been explicitly rejected by US courts as a per se rule for FRAND cases[195]. By listing this SSPPU doctrine as a valuation model alongside other valuation models endorsed by industry practice and widely accepted by courts globally, the report gives the appearance of legitimacy to a methodology developed for the specific case of jury trial in the US, where it has later been rejected as a per se rule for FRAND cases, and which has not been used by courts outside of the US.

### d) Broad assumptions which disregard the challenges of practical implementation – "assuming we had a can opener"[196]

The report suggests at multiple points that industry should "agree" on certain aspects of licensing (some of which commercial) as a prerequisite to some of its policy proposals. This is best exemplified in the licensing level section, where a model is conceived in which industry would determine licensing level "*preferably before the market for each licensing product for an IoT vertical takes off*"[197].

The report continues putting forward a few criteria to determine the appropriate licensing level. This approach may seem attractive from a theoretical point of view, but it greatly underestimates the complexity and diversity of value chains in the IoT, as well as the challenges of aligning across diverse industries. For instance, the proposal does not sufficiently consider the long-term importance of cross-licensing, particularly for EU companies involved in 5G standardisation

[195] "No court has held that the SSPPU concept is a per se rule for 'reasonable royalty' calculations; instead, the concept is used as a tool in jury cases to minimize potential jury confusion when the jury is weighing complex expert testimony about patent damages." US Court of Appeal for the Ninth Circuit in Federal Trade Commission v Qualcomm Inc. 19-16122, 11 August 2020

[196] A physicist, a chemist, and an economist were stranded on a desert island with no implements and a can of food. The physicist and the chemist each devised an ingenious mechanism for getting the can open; the economist merely said, "Assume we have a can opener"!

[197] See for instance the Executive Summary; II Analysis of key issues and proposals for improvement; Where to license in the value chain?

work. Further, the report suggests organising horizontal and vertical alignment between licensees and licensors in order to determine the appropriate licensing level. Apart from the many legal questions that such proposal may trigger, as well as concerns in relation to its international applicability, it also fails to recognise the heterogenous nature of industry sectors where not all manufacturers organise their supply chain in the same manner. In doing so, the report displays a significant gulf between some of its policy proposals and the assumptions made for those measures to be feasible in practice.

In conclusion, when publishing a high-profile report featuring such a plethora of different proposals, not supported by evidence, the European Commission risks that the nature, role and weight of this report is misunderstood by stakeholders-at-large, as well as by the EU's international partners and is used to amplify lobbying efforts in service of commercial interests that will try to benefit from such unclarity.

While there is no doubt that any future EU policy initiative will undergo a formal impact assessment before being put forward, it is nevertheless important that the continuing discussion of these issues is pursued on the basis of empirical evidence, focusing on areas which not only safeguard and foster standardisation in theory, but also are practically feasible and have the potential to achieve wide industry support. A broad, inclusive and representative dialogue is necessary to gather input from stakeholders and assess the impact of these proposals.

Ultimately, the standardisation ecosystem – and the participation of EU industry in it – should be preserved and fostered by any EU initiative targeted at licensing of standard essential patents. The primary objectives of the licensing framework, and of ICT standardisation more generally, is to support sustainable technological innovation and its broad dissemination. The European Commission should ensure that these goals are not forgotten.

While the report of the Expert Group is a testimony to the hard work that many have delivered and reflect many diverse ideas, some of which can maybe, at least partially, be implemented in order to further evolve licensing practices, it fails to provide a coherent consensus-based structure that could be used to improve the standard essential patent licensing landscape. That is the source of my respectful dissent.

# Annex 3

# SEP LITIGATION

There is limited systematic and up-to-date empirical data on the extent of SEP litigation in Europe.[198] Furthermore, evidence regarding recent trends in SEP litigation in Europe is unsatisfactory.[199] A central repository of patent litigation cases with patent numbers that can be matched to databases of declared SEPs (as is publicly available from the USPTO website for US patents) would greatly facilitate the analysis and allow for significantly more informed discussions about SEP litigation in Europe. Having a better view of the true SEP landscape would facilitate the analysis of SEP litigation not only in Europe but also globally even more.

With these limitations in mind, it seems that, while declared SEPs have a higher propensity to be subject to litigation than other patents, the share of declared SEPs in the population of all patents appears to be very small. In terms of case counts and the share of patents that are concerned, SEP litigation seems to be a marginal phenomenon in Europe. Only a small share of declared SEPs and a small share of standard implementers seem to be subject to any litigation.

Within Europe, the number of SEP litigation cases during the period 2009-2018 seems to be on a similar or somewhat lower level than during the preceding period 2000-2008, whereas the population of declared SEPs has increased significantly.[200] A similar absence of an increase in the incidence of SEP litigation, compared to both the population of declared SEPs and the incidence of patent litigation in general, can be observed in the US.[201] SEP litigation in Europe is highly concentrated in Germany. The share of declared SEP families subject to litigation in comparison to all patents litigation is close to zero or zero in most EU Member States. These recent trends in SEP litigation data in Europe are in line with US patent litigation data. (See Figure 2 below.) This is not surprising; very limited evidence suggests that many SEP litigation cases are global disputes, so that we would expect to see a certain commonality of trends. As most SEP licences are global licences and most SEP litigations are held in one country only, adding the litigation data in Europe and the US may give a more complete view of the share of SEP litigations in the total number patent litigation cases. Also taking all patent

[198] Some of the few existing studies include Contreras et al. (2017) and Darts-IP (2019). SEP litigation in the US has been studied to a greater extent, see e.g. Simcoe et al. (2007) and Lemley and Simcoe (2019)

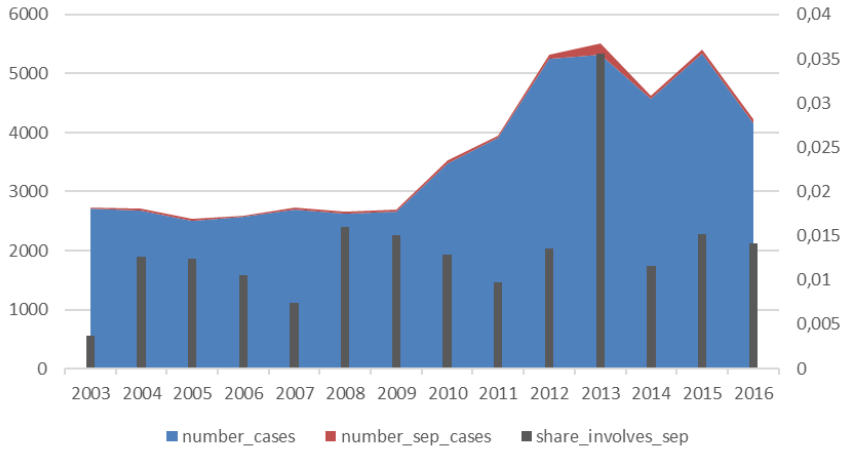
[199] It is even more unclear how many cases are resolved through arbitration, or through negotiations under the threat of litigation.

[200] The vast majority of litigation cases involving declared SEPs in Europe take place in Germany, Data on SEP litigation in Germany from 2000 to 2008 is available from Contreras, Jorge L., Gaessler, Fabian, Helmers, Christian, and Love, Brian J., 'Litigation of Standards-Essential Patents in Europe: A Comparative Analysis', *Berkeley Technology Law Journal*, 32, 2017), p. 1457; while data on the period 2009-2018 is available from the publicly available summary of the report Darts-IP, 'Litigation Landscape of Standard-Essential Patents', available at https://www.darts-ip.com/sep-report-2019/) .

[201] The share of patent litigation cases involving declared SEPs in the overall population of patent litigation cases has been constant since 2003, despite a significant growth in the stock of declared SEPs (See Figure 1 below.) The share of declared SEPs ever asserted in any district court case has decreased since 2008 (See Figure 2).

litigations together, irrespective of whether it is for maintaining exclusivity (pharma, biotech, life-science) or licensing-out for money) may obscure the picture.

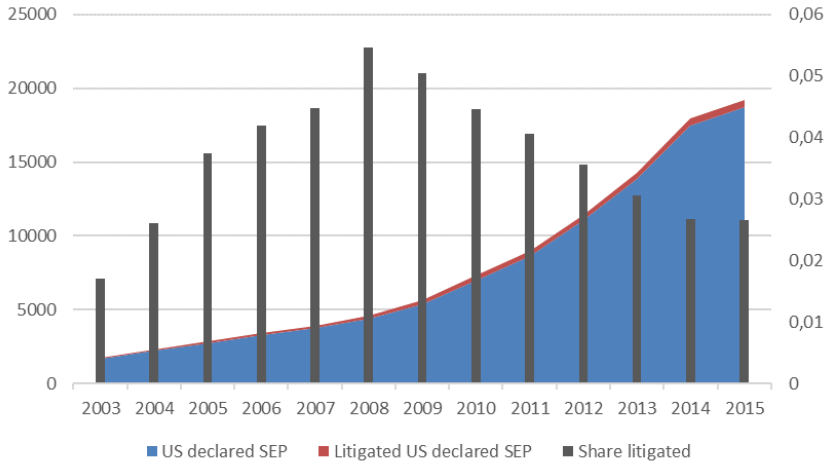
**Figure 1: SEP litigation cases, number and share of total patent litigation cases**




Source: USPTO Research dataset "Patent Litigation Docket Reports Data", combined with Searle Center Database of declared SEP (Baron and Pohlmann, 2018)

Notes: Count of unique district court cases by filing date. A case is labelled a "SEP case" if at least one patent asserted in the lawsuit is a declared SEP

**Figure 2: Declared and litigated US SEPs**




Source: USPTO Research dataset "Patent Litigation Docket Reports Data", combined with Searle Center Database of declared SEP (Baron and Pohlmann, 2018)

Notes: "US declared SEP" are granted US patents that have been declared potentially essential to at least one standard. "Litigated US declared SEP" are granted US patents that have declared potentially essential to at least one standard and asserted in at least one US district court case.

The majority of SEP litigation cases in Europe seem to be invalidity or opposition actions; a situation that mirrors what can be observed in Japan, South Korea, and China. The US is the country with the highest number of SEP infringement actions. The share of NPEs among the SEP holders involved in patent litigation is significant both in the US and in Europe. While not all SEP litigation involves NPEs, and *vice versa*, there is a significant overlap between cases involving SEPs and cases involving NPEs. Based on the figures obtained from NPE litigation cases in Europe more generally, large implementers are disproportionately more likely to participate in litigation than SMEs.

It should be noted that patents that are identified as subject to litigation may often only be a subset of a larger portfolio of patents for which the licence is under dispute, so that these other patents may be excluded from consideration. Another consideration is that declared SEPs that have a higher likelihood to be essential may have a higher likelihood of being asserted in court, so that the share of litigated patent families is higher among effectively essential than among declared SEPs. These additional considerations, however, do not alter the basic finding, which is that of 2008, litigation only concerned a small part of SEP families in Germany, and even much smaller part of SEP families elsewhere in Europe.

# Annex 4

## A. Data on declared SEP

The analysis of SEP declaration trends uses the Searle Center Database, which is freely available to academic researchers. The dataset collects information from the declaration databases of the following SDOs: ANSI, ATIS, Broadband Forum, CEN, CENELEC, ETSI (including patents declared essential to standards developed by 3GPP), IEC, IEEE, IETF, ISO, ITU, OASIS, OMA, and TIA.[202] Different SDOs have different policies regarding the obligation to declare potential SEPs. In particular, some SDOs require the disclosure of individual patent numbers, whereas other SDOs allow the holders of potential SEPs to fulfil their disclosure obligation with a so-called "blanket disclosure". Furthermore, ETSI's database of declared SEPs includes both the patent numbers declared by the declaring company, as well as the patent numbers of other patents of the same patent family. These different SDO policies affect comparisons of numbers of declared SEPs between SDOs.

Any count of declared SEPs is based on research choices. This includes whether to count patents or families, and whether to count only granted patents or granted patents and applications. **Figure 3** of Part 2 to this contribution presents the growth in the number of granted European patents ("EP") declared essential. A patent enters this count if a pending EP application declared to be potentially essential is granted, or when a granted EP is declared potentially essential. Note that these numbers conflate all aforementioned SDOs, including SDOs requiring specific declaration of every potential SEPs, and SDOs allowing for blanket disclosures. The number of patents being declared thus also reflects the extent to which companies make specific declarations at these SDOs. Nevertheless, the vast majority of these declarations were made to ETSI, and relate to 3GPP standards. The number of declared SEP families with EP members levelled off after 2009. Note that the data is subject to truncation (given the date of data collection, more recent SEP declarations are under-counted).

**Figure 4** of Part 2 is taken from the following publication: Baron, Justus, and Pohlmann, Tim, 'Mapping standards to patents using declarations of standard-essential patents', *Journal of Economics & Management Strategy* 27.3, 2018, pp. 504-534.

The left-hand side of Figure 4 depicts the evolution of the stock of active declared US SEP. Active declared SEP are those patents that have been declared potentially essential, have been granted, and have not yet expired or lapsed. The figure also represents the stock of pending US applications declared potentially essential, and the stock of declared US SEPs that have expired or lapsed. The right-hand side of Figure 4 depicts the different flows affecting the number of active declared US SEP: grants of

[202] The database also includes information on SEPs from the websites of pool licensing administrators, but the analysis in this paper uses data from the SDO declarations only.

patents declared essential while pending, declarations of already granted patents, and lapses and expirations of declared US SEPs. Figures beyond 2016 are projections of expirations based on current (as of 2017) declared US SEPs' expiration dates. The analysis shows that the projected number of expirations of declared US SEPs will significantly increase by 2024; even though the number of patents entering the stock of active declared US SEPs is currently significantly larger than the number of exits.

**Figure 5** of Part 2 depicts the number of companies having declared at least one potential SEP to ETSI. For this analysis, company names are cleaned, and companies are assigned to their global ultimate owner ("GUO"). A primodeclarant is a company making its first declaration (at the level of the GUO) to ETSI of a potential SEP.

It is important to cross-validate the reliability of this data. There is a number of different databases with information on declared SEPs. The different databases include very different numbers of declared SEPs, which can be explained by a variety of methodological differences. Bekkers et al. (2017) also collected data on declared SEPs, and make this data publicly available. They identify "6,723 granted US patents that were either declared essential, or share a common priority application with a European declared essential patent" (Bekkers et al., 2017), compared to 19,000 granted US declared SEP identified by Baron and Pohlmann (2018). This discrepancy can be attributed to a conjunction of three factors: (i) a slightly different observation period (with more recent declarations included in Baron and Pohlmann, 2018); (ii) more SDOs included in Baron and Pohlmann (2018); and (iii) a change in ETSI's presentation of declared SEPs in its disclosure database, automatically adding other family members of declared SEPs to every declaration. These discrepancies affect comparisons between studies, but not over time; as the change applies retroactively to all declarations.

## B. Data on SEP transfers

**Figure 6** of Part 2 is taken from the following publication: Baron, Justus, and Laurie Ciaramella, 'The market for standard-essential patents', 2018. Working paper.

"SEP transfers" are identified by matching the Searle Center Database of declared SEPs (see above) with the USPTO reassignment database. The two databases are merged on the patent number. For declarations of US patent identifiers other than patent numbers (e.g. application number or earliest publication number), we used the Patent Examination Research Dataset ("Public PAIR") (available from the USPTO Chief Economist website) to identify the patent number, if a patent was granted.

SEP transfers are defined as re-assignments of declared SEPs recorded at the USPTO, excluding assignee name changes, mergers and acquisitions, and within-firm re-assignments. Recording a re-assignment with the USPTO is not mandatory, but there are strong incentives. While the data on recorded reassignments may understate the number of patent transfers, the extent of under-reporting is unlikely to be very significant.

Figure 6 of Part 2 depicts the number of transfers of patents declared to be potentially essential, regardless of whether the declaration occurs before or after the transfer. There is thus a potential for truncation: transfers of patents declared essential after 2017 are not included in the graph, even if the transfer took place before 2016. While most transfers occur after the declaration, a non-negligible number of patents are declared after transfer. The truncation of the data understates the observed trend: in the absence of truncation, the depicted increase in the number of SEP transfers would be even more significant.

## C. Data on contributions to 3GPP RAN

The data on technical contributions to 3GPP RAN was downloaded from the 3GPP website. To count contributions, we count the number of documents with different tdoc number.

Not all technical areas of 3GPP are similarly susceptible to result in SEPs (indeed, while similar numbers of contributions are made to the three technical specification groups [TSG] RAN, SA, and CT, 95% of the patents associated with 3GPP contributions are associated with contributions to RAN, (see Baron (2019)). In order to understand how the evolution in numbers of SEPs relates to trends in participation in 3GPP, the analysis is therefore limited to contributions to RAN.

**Figure 7** of Part 2 depicts trends in the numbers of contributors to 3GPP RAN, as well as the number of first contributors. Similar to the analysis of the number of firms declaring SEP, we clean company names and standardize companies at the level of the GUO to count the number of contributors, and to identify companies making their first contribution to 3GPP RAN. A first contributor is thus a firm making a contribution to 3GPP RAN that has never made a contribution to 3GPP RAN before (at the level of the GUO).

Baron and Gupta (2018) provide a methodological discussion of analysing 3GPP contributions data. Nevertheless, the database described by Baron and Gupta (2018) only extends to 2014. The analysis in this contribution therefore uses an updated dataset downloaded from the 3GPP website.

## D. Data on SEP litigation

Analysis of SEP litigation trends and magnitudes in Europe is based on the data reported by Contreras et al. (2017), as well as the publicly available summary of the Darts-IP (2019) report.

The analysis of SEP litigation trends in the US uses the USPTO Research dataset "Patent Litigation Docket Reports Data".[203] This dataset combines information on district court patent litigation cases from the Public Access to Court Electronics Records

[203] https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-litigation-docket-reports-data

("PACER") and RECAP, an independent project designed to serve as a repository for litigation data sourced from PACER. We merged this database with the Searle Center Database on declared SEP (Baron and Pohlmann, 2018; see above). The two databases are merged on the patent number. For declarations of US patent identifiers other than patent numbers (e.g. application number or earliest publication number), we used the Public PAIR (also available from the USPTO Chief Economist website) to identify the patent number, if a patent was granted.

Recent trends in patent litigation numbers in the US are affected by the passage of the America Invents Act ("AIA"). The AIA led to a significant increase in the number of recorded patent litigation cases in the US in 2012, because patent owners now more often have to file multiple separate lawsuits instead of one lawsuit involving multiple defendants. This change over time makes comparisons of patent litigation case counts in the US over time more difficult, both within the US and in comparison with other jurisdictions.

Both the European and the US SEP litigation data suggest that a share of less than 5% of declared SEP are ever subject to litigation. Contreras et al. (2017) found merely 92 SEP families involved in European litigation cases. Contreras et al. (2017) do not provide country-level counts of SEP families, but based on the displayed case numbers, it is realistic to assume that a large share of the SEP families are litigated in Germany. According to the data underlying Baron and Pohlmann (2018), there were 2,492 inpadoc patent families with at least one DE or EP member that was both granted and declared essential as of 2008.[204] This means that as of 2008, approximately 3% of the declared SEP families were subject to any litigation in Germany, which is by far the jurisdiction with the highest number of patent litigations. This share is not likely to have increased since 2008. According to Darts-IP data, SEP litigation cases in Germany during the period 2009-2018 were on a similar or somewhat lower level than during the preceding period 2000-2008, whereas the population of inpadoc families with at least one DE or EP member that was both granted and declared essential by 2017 quadrupled to 9,819.

For comparison, as of 2017, there were 537 litigated US SEPs, the share of litigated patents in the population of declared and issued US SEPs having decreased to 2.8%, from an all-time-high of 5.5% in 2008 (see Figure 2 in Annex 3).

Once again, it is important to benchmark and cross-validate these findings with the results of other studies. Bekkers et al. (2014) find that as of 2011, 393 of the 5,768 declared US SEPs in their sample were subject to any litigation; a share of 6.7%. In our sample, as of 2011, there were 8,645 issued and declared US SEPs, with a share of litigated patents of 4.1%. The estimated share of litigated patents among declared US SEPs is also higher than the estimated share of litigation patents among declared SEPs (for a comparison at the same point in time, the US share of 5.5% in 2008 can be

[204] Inpadoc families are the most extensive available definition of patent families, thus leading to a conservative family count in the denominator.

compared with the German share of below 3%). This slightly higher estimated share is consistent with observable differences between patent litigation counts in Europe and the US more generally.[205]

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Cremers, Katrin, Ernicke, Max, Gaessler, Fabian, Harhoff, Dietmar, Helmers, Christian, McDonagh, Luke, Schliessler, Paula and Van Zeebroeck, Nicolas, 'Patent litigation in Europe', *European journal of law and economics*, 44, no. 1, 2017, pp. 1-44.

Darts-ip, 'NPE Litigation in the European Union – Facts and Figures', February 2018


[205] The USPTO litigation database contains information on 75,996 cases from US district courts https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-litigation-docket-reports-data. For comparison, in 2007, the year with the highest count of cases in Europe identified by Cremers et al. (2016), there was a total of 968 cases in the four major European patent jurisdictions combined (excluding invalidation actions at the BPatG), and 2,896 cases in US district courts. The difference between numbers of US and European cases is larger in other years.

# Annex 5

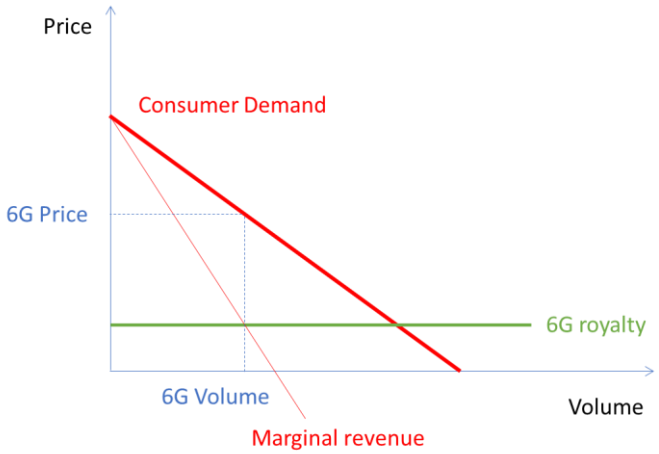
# AN ILLUSTRATIVE EXAMPLE OF THE PVA APPROACH AS SET OUT IN PROPOSAL 45

Consider the derivation of the aggregate royalty for all 7G SEPs used in a given licensed product.

Suppose without loss of generality that this product is produced and commercialised in a simple value chain: consumers purchase the licensed product from a monopolist manufacturer, which licences the technology from a single SEP holder. The IP holder charges a per-unit royalty and has a zero cost of licensing. Suppose further that the monopolist supplier of the licensed products has no variable costs other than the royalty.

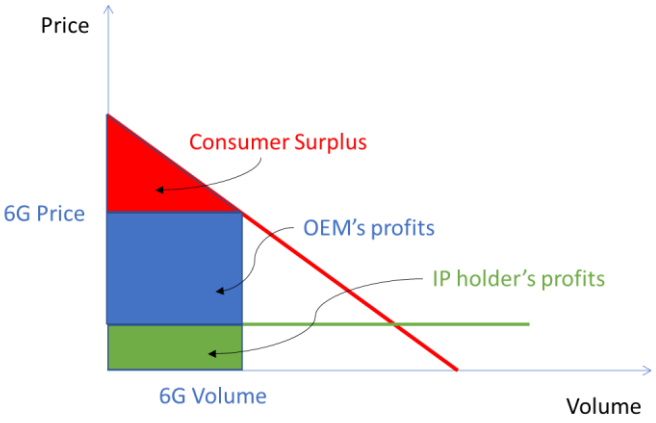
Prior to the development of the 7G technology, the manufacturer sold (a version of) the licensed product using the 6G technology. Let us suppose that the above assumptions applying to the 7G product also hold for the 6G product. Therefore, the price of its 6G product is such that its marginal revenue equals the royalty, as depicted in Figure 1.

**Figure 1**



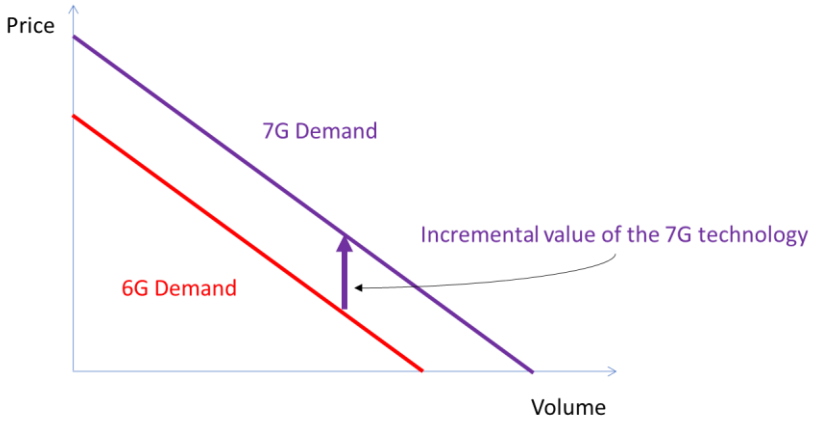

The distribution of the value generated in the market for the 6G product is depicted in Figure 2. The red area equals the value appropriated by consumers, the blue area equals the profits of the monopolist supplier, and the green area is equal to the revenues of the SEP holders.

**Figure 2**




Suppose the adoption of the 7G technology increases the willingness to pay for the manufacturer's product for all levels of demand. This is illustrated in Figure 3.

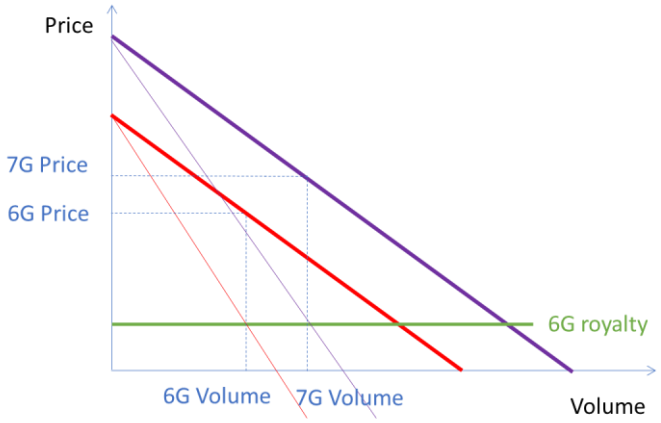
**Figure 3**




The incremental value of the 7G technology for the licensed product is given by the distance between the 7G demand curve (in purple) and the 6G demand curve (in red).

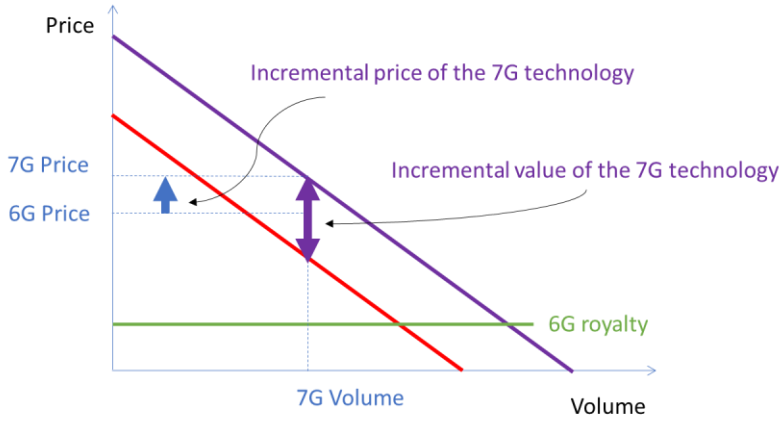
Given the assumptions above, and assuming now change in the royalty, the manufacturer will take advantage of the increase in the consumers' willingness to pay for its product (i.e. the shift in demand) to increase prices: from the 6G price to the 7G price (as depicted in Figure 4.)

**Figure 4**



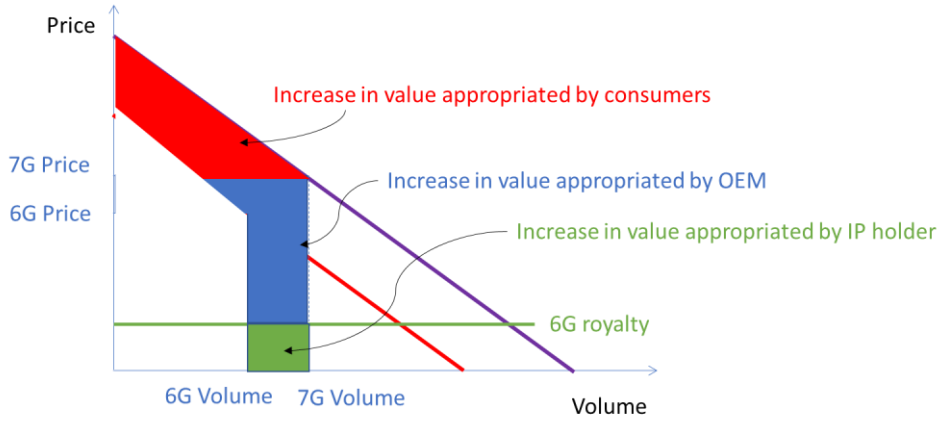

Note that the increase in price is smaller (less than half) than the incremental value of the 7G technology (see Figure 5 below). In other words, the monopolist supplier is not able to fully appropriate the incremental value generated by the new technology.

**Figure 5**




As a result, the value generated by the adoption of the new technology by the monopolist supplier is given by Figure 6. The red area is appropriated by consumers, the blue area is appropriated by the monopolist and the green area by the SEP holder.

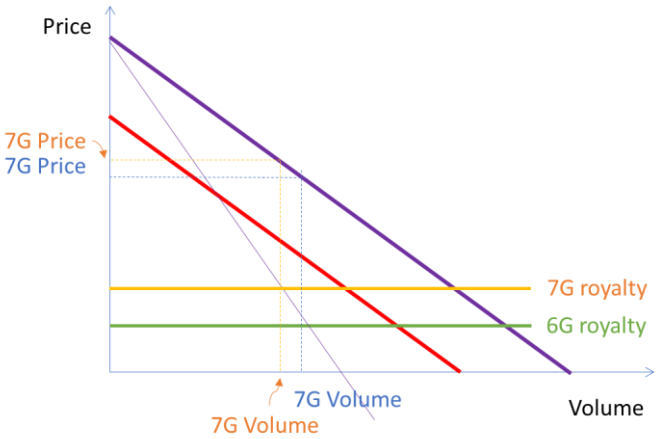
**Figure 6**



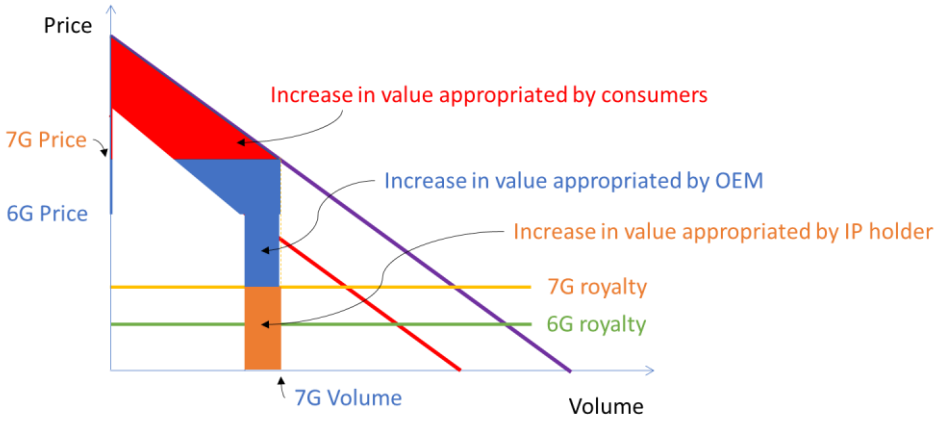

Clearly, in this example, the SEP holder appropriates the smallest share of the value added to the licence product by its technology. Arguably, therefore, its royalty (which, given that it is the sole IP holder in this example, is the aggregate royalty) could increase and still be FR. This is illustrated in Figure 7.

**Figure 7**

**A. Derivation of the 7G price when 7G royalty exceeds the 6G royalty**



## B. Derivation of the 7G price when 7G royalty exceeds the 6G royalty



# Annex 6

# ECONOMETRIC TECHNIQUES TO ESTIMATE THE VALUE THAT THE PATENTED TECHNOLOGY ADDS TO THE LICENSED PRODUCT

The incremental value added by the patented technology to the licensed product may be estimated using econometric techniques, such as (i) hedonic price regressions; (ii) choice modelling or price conjoint analysis; and (iii) demand estimation models.

## Hedonic price regressions

In a hedonic regression, the price of the licensed product is related to the product's attributes, including the underlying technology. The main advantage of this approach is its relative simplicity. However, it should be noted that this method may underestimate or overestimate the incremental value of the technology. Regression analysis only accurately identifies the variation in price that is attributable to the inclusion of a patented technology if all confounding factors and interactions with other product features are correctly accounted for.

Furthermore, it is important to understand that the observable variation in price attributable to the inclusion of the feature is only a first approximation to the value contribution of a feature. If multiple competing firms simultaneously make unlicensed use of the same patented feature, then the observed prices may understate the value contribution of the patented feature, because especially in a highly competitive market the price of unlicensed products depresses the price of all offered products and therefore the market prices do not leave sufficient space for (unpaid) royalties. In this case, the incremental price determined by hedonic regression will have to be adjusted upwards using a multiple, which will depend on (a) the shape of the demand function and (b) the structure of supply. The more competitive the downstream market is, the greater the multiple that needs to be applied.

## Choice modelling or conjoint analyses

Choice modelling is based on surveys where potential consumers of the licensed product are asked to choose between hypothetical products. The hypothetical products are described by a limited number of attributes, including the use of the patented technology. Conjoint surveys typically take place in an online setting, and survey respondents must typically perform between 12 and 20 "choice tasks," depending on the complexity of the product.[206]

[206] Cameron, Lisa, Cragg, Michael, and McFadden, Daniel, 'The Role Of Conjoint Surveys In Reasonable Royalty Cases', *Law360*, available at https://www.law360.com/articles/475390/the-role-of-conjoint-surveys-in-reasonable-royalty-cases

By surveying a large number of study participants, and introducing large numbers of slightly different options, the researcher can estimate how demand changes in response to variations in the product characteristics and prices. These changes identify the price elasticity of demand for a product with certain attributes; as well as cross-price elasticity of demand for this product with respect to the price of competing products. These elasticities can be used to model the prices of different products in a competitive equilibrium, comparing the situation in which the user has access to the patented technology with a situation in which the patented technology is not available. The difference between implementer profits in these two situations describes the contribution of the patented technology to the implementer's profits, which may be used to estimate of a reasonable royalty.

The method has several advantages. First, the researcher controls the characteristics of the hypothetical product offerings, reducing the risk of confounding factors biasing the estimation of the value of the patented feature. Second, the method directly estimates demand, i.e. consumers' willingness to pay for the patented technology. By contrast, observable market prices for products reflect both demand and supply, and consumers' willingness to pay for the product feature can be inferred from the price only by making additional assumptions about the nature of competition and the form of the demand function. Third, the method is capable of taking into account the effect of the patented technology on both the price and the market share of the licensed product. Finally, while hedonic price regression holds other products' prices constant, conjoint analysis allows for the possibility that the price of other products decreases in response to increased competitive pressure from the licensed product.

There are however certain caveats. In particular, stated preferences of survey participants may not accurately reflect how real consumers would actually choose between different options. In order to mitigate these concerns, the respondents must be appropriately chosen to represent the population of likely buyers of the good. It is also important that the product attributes are well explained to survey participants, ensuring that respondents understand the different options, and that the description of the attribute of interest is sufficiently tied to the patented technology (Cameron et al., 2014).

Conjoint analysis is becoming increasingly popular for the determination of reasonable royalties in the US.[207] Allenby et al. (2014) provide a model analysis for the valuation of a patented product feature using conjoint analysis, and Allenby et al. (2017) discuss an

[207] See e.g. Allenby et al. (2017) for a list of recent court cases in which experts relied on conjoint analysis to determine a reasonable royalty. Allenby, Greg, Rossi, Peter E., Cameron, Lisa, Verlinda, Jeremy & Li, Yikang, 'Calculating Reasonable Royalty Damages Using Conjoint Analysis', *45 AIPLA Q. J.* 233, 2017.

application to standardized wireless communication technology.[208] Sidak and Skog (2016) review the use of conjoint analysis in the US case law.[209]

**Demand estimation models**

It is also possible to use observational price data from real market transactions to retrieve an unbiased demand estimate. Demand estimates based on observational data are often biased, because changes in prices may reflect both variations in demand and supply factors. Variations in price, observed e.g. through hedonic regression analysis, may thus be attributable to supply factors (e.g. costs) rather than consumer valuation for the technology. In order to separately identify demand and supply influences on observed price variations, one needs at least one instrumental variable. An instrumental variable, by assumption, only affects either demand or supply, but not both at the same time. Demand could be estimated using e.g. an exogenous supply shock to identify and control for supply. Nevertheless, such instrumental variables are often not available.

An alternative approach consists in estimating a demand system. It is assumed that price is endogenously determined as a function of given product characteristics. The method uses the uniqueness of the product characteristics as an instrument for demand.[210] Similar to conjoint survey analysis, the method produces estimates of own-price and cross-price elasticities of demand. These can be used to model price formation in the counterfactual scenario in which the manufacturer of the licensed product did not have access to the patented technology. The difference between the equilibrium profits in this scenario and the observable profits achieved while using the patented technology identifies the value that use of the patented technology added to the manufacturer's profits, and forms the basis for a reasonable royalty.

The method has several advantages. Unlike conjoint survey analysis, it is based on observational data, i.e. revealed instead of stated preferences. Furthermore, the method explicitly addresses endogeneity in prices using instrumental variables that are generally available. It thus allows for a standardized and replicable approach to assessing value.

A drawback of the method is its computational complexity. While there are many applications of the method in empirical research, applications to value determinations in an adversarial setting are more limited. A notable field of practical application of demand systems is antitrust.[211] More recently, Hiller et al. (2018) propose an application

[208] Allenby, G. M., Brazell, J., Howell, J. R., & Rossi, P. E., 'Valuation of patented product features', *The Journal of Law and Economics*, 57(3), 2014, pp. 629-663.
[209] Sidak, G. & Skog, J., 'Using Conjoint Analysis to Apportion Damages', 25 *Federal Circuit Bar Journal*, 581, 2016.
[210] Berry, S., Levinsohn, J., and Pakes, A., 'Automobile Prices in Market Equilibrium', *Econometrica*, 63, pp. 841 – 890
[211] Nevo, Aviv, 'A practitioner's guide to estimation of random-coefficients logit models of demand', *Journal of economics & management strategy*, 9.4, 2000, pp. 513-548.

of the method to the determination of reasonable royalties for patents that are essential to the near field communication ("NFC") standard.[212]

[212] Hiller, R. Scott, Savage, Scott J. and Waldman, Donald M., 'Using aggregate market data to estimate patent value: An application to United States smartphones 2010 to 2015', *International Journal of Industrial Organization* 60, 2018, pp. 1-31.

# Annex 7

# INSIGHTS FROM OTHER AREAS OF IP VALUATION

There have only been few cases in which a European court has determined the value of a SEP licence.[213] There is limited public information on the methods used in valuations of SEP licences in other contexts, such as arbitration or bilateral negotiations. It is therefore informative to consider other areas of IP valuation with a larger body of precedents.

The **German Employee Inventions Act** obliges the employer to pay its employee an appropriate remuneration for his/her inventions. If the employer and the employee cannot agree on the remuneration, the amount will be set in two steps. First, the economic value of the invention is determined in the same way as parties to a licensing agreement would determine the royalty. Second, the remuneration of the employee will be determined as a proportion of this royalty.[214] Thus, the first step results in a royalty that has to be fair and reasonable in a similar way as a FRAND-rate for a SEP.

The inventive value is in most cases assessed by a non-binding decision of the Arbitration Board established for the purpose at the German Patent Office. The decision is based on a concrete licence analogy, in which a licence specifically concluded for the patent in question is used for a comparison. If such a licence agreement(s) is not available, the Board considers other licence agreements agreed upon by the employer for a settlement. If such licence agreements are also not suitable for comparison, the Board uses licence agreements for similar or otherwise comparable products commonly concluded in the industry.[215] In the past, the inventive value might have been determined as a proportion (e.g. 25 to 30 %) of the employer's benefit from using the invention.[216] However, this latter method is no longer used today.[217] In the context of the licence analogy methodology the Arbitration Board or court applies a royalty that is usual in the industry to the turnover of the patented products. In the case of a complex product, the royalty is typically applied to a royalty basis ("Bezugsgröße") corresponding to the part

[213] For a comparative discussion of methods used for the determination of FRAND royalties and other terms and conditions (primarily in other jurisdictions), see Pentheroudakis and Baron, '*Licensing Terms of Standard Essential Patents: A Comprehensive Analysis of Cases*', JRC Science for Policy Report, Publications Office of the European Union, 2017. https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/licensing-terms-standard-essential-patents-comprehensive-analysis-cases

[214] See § 9 para. 2 of the German Employee Inventions Act (Gesetz über Arbeitnehmererfindungen) and Nr. 2 of the Directive on the Remuneration of Inventions by Employees (Richtlinie für die Vergütung von Arbeitnehmererindungen im privaten Bereich)

[215] Busse/Keukenschrijver, PatG, 8. Aufl.,§ 11 ArbEG Rn. 12; Bartenbach/Volz, Arbeitnehmererfindervergütung, 4. Aufl., RL Nr. 9; both with further references.

[216] Judgment of the Federal Court of Justice in Germany of 13 November 1997, X ZR 6/96, GRUR 1998, 684 sub II 4 b. Judgment of the Federal Court of Justice of 16 April 2002, X ZR 127/99, GRUR 2002, 801 sub III 3. Decision oft he Arbitration Board under the Employee Inventions Act (Schiedsstelle für Arbeitnehmererfindungen beim Deutschen Patent- und Markenamt) of 18 January 1990, ArbErf. 72/89, , BlPMZ 1990, 336.

[217] Judgement of the Federal Court of Justice of 17 November 2009, *Türinnenverstärkung*, X ZR 137/07, BGHZ 183, 182 para. 21 ff. Judgment of the Federal Court of Justice, of 6 March 2012, *antimykotischer Nagellack I*, X ZR 104/09, GRUR 2012, 605 para. 16.

of the product which is characterized by the invention ("von der Erfindung geprägt"). The royalty and the royalty base should be chosen and correlated in a way that the resulting remuneration is independent of the specific choice of a product.[218] If there is already an accepted royalty base for a certain type of patents in the market, the German courts can simply use this accepted royalty base.[219] The determination of the compensation of an employee's invention typically concerns lower amounts and involves less time and effort than those concerning a royalty for a SEP licence.

Similar questions arise in the context of remuneration of patent holders for **compulsory licences**. In Germany, the patent holder is entitled to a compensation from the recipient of the compulsory licence, which is reasonable in light of the circumstances of the case, and takes into account the economic value of the compulsory licence. It is common to base the determination of the compensation on the royalty that would have been agreed upon in a voluntarily concluded licensing contract, taking into account the specificities of the case. The determination of this hypothetical royalty follows an approach that is typical for the determination of royalties e.g. for compulsory licences, employee compensation, and damages for patent infringement, namely the comparison with the royalties voluntarily agreed upon in other licences (taking into account the specificities of each individual case).[220]

A number of European countries provide for **licences of right**, whereby the patent holder commits to make licences available on FRAND terms in exchange of a reduction in patent fees.[221] In the United Kingdom, the comptroller often establishes royalties by reference to comparable licences. "Traditionally royalty has been assessed either by looking at comparable licences or by splitting the profits available to the licensee between the parties."[222]

In addition, the **Final Paper from the European Commission's Expert Group on Intellectual Property Valuation** provides a summary discussion and results of a practitioner survey regarding valuation methods used in different contexts.[223] The paper distinguishes between valuation methods used for enterprise-internal, management-oriented reasons, those carried out to comply with reporting obligations under corporate and tax law, those related to IP transfers, those related to disputes, and those carried out

[218] Judgment of the Federal Court of Justice of 26 June 1969, *Rüben-Verladeeinrichtung*, X ZR 52/66, GRUR 1969, 677, 680 sub III 1 c. Judgment of the Federal Court of Justice of 25 November 1980, *Drehschiebeschalter*, X ZR 12/80, GRUR 1981, 263 sub II 3.

[219] See Nr. 8 of the Directive on the Remuneration of Inventions by Employees

[220] Judgment of the Federal Patent Court in Germany ("Bundespatentgericht") of 21 November 2017, *Isentress II*, 3 Li 1/16 (EP), GRUR 2018, 803 para. 48.

[221] In Germany and Spain these terms are determined by the respective patent offices. In the United Kingdom and Ireland the royalties for licenses of right are determined by the comptroller. In Italy the terms are determined in arbitration. In Latvia, Luxembourg, and Slovakia the terms are established by court. https://www.beckgreener.com/licences-right-european-patent-convention-epc-territories-and-respect-european-unitary-patents

[222] Reports of Patent, Design and Trade Mark Cases, *NIC Instruments LTD*, Volume 122, Issue 1, 2005, Pages 1–22, https://doi.org/10.1093/rpc/2005rpc1

[223] The Report is available for download at https://op.europa.eu/en/publication-detail/-/publication/797124c6-08cb-4ffb-a867-13dd8a129282

for financing and accounting purposes. The paper stresses that valuation methods are context-specific, and calls for the establishment of a data source containing anonymous information on IP transactions, as well as an organization to oversee IP valuation practice (incl. education and training).

# Annex 8
# CONSIDERATIONS FOR SELECTING APPROPRIATE VALUATION AND APPORTIONMENT METHODS

**Note: This Annex was drafted by at least one member of the Expert Group and expresses the personal views of that (those) member(s). Inclusion of this Annex into the Contribution should not be interpreted as endorsement of this Annex by the whole Expert Group.**

## Table 1. Aggregate Royalty Valuation Methods

| 1. | **Comparable Licences Approach** Sum 'normalized'[224] and weighted[225] royalties of comparable licences x scale-up factor(s)[226] | **Valuation case at hand** | **Possible Comparable Licence information available for** | **Useful sources of information and estimated cost** | **Likely number of available data points** | **Relevancy[227] Information** | **Objectiveness[23][5] Information** | **Robustness[235] Information** | **Complexity using Method based on available information** | **Overall Suitability Method for case at hand** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | New standard, prior to launch market for a use case[228] (ex-ante) | Same standard, same use case | t.b.d. | Zero | - | - | - | - | Not |
| | | New standard, early phase in market for a use case (ex-post) | Same standard, same use case | t.b.d. | Low | High | High | Medium-High | Low | Low |

[224] Normalized: royalties have to be expressed in same value terms ($ or %) and relative to same royalty base.
[225] Weighted to reflect the level of similarity between the comparable licenses used for valuation.
[226] Scale-up factor(s) are factors that may take into account SEP ratios between standards and/or other elements, like performance-, volume - and/or price ratios for new/previous standard.
[227] Definitions: (a) Relevancy of information: the degree of correlation of the information used with the value that the method aims to measure, i.e. the aggregate royalty; (b) Objectiveness of information: the degree the information used is based on observable and replicable phenomena and uninfluenced by emotions or personal judgements or prejudices; and (c) Robustness of information: the robustness of the information is a measure for how prone it is for being deliberately changed or filtered in order to influence the outcome of the value that the method aims to measure, i.e. the aggregate royalty.
[228] A use case may have different product categories; in that case the aggregate royalty should be determined for each product category.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | New standard, later phase in market for first use case (ex-ante) | Same standard, same use case | t.b.d. | Medium | High | Medium-High | Medium-High[229] | Medium-Low | Medium |
| | | New standard, for a use case, (prior to launch, early or later phase of market) [230] | Previous generation standard, same use case | t.b.d. | High | Medium | Medium-High | Medium-High[6] | Medium | Medium-High |
| | | | Same standard, other, earlier use case | t.b.d. | Medium-High | Low | Medium | Medium-High[6] | Medium | Low-Medium |
| | | | Other standard, same use case | t.b.d. | Medium-High | Medium | Medium | Medium-High[5] | Medium | Low-Medium |
| | | | | | | | | | | |
| **2.** | **Profit Split Approach** Split (estimated) average global[231] profit of an implementer over a predetermined period[232] between all SEP licensors and implementer | **Valuation case at hand** | **Possible information on (estimated) profit available for** | **Useful sources of information and estimated cost** | **Likely number of available data points** | **Relevancy Information** | **Objectiveness Information** | **Robustness Information** | **Complexity using Method based on available information** | **Overall Suitability Method** |
| | | New standard, prior to launch market for a use case (ex-ante) | Same standard, same use case | t.b.d. | Low | Low | Low | Low-Medium | Medium | Low |
| | | New standard, early phase of market for a use case (ex-post) | Same standard, same use case | t.b.d. | Low-Medium | Low | Medium | Medium | Medium-High | Low |
| | | New standard, later phase of market for a use | Same standard, same use case | t.b.d. | Medium | Low | Medium-High | Medium-High | Medium-High | Low |

[229] Possibility of selecting agreements supporting own position, in particular when using licenses for same SEPs.
[230] May be used in case no comparable license information for same standard and same use case is available.
[231] Profits need to be averaged globally as profits may vary from country to country.
[232] Profits have to be averaged over a number of years, e.g. 5 years (term of agreement) as profits may change substantially over the years, especially in the first years after launch of a product.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | case (ex-post) | | | | | | | | |
| | | | | | | | | | | |
| | Profit Split Approach: as above x scale-up factor | New standard, (for early or later phase of market) for a use case | Previous generation standard, same use case | t.b.d. | Medium | Low | Medium | Medium | Medium | Low |
| | | | | | | | | | | |
| **3.** | **Ex-Ante Aggregate Royalty Statements Approach** Weighted[233] average of royalty statements made by SEP licensors | **Valuation case at hand** | **Possible statements available for** | **Useful sources of information and estimated cost** | **Likely number of data points available for** | **Relevancy Information** | **Objectiveness Information** | **Robustness Information** | **Complexity using Method based on available information for** | **Overall Suitability Method** |
| | | New standard, for first use case | Same standard, same use case | t.b.d. | Low[234] | Medium-High[235] | Medium-High | Low-Medium | Low | Low-Medium |
| | | New standard, for following use cases | Same standard, per following use case | t.b.d. | Low[11] | Medium-High[12] | Medium-High | Low-Medium | Low | Low |
| | | | | | | | | | | |
| **4.** | **Present-Value-Added Approach** Present value of discounted estimated future incremental revenues from all SEPs for standard-compliant product | **Case at hand** | **Possible information available for** | **Useful sources of information and estimated cost** | **Likely number of data points available for** | **Relevancy Information** | **Information Objectiveness** | **Information Robustness** | **Complexity using Method based on available information for** | **Overall Suitability Method** |

[233] Weighted to filter out any unreasonably high or low statements.

[234] If companies will be held to their statements made prior to standardization started later on after standard has been set, companies will likely no longer make any royalty statements.

[235] High if statements are made by SEP licensors, otherwise medium.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **A. Hedonic Price Regression** Compare prices of two similar products with and without use of standard | New standard, prior to launch of market for a use case (ex-ante) | Estimated price product compliant with new standard[236] and average price product compliant with previous generation standard | t.b.d. | Medium | Medium | Medium | Medium | High | Low |
| | | New standard, early phase of market for a use case (ex-post) | Estimated price product compliant with new standard and average price product compliant with previous generation standard | t.b.d. | Medium | Medium | Medium | Medium | High | Medium |
| | **B. Choice Modelling / Conjoint Analysis** Statistical analysis of surveys for customer preferences for standard compliant product | New standard, prior to launch/ early phase of market for a use case | Customer surveys showing preference for product compliant with new standard compared with product compliant with previous generation standard or current product not using any standard | t.b.d. | Low | Medium | Medium | Medium-Low | High | Medium |
| | **C. Demand Estimation Model** Predict change in global demand for a product due to use of standard | New standard, prior to launch of the market for a use case (ex-ante) | Projections of demands[237] and prices of product using the standard and sales and prices of product using previous generation standard | t.b.d. | Medium | Medium | Medium | Low-Medium | Medium | Low |
| | | New standard, early phase of the market for a use case (ex-post) | Demands and prices of product using the standard and sales and prices of product using previous generation standard | t.b.d. | Medium | Medium | Medium | Medium | High | Medium |

[236] If regression on estimates, the assumptions used for the estimations can be inputted directly.
[237] Using projections of demands for a product in a demand estimation model may not be helpful as it will result in the same projections.

## Table 2. Apportionment Approaches for Aggregate Royalty ("AR")

| | Apportionment based on | Case at hand: Apportionment of AR for | Number of available data points | Information relevancy | Information objectiveness | Information robustness | Complexity using method based on available information | Overall suitability method for case at hand |
|---|---|---|---|---|---|---|---|---|
| **1.** | **# Declared SEPs per company** | New standard, prior to launch market for use case shortly after approval standard | High | Low[238,239] | High | Low[240] | Low | Low |
| | | New standard, prior to launch for use cases a couple of years after approval standard | High | Low | High | Low[17] | Low | Low |
| | | | | | | | | |
| **2.** | **# True SEPs in sample declared SEPs** | New standard, prior to launch market for use case shortly after approval standard | Medium | Low-Medium | Low Medium[241] | Medium-High[242] | Medium-High | Low-Medium |
| | | New standard, prior to launch market for another use case a couple of years after approval of standard | Medium | Low-Medium | Low-Medium | Medium-High | Medium-High | Medium |
| | | | | | | | | |
| **3.** | **Sample declared SEPs, checked on essentiality and weighted based on** | **Case at hand: Apportionment of AR for** | **Number of available data points** | **Information relevancy** | **Information objectiveness** | **Information robustness** | **Complexity using method based on available information** | **Overall suitability method for case at hand** |
| | **A. Forward citations[243] only or in combination with one** | New standard prior to launch market for use | Low-Medium[244] | Medium-High | Low-Medium[245] | Medium-High | Medium-High | Low-Medium |

[238] A large percentage of the declared patents is estimated not to be essential. These estimates range from 40% to 70% not essential declared SEPs.
[239] A large percentage of declared SEP is not granted at the time of approval of a standard. According to IPlytics study 44% of the declared SEPs for 5G have been granted with a large spread ranging from 26%-66% between companies depending on their country of origin. About 12% of the declared patents are granted by the European Patent Office.
[240] Due to systematic over-declaration of SEPs.
[241] Higher, if essentiality checks are done by a trusted, independent body, like patent office or a network of certified evaluators, otherwise medium (and in some cases even low). Results depend highly on sample taken.
[242] Results may be influenced to some extent by divisional filings and higher propensity of filings.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **or more other factors, like market coverage (patent countries), number of claims, number of IPC classes, etc.** | case shortly after approval of standard | | | | | | |
| | | New standard prior to launch market for another use case a couple of years after approval of standard | Medium-High | Medium-High | Low-Medium[22] | Medium-High | Medium-High | Medium |
| | | | | | | | | |
| | **B. Contributions to standard** | New standard prior to launch market for use case shortly or longer after approval of standard | High | Low-Medium | Medium-High[246] | Low -Medium[247] | Medium-High | Medium |
| | | | | | | | | |
| | **C. Relevancy indicators, like system/application SEPs, SEPs relating to different layers standard stack, overlap with standard etc.** | New standard prior to launch market for use case shortly after approval of standard | Low-Medium | High | Medium-High | Medium-High | Medium-High | Medium |
| | | New standard prior to launch market for use case a couple of years after approval of standard | Medium-High | High | Medium-High | Medium-High | Medium-High | Medium |
| | | | | | | | | |
| **4.** | **# True SEPs[248] per company** | **Case at hand: Apportionment of AR for** | **Number of available data points** | **Information relevancy** | **Information objectiveness** | **Information robustness** | **Complexity using method based on available information** | **Overall suitability method for case at hand** |
| | **A. Without any incentives/ obligations to get reasonably clear picture of true SEP landscape shortly after approval of standard** | New standard, prior to launch market for use case shortly after approval standard | Medium | Medium-High | High | High | Medium-High | Medium |
| | | New standard, prior to launch market for another use case a couple of years after approval of standard | Medium-High[249] | Medium-High | High | High | Medium-High | Medium-High |
| | **B. With incentives/obligations to get** | New standard prior to launch market for use | Medium | Medium-High | High | High | Medium-High | Medium-High |

[243] Excluding self-citations.
[244] Number of citations for recently issued patents is usually low.
[245] Large number of different outcomes as weighing cannot be done objectively; with multiple indicators there is a large number of different outcomes.
[246] Different types of incommensurable contributions may necessitate some judgements.
[247] Number of contributions may be subject to inflation.
[248] Assuming checks are mandatory done by a trusted, high quality independent body, e.g. patent office or certified network of law firms.
[249] A couple of years after the approval of standard the percentage of granted patents will have increased.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **reasonably clear picture of true SEP landscape shortly after approval of standard**[250] | case shortly after approval of standard | | | | | | |
| | | New standard prior to launch market for another use case a couple of years after approval of standard | High | Medium-High | High | High | Medium-High | High |
| | | | | | | | | |
| **5.** | **# Weighted, true SEPs[26] per company, weighing based on** | **Case at hand: Apportionment of AR for** | **Number of available data points** | **Information relevancy** | **Information objectiveness** | **Information robustness** | **Complexity using method based on available information** | **Overall suitability method** |
| | **A1. Forward citations only or in combination with one or more other factors, like market coverage (#patent countries), number of claims, number of IPC classes, etc. + no incentives/ obligations for fast check and grant** | New standard prior to launch market for use case shortly after approval of standard | Low-Medium[251] | Medium-High | High | Medium-High | Medium-High | Low-Medium |
| | | New standard prior to launch market for another use case a couple of years after approval of standard | Medium-High | Medium-High | High | Medium-High | Medium-High | Medium |
| | **A2. Forward citations in combination with one or more other factors, like market coverage (#patent countries), number of claims, number of IPC classes, etc. + incentives/obligations for fast check and grant**[258] | New standard prior to launch market for use case shortly after approval of standard | Medium | Medium-High | High | Medium-High | Medium-High | Medium-High |
| | | New standard prior to launch market for another use case a couple of years after approval of standard | High | Medium-High | High | Medium-High | Medium-High | Medium-High |
| | | | | | | | | |
| | **B. Contributions to standard** | New standard prior to launch market for use case shortly or longer after approval of standard | High | Low-Medium | Medium-High | Low-Medium | Medium-High | Medium |
| | | | | | | | | |
| | **C1. Relevancy indicators, like system/application SEPs, SEPs relating to different layers standard stack, overlap with standard etc.+ no incentives + obligations for fast check** | New standard prior to launch market for use case shortly after approval of standard | Medium | High | Medium | Medium | Medium-High | High |
| | | New standard prior to launch market for use case a couple of years | High | High | Medium | Medium | Medium-High | High |

[250] Introducing these incentives or obligations would likely require some structural reform measures.
[251] Number of citations for recently issued patents is usually low.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **and grant** | after approval of standard | | | | | | |
| | | | | | | | | |
| | **C2. Relevancy indicators, like system/application SEPs, SEPs relating to different layers standard stack, overlap with standard etc.+ incentives obligations for fast check and grant**[258] | New standard prior to launch market for use case shortly after approval of standard | Medium | High | Medium | Medium | Medium-High | High |
| | | New standard prior to launch market for use case a couple of years after approval of standard | High | High | Medium | Medium | Medium-High | High |

# ANNEX 9
# A PRACTICAL APPROACH TO THE ASSESSMENT OF THE NON-DISCRIMINATION PRONG OF THE FRAND COMMITMENT

In this Annex we present an example of methodology to assess whether the terms and conditions of a given licence or offer (the "compared licence") made by a SEP holder (licensor) to an implementer (licensee) are ND. The terms and conditions of the compared licence will be benchmarked against all licensing agreements and offers made by the licensor (though it could be extended to include all licensing agreements entered into by the licensee). We term the set of all benchmark licences and offers as the "comparable set".

The purpose of this methodology is to provide a safe harbour so that, within the ranges indicated by the method, the licence is considered ND. It is however not excluded that outside those ranges the licence agreement may also be ND, due to some specific circumstances, but whether that is the case it will have to be determined on a case by case basis.

The methodology involves various steps.

1. *Identifying all relevant terms and conditions*

The first step of the analysis consists in identifying all terms and conditions included in the compared licence and the licences in the comparable set. The table below reports a list of terms and conditions commonly employed in SEP licences and offers. They are listed by categories. This list is not meant to be exhaustive and may include elements that are considered irrelevant by some; it is included here to facilitate the presentation of the methodology.

**Table 1. Possible terms and conditions in the compared licence and the comparable set**

| **Category:** | **Elements:** |
|---|---|
| | |
| **Licensed IP** | Portfolio of SEPs only |
| | Portfolio of SEPs combined with other IP (non-SEPs, copyrights, trademarks, designs, know how, etc.) |
| | Remaining lifetime licensed SEPs |
| | |
| **Scope of Licence** | End-user equipment, devices or methods fully compliant with the relevant standard |
| | End-user equipment, devices plus modules and components (incl. semiconductors) and methods fully compliant with the relevant standard |

| | |
|---|---|
| | Broad: unspecified products as long as fully compliant with the relevant standard |
| | Narrow: specified products fully compliant with the relevant standard |
| | |
| **Royalty Structure** | Percentage royalty |
| | Fixed royalty |
| | Lump Sum |
| | Volume Discounts |
| | Time Discounts |
| | Minimum royalty amount per period |
| | Minimum royalty amount per product |
| | Annual Cap |
| | |
| **Payment Conditions** | Term (quarterly, semi-annually, annually) |
| | Interest late payments |
| | |
| **Compliance** | Reporting obligations (what level of information required) |
| | Auditing conditions (cost, independent auditor, term retention books, percentage deviation allowed) |
| | |
| **Territorial Scope** | Worldwide, by region, by country |
| | |
| **Term** | Set time, lifetime of patents |
| | |
| | |
| **Non-Disclosure Requirements** | Existence of agreement not to be disclosed |
| | Terms & conditions of licence not to be disclosed |
| | |
| **Legal** | Applicable Law (US, German, etc.) |
| | Competent Forum/Court (in the country of a SEP licensor, neutral country, country of the licensee) |
| | |
| **Market situation** | Comparable technology available |
| | Comparable products on the market (competition) |
| | Financial need of patentee |
| | Pricing of the product (which uses the SEPs) |
| | Demand for the product |
| | Lead time on the market (first on the market) |
| | Number of licensees |
| | |
| **Patent** | Validity issues |
| | Use of SEPs dependent on other licences |

2. *Identifying those terms and conditions that together determine the royalty consideration*

All terms and conditions identified in Table 1 may in principle have a positive or negative impact on the royalty consideration requested by the licensor (or the royalty consideration counteroffered by a licensee). For example, the royalty demanded by a licensor may be lower if the licensee accepts to pay a significant amount upfront, and it is likely to be higher for a broader patent portfolio, a wider territorial scope, and a longer duration.

The impact on the royalty offered (or counteroffered) of the inclusion of a given licensing term will vary across terms and conditions and may also vary from one licensing negotiation to another. However, most members of the expert group ("members") consider that, based on their own negotiation and litigation experience, some factors are likely to matter more than others. The terms and conditions listed in Table 1 could be weighted by reference to the likely magnitude of the impact that its inclusion (or omission) could have on the royalty.

To demonstrate how this could be done, each member of the group in charge of drafting Part 3.3 on FRAND terms and conditions gave a relative weight or score to each of the categories listed in Table 1 (on a total score of 100 for all categories) based on her or his personal view on the relative influence of the terms and conditions listed in each of the categories on the royalty. The following six categories obtained the highest scores: (1) royalty structure; (2) market situation; (3) patent; (4) territorial scope; (5) scope of licence; and (6) licensed IP.

Based on those results, in a second step, the members of the group scored in the same way the elements of the categories with the highest scores coming out of the first step. The group focused further only on the six categories that received the highest scores and clustered some elements into one category in order to rationalize the results and make it possible to build the algorithm/methodology at the later stage. The results of this exercise are reported Table 2 below. The average scores obtained by the elements within different categories reflect the relative value and discriminatory impact a given element has on the ultimately agreed royalty. As with Table 1, this list is not meant to be exhaustive and represents the views of some members only; others may include different factors or weight them differently.

This is not the only way to identify the terms and conditions that matter most for the determination of the royalty but just an example on how it can be done. An alternative would be to calculate correlations between the royalty and the terms and conditions listed in Table 1 for the set of comparable licences. Those terms and conditions with the highest correlations would then be used in the following steps in the methodology.

**Table 2. Identifying terms and conditions driving the royalty**

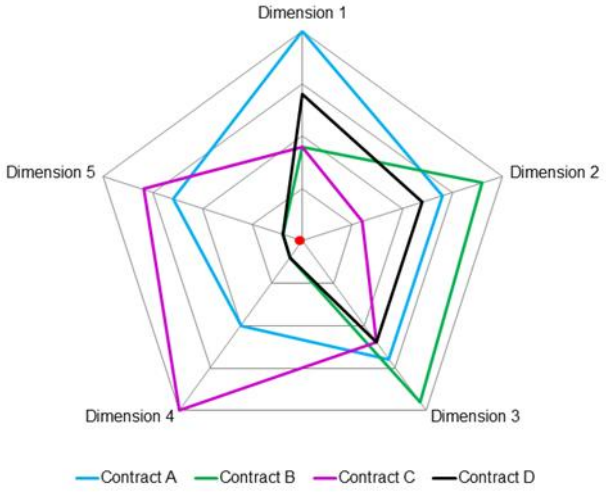
| **Category** | **Total Category Score** | **Elements** | **Average Element Score** |
|---|---|---|---|
| | | | |
| **Royalty (amount/price)** | 170 | Percentage royalty, fixed royalty or lump sum | 25 |

| | | | |
|---|---|---|---|
| | | Volume Discounts, Annual Caps, Minimum royalty per period/product, time discounts (for early sign-on) | 22 |
| | | | |
| **Licensed IP** | 100 | Portfolio of SEPs only or combined with other IP (non-SEPs, copyrights, trademarks, designs, know how, etc.), including remaining lifetime SEPs | 7 |
| | | Use of SEPs dependent on other licences | 7 |
| | | Validity issues | 6 |
| | | | |
| **Scope of Licence** | 97 | Territory: worldwide, by region, by country | 10 |
| | | | |
| | | Licence to make, use and sell specified or unspecified end-user equipment, devices or practice any methods fully compliant with relevant standard, including have made rights for components/ semiconductors for use in equipment or devices or including licence to make, use and sell components/semiconductors fully compliant with the relevant standard. | 7 |
| | | | |
| **Market situation** | 95 | Comparable technology/products available | 7 |
| | | Demand for and price of the product using the SEPs | 5 |
| | | Number of licensees | 2 |
| | | Financial need of patentee | 1 |
| | | Lead time on the market (first on the market) | 1 |
| | | | |
| **Total Score** | | | **100** |

### *3. Identifying similarly situated licensees*

Suppose that the analysis above identifies five terms and conditions ("dimensions") as key drivers of the royalty observed in the set of comparable licences. We can characterise the comparable licence and each of the licensing agreements in the comparable set using those five dimensions. We can then plot those agreements using a radar chart as that in Figure 1 below.

**Figure 1. The compared licence and the licences in the comparable set**




The radar chart above illustrates a comparison between four hypothetical contracts (A, B, C and D) along the five key dimensions. In practice, a radar chart can have any number of dimensions and can be used to compare any number of contracts. The red dot in the centre represents the compared licence. The solid lines represent the comparable licences ("contracts").[252] Each of those contracts corresponds to a different licensee (or may be to two agreements with the same licensee entered at different points in time).

The radar chart compares each contract with the compared licence on each of the five dimensions. Distance from the red dot along a dimension represents how close a comparator the contract is to the compared licence. The set of *similarly situated licensees* can then be defined as the set of those licensees whose licensing agreements or offers which are closest to the red dot.

A contract that is identical to the compared licence would be shown by another dot in the centre of the chart. If a contract is different to compared licence on a given dimension it is positioned somewhere along the axis for that dimension. The less comparable a contract is to the compared licence, the further from the centre it will be positioned on that axis. For example, looking at dimension 1 we see that contracts B and C are equally close to the compared licence on this dimension and are closer to the compared licence than contract D, which is closer than contract A.[253]

The radar chart above shows that no contract is the worst on every dimension. Contract A (shown by a blue line) is the worst on dimension 1, Contract B (the green line) is the worst on dimensions 2 and 3, and Contract C (the purple line) is the worst on dimensions 4 and 5. On this basis, no contract is universally the 'worst' comparable. However, it is also clear that in

[252] A radar chart is not the only method that can be used to compare contracts. For example, if the number of contracts or number of dimensions is very large, a radar chart may become difficult to read. In those cases, computational techniques can be used to make the same comparisons. We use a radar chart here because it allows us to illustrate how the comparisons between comparable contracts can be made.
[253] In order to compare contracts using a radar chart it is necessary to 'normalise' each key dimension.

this example Contract A cannot be the best comparator. That is because on every dimension Contract D is either closer to the compared licence than Contract A or equal to Contract A. We describe this outcome by saying that Contract D 'dominates' Contract A: it is a better comparator than Contract A (or at least an equally good comparator) on every dimension.

To be precise, we can say that contract X will dominate contract Y if it is a better comparator than contract Y on at least one dimension and is either a better comparator or equally comparable on every other dimension. A 'non-dominated' contract is therefore a contract for which there does not exist another contract that is a closer comparator in every key dimension. Once we have identified any dominated contracts, these contracts can be removed from the set of similarly situated licensees. We would then describe the resulting smaller set of contracts as the set of similarly situated licences, or similarly situated licensees, since there is a one-to-one mapping between licences and licensees. In our example above, this set comprises contracts B, C and D.

An alternative proposed by some members would be to identify as similarly situated licensees those operating in the same downstream market than the licensee whose agreement is being assessed (or, more generally, which are closest to the compared licence in the criteria listed under the market situation category in Table 1). Suppose that in our example above the licensees satisfying this criterion are those with contracts A, B and D. Contract C would be dropped because it concerns a licensee that is not similarly situated in the sense defined above.

Still contracts A, B and D may involve very different royalties reflecting the heterogeneity in their non-royalty terms and conditions. In order to determine whether the compared licence is discriminatory, we need to ensure that we compare apples to apples. Thus, we still need to rank A, B and D in terms of comparability. This means identifying non-dominated contracts as we did with the help of the radar chart above. This will result in the exclusion of contract A, since it is dominated by contract D. In short, this way of proceeding will delineate the set of comparable licences or offers as the set of non-dominated agreements corresponding to similarly situated licensees.

*4. Implementing the ND test*

If the set of similarly situated licences or offers contains a single licensing agreement or offer, then the royalty for that licence or offer provides a good benchmark for the compared licence. Likewise, if all licences or offers in that set are identical along the five key dimensions identified above, then we can use their royalty as a benchmark.

That is not the case in the example above, because of the three non-dominant contracts, B, C and D, none is universally superior to the other. We can then use the range of royalties for the three licences as comparators. Or we can use the weights in Tables 1 and 2 to calculate a weighted average of their royalties. Arguably, this would be a better benchmark to use when assessing whether the royalty specified in the compared licence is in line with those applied to similarly situated licences. The ND test is then simple: how does the royalty in the compared licence, i.e. the licence or offer that is being analysed to determine whether it complies with

the FRAND commitment, compare with the weighted average royalty of the licence agreements or offers that are part of the set of similarly situated ones identified in step 3 of the methodology?

# Annex 10
# COMPARISON OF INFORMATION AVAILABLE ON CERTAIN PATENT POOL WEBSITES[254]

**Note: This Annex was drafted by certain members of the Expert Group as a reference tool. Inclusion of the Annex into the Contribution should not be interpreted as endorsement of this Annex by the whole Expert Group.**

| | **Pool Administrator** | **Avanci[255]** | **One-Blue[256]** | **HEVC Advance[257]** | **Via Licensing[258]** | **MPEG-LA[259]** | **Sisvel[260]** |
|---|---|---|---|---|---|---|---|
| | Standards subject to Pool Licensing | 2G, 3G, 4G | CD, DVD, BD, UHD-BD | HEVC/H.265 | Various audio, wireless and other standards. Below data are for Via's LTE program | Various audio, video and other standards. Below data are for MPEG-LA's HEVC program | Various audio, video and wireless communication standards. Below data are for Sisvel's LTE program |
| 1. | Pool Administrators' shareholders / ownership structure[261] | **No** | **Yes** | **Yes** | **Yes** | **No** | **Yes** |
| 2. | Process for evaluating SEPs | **No** | **Yes** | **Yes** | **Yes** (upon request) | **Yes** (upon request) | **No** |
| | **Pool Administrator** | **Avanci** | **One-Blue** | **HEVC Advance** | **Via Licensing** | **MPEG-LA** | **Sisvel** |
| 3. | List of independent evaluators | **No** | **Yes** | **Yes** (for one country only) | **No** | **Yes** (upon request) | **No** |
| 4. | List of Certified SEPs | **No** | **Yes** (per program) | **Yes** (total + per program) | **No** | **No** | **No** |
| 5. | Illustrative cross | **No** | **No** | **Yes** | **No** | **Yes** | **Yes** |

[254] The information contained in this Annex is derived solely from information available on each pool administrator's website as of the date of this publication.
[255] See: www.avanci.com
[256] See: www.one-blue.com
[257] See: www.hevcadvance.com
[258] See: www.via-corp.com
[259] See: www.mpegla.com
[260] See: www.sisvel.com
[261] All Pool Administrators compared in this table are independent legal entities. It is examined whether the websites provide information on who owns those legal entities (Pool Administrators), i.e. their shareholders, or their ownership structure.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | references to standard | | | | | | |
| 6. | List of Licensed Products | **Yes** | **Yes** | **Yes** | **Yes** | **Yes** | **Yes** |
| 7. | Royalties per program | **Yes/No**[262] | **Yes** | **Yes** | **Yes** | **Yes** | **Yes/No**[263] |
| 8. | Licence agreement per program | **No** | **Yes** | **Yes** (upon request) | **Yes** (upon request) | **Yes** (summary + full upon request) | **No** |
| 9. | List of licensors | **Yes/No**[264] | **Yes** (total + per program) | **Yes** (total + per program) | **Yes** | **Yes** | **Yes** |
| 10. | List of licensees | **Yes/No**[265] | **Yes** (total # + per program) | **Yes** (total #, not per program) | **Yes/No**[266] | **Yes** | **No** |

[262] For connected car programme only.
[263] For certain programmes only.
[264] For connected car programme only.
[265] For connected car programme only.
[266] For AAC programme only.