EUROPEAN
COMMISSION

Brussels, 27.4.2023
SWD(2023) 124 final

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT REPORT

Accompanying the document

Proposal for a Regulation of the European Parliament and of the Council on standard essential patents and amending Regulation (EU) 2017/1001

{COM(2023) 232 final} - {SEC(2023) 174 final} - {SWD(2023) 123 final} -
{SWD(2023) 125 final}

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Glossary

Term or acronym	Meaning or definition
3GPP	3GPP – The Mobile Broadband Standard Partnership Project
Arbitration	A structured process in which the parties submit their dispute for adjudication to a trained arbitrator or panel of arbitrators resulting in a binding decision.
ADR	Alternative Dispute Resolution
EU Charter	Charter of Fundamental Rights of the European Union
CJEU	Court of Justice of the European Union
Commission	European Commission
Conciliation	A structured process in which the parties submit their dispute for negotiation and resolution with the assistance of a neutral person, who may issue a non-binding opinion if the parties are unable to resolve their dispute.
Council	Council of the European Union
EPO	European Patent Office
EP	European Parliament
ETSI	European Telecommunications Standards Institute
EUIPO	European Union Intellectual Property Office
FRAND	Fair, Reasonable and Non-discriminatory
FRAND determination process (conciliation +)	A structured process initiated at the request of one party, in which a neutral person assists the parties to determine FRAND royalties, may request evidence from the parties and will issue a non-binding opinion, if the parties are unable to resolve their dispute.
ICT	Information and Communication Technologies
IEEE	Institute of Electrical and Electronics Engineers
IoT	Internet of Things
IPR	Intellectual Property Rights
ITU-T	International Telecommunications Union – Telecommunications Sector
Mediation	A structured process in which the parties submit their dispute for negotiation with the assistance of a mutually selected impartial and neutral person.
NDA	Non-Disclosure Agreement

NPE(s)	Non-Practicing Entity(ies)
NPO	National Patent Office
Patent claims	Under the European Patent Convention (EPC), a claim must define the matter for which the protection is sought in terms of technical features.
Patent Family	A patent family is a collection of patents that cover the same technology (invention) and are granted indifferent countries.
Patent pool	Means an agreement between two or more SEP holders to license one or more of their patents to one another or to third parties.
R&D	Research and Development
SDO	Standards Development Organisation
SEP(s)	Standard Essential Patent(s)
SME(s)	Small and Medium-sized Enterprise(s)
TRIPS	Trade-Related Aspects of Intellectual Property Rights
WIPO	World Intellectual Property Organisation
WTO	World Trade Organisation

1. INTRODUCTION

1.1. Political and legal context

Standard Essential Patents (SEPs) are patents that protect technology that is incorporated in a standard.[1] SEPs are "essential" in the sense that implementation of the standard requires use of the inventions covered by SEPs.

SEPs are a combination of two seeming contradictions. Standards ensure compatibility and functionality of complex technology, as well as enable interoperability between devices. The success of a standard depends on its wide implementation and as such every producer should be allowed to use a standard. On the other hand, the goal of a patent is protection of the technology of the patent owner who has the right granted by law to limit, or prevent, the usage of that technology and profit, or not, from it, by choosing how and to whom to license/sell patents, whether or not this is for remuneration. To deal with these contradictions, Standards Development Organisations (SDOs) ask the patent owners who participate in standard development to promise to license their patented technology (i.e., SEPs) on "fair reasonable and non-discriminatory" (FRAND) terms[2] to any implementer[3] that chooses to use the standard. If a patent owner makes this promise (called FRAND commitment)[4], it cannot refuse to license its SEPs to a party who is willing to agree to FRAND terms.

SEP licensing issues arise primarily in the context of standards where the SEP holders have made a promise to the relevant SDO to license their SEPs on FRAND terms for remuneration. Such standards are, for example, communication standards (e.g. 3G, 4G, 5G, WiFi, NFC), audio/video compression and decompression standards (MPEG, HEVC), as well as standardized technologies for data storage and exchange (CD and DVD), photo formats (JPEG), and Home Audio/Video Interoperability (HAVi). The users of these standards are traditionally producers of telecommunication equipment, mobile phones, computers, tablets, TV sets, etc. With the recent rise of the Internet of Things (IoT) including connected cars, drones, payment terminals, tracking devices, smart meters and other smart devices, the standards listed above are increasingly implemented by a growing number of companies, often SMEs.

Standard setting and the related FRAND obligation are guided by the Horizontal Guidelines[5] and the CJEU landmark ruling from 2015 in *Huawei v. ZTE*.[6] The summary of the judgment can be found

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[1] A patent that is essential to a standard established by a standardisation body renders its use indispensable to all companies who envisage manufacturing products that comply with the standard to which it is linked. That feature distinguishes a SEP from a patent that is not essential to a standard and which normally allows third parties to manufacture competing products without recourse to the patent concerned and without compromising the essential functions of the product in question (see Judgment of the Court of Justice of 16 July 2015, *Huawei Technologies Co. Ltd v ZTE Corp. and ZTE Deutschland GmbH*, C-170/13, ECLI:EU:C:2015:477, https://e-justice.europa.eu/ecli/ECLI:EU:C:2015:477).

[2] According to para. 285 of the 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, OJ C 11, 14.1.2011, p. 60, CELEX: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011XC0114(04), FRAND can also cover royalty-free licensing.

[3] 'Implementer' is any legal person that implements the standard in a product or service.

[4] The FRAND commitment is a voluntary contractual commitment given by the SEP holder to the benefit of third parties. Each commitment may be different, depending on each Standard Development Organisation's policy.

[5] 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, OJ C 11, 14.01.2011, pp. 1-72, CELEX: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011XC0114(04).

[6] Judgment of the Court of Justice of 16 July 2015, *Huawei Technologies Co. Ltd v ZTE Corp. and ZTE Deutschland GmbH*, C-170/13, ECLI:EU:C:2015:477, https://e-justice.europa.eu/ecli/ECLI:EU:C:2015:477.

under the link below.[7] The CJEU recognized the right of the SEP holder to seek to enforce its patents in national courts subject to certain conditions that must be fulfilled to prevent an abuse of a dominant position by the SEP holder. Since a patent confers on its holder the exclusive right to prevent any third party from using the invention without the holder's consent only in the jurisdiction for which it is issued (e.g., Germany, France, the US, China etc.), the patent disputes are governed by national patent laws and civil proceedings/enforcement laws.[8]

In case of unlicensed imports, SEP holders can rely on Regulation (EU) No 608/2013 concerning customs enforcement of intellectual property rights[9] by requesting detention of goods by customs, although that Regulation does not provide specific provisions with regard to applications for customs' action concerning goods infringing SEPs.[10] Jurisprudence seems to suggest that the parties have to comply with the conditions described under *Huawei* v *ZTE* before requesting such seizure or asking for the release of impounded goods on the part of the implementer.[11]

In 2017, the Commission's Communication[12] "Setting out the EU approach to Standard Essential Patents," called for a comprehensive and balanced approach to SEP licensing to incentivise the contribution of the best technology to global standardisation efforts and foster efficient access to standardised technologies. The Commission acknowledged the need for increased transparency (regarding, among others, existence of SEPs, SEP ownership, and FRAND royalties) and addressed certain aspects of FRAND licensing and SEPs enforcement. The Commission's views were supported by Council Conclusions 6681/18[13], with the Council stressing the importance of increased transparency.

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[7] The bringing of an action for a prohibitory injunction against an alleged infringer by the proprietor of a standard-essential patent which holds a dominant position may constitute an abuse of that dominant position in certain circumstances (europa.eu)

[8] Harmonised by Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights ('IPRED'), OJ L 157, 30.4.2004, pp. 45-86, http://data.europa.eu/eli/dir/2004/48/oj.

[9] Regulation (EU) No. 608/2013 of the European Parliament and of the Council of 12 June 2013 concerning customs enforcement of intellectual property rights and repealing Council Regulation (EC) No. 1383/2003 ('Regulation concerning customs enforcement of IPRs'), OJ L 181, 29.6.2013, pp. 15-34, http://data.europa.eu/eli/reg/2013/608/oj.

[10] Customs enforcement of patents is regulated by Regulation concerning customs enforcement of IPRs. Taking into account the broad definition of patents in this Regulation, in particular Article 2(1)(e): "a patent as provided for by national or Union law", it is understood that it already encompasses SEPs.

[11] Hague District Court, decision of 24 October 2014, *ZTE v. Vringo*, C/09/470109 / KG ZA 14- 870, https://slidelegend.com/judgment-hoyng-rokh-monegier_59ec9d4e1723dd6d9a764540.html; Regional Court Düsseldorf, decision of 9 November 2017, *Sisvel v. Samsung*, 14d O 13/17, http://www.justiz.nrw.de/nrwe/lgs/duesseldorf/lg_duesseldorf/j2017/14d_O_13_17_Urteil_20171109.html.

[12] Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee on Setting out the EU approach to Standard Essential Patents, COM(2017)712 final, 29.11.2017, https://ec.europa.eu/docsroom/documents/26583.

[13] Council conclusions on the enforcement of Intellectual Property Rights, 6681/18, 1.3.2018, http://data.consilium.europa.eu/doc/document/ST-6681-2018-INIT/en/pdf.

Since then, the Commission has conducted several studies[14] and a series of webinars[15], has established a group of experts on the licensing and valuation of SEPs[16], and has actively monitored the market situation. On 10 November 2020, by Council conclusions 12339/20[17], the Council invited the Commission to present proposals for a future EU IP policy. The Council encouraged the Commission to swiftly present the announced IP action plan, with initiatives to make IP protection more effective and more affordable, especially for small and medium-sized EU enterprises ("SMEs"),[18] and to promote effective sharing of IP, in particular critical assets such as SEPs, whilst ensuring adequate and fair compensation to technology developers.

On 25 November 2020, the Commission published its intellectual property action plan ('the IP action plan')[19], where it announced its goals of promoting transparency and predictability in SEP licensing, including by improving the SEP licensing system, for the benefit of EU industry and consumers, and in particular SMEs. The IP Action plan noted increases in SEP licensing disputes in the automotive sector and the potential for other IoT sectors to become subject of such disputes, as they begin using connectivity and other standards. The IP Action plan was supported by Council Conclusions of 18 June 2021[20] and by the European Parliament (EP) in its Resolution[21]. The EP acknowledged the need for a strong, balanced and robust IPR system and agreed with the Commission's position that the transparency necessary for fair licensing negotiations depends in large part on the availability of information about the existence, scope, essentiality, ownership, and stipulated royalties of SEPs. The

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[14] European Commission, Joint Research Centre, Bekkers, R., Henkel, J., Tur, E. M., et al., *Pilot study for essentiality assessment of standard essential patents*, Publications Office of the European Union, 2020, https://data.europa.eu/doi/10.2760/68906; European Commission, Joint Research Centre, Bekkers, R., Raiteri, E., Martinelli, A., et al., *Landscape study of potentially essential patents disclosed to ETSI: a study carried out in the context of the EC 'Pilot study for essentiality assessment of standard essential patents' project*, Thumm, N. (editor), Publications Office, 2020, https://data.europa.eu/doi/10.2760/313626; European Commission, Joint Research Centre, Baron, J., Pentheroudakis, C., Thumm, N., *Licensing terms of standard essential patents: a comprehensive analysis of cases*, Thumm, N. (editor), Publications Office, 2018, https://data.europa.eu/doi/10.2791/32230; CRA, Régibeau, P., De Coninck, R. and Zenger, H., *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing: A Report for the European Commission*, 2016, https://ec.europa.eu/docsroom/documents/48794?locale=en; European Commission, Directorate-General for Enterprise and Industry, *Patents and standards: a modern framework for IPR-based standardization: final report*, 2014, https://data.europa.eu/doi/10.2769/90861.

[15] See webpage https://ec.europa.eu/growth/content/webinar-series-standard-essential-patents_en.

[16] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, https://ec.europa.eu/docsroom/documents/45217.

[17] Council conclusions on Intellectual property policy and the revision of the industrial designs system in the Union, 12750/20, 10.11.2020, https://www.consilium.europa.eu/media/46671/st-12750-2020-init.pdf.

[18] SME definition: https://single-market-economy.ec.europa.eu/smes/sme-definition_en.

[19] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on making the most of the EU's innovative potential: An intellectual property action plan to support the EU's recovery and resilience ('IP action plan'), COM(2020) 760 final, 25.11.2020, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52020DC0760.
This proposal along with two others announced in the IP action plan on Supplementary Protection Certificates and Compulsory Licensing are scheduled for adoption as a package in the first half of 2023. These three initiatives share similar goals of increasing legal certainty and transparency as well as reducing fragmentation and transaction costs. All three initiatives take into account the introduction of the Unitary Patent. Beyond the common objectives the two other initiatives are not tackling issues specific to SEPs.

[20] Council conclusions on intellectual property policy, 9932/21, 18.6.2021, https://www.consilium.europa.eu/media/50529/st-9932-2021-init.pdf.

[21] European Parliament resolution of 11 November 2021 on an intellectual property action plan to support the EU's recovery and resilience (2021/2007(INI)), OJ C 205, 20.5.2022, pp. 26-36, CELEX: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021IP0453.

EP also asked the Commission to provide more clarity on various aspects of FRAND, and to consider possible incentives for more efficient SEP licensing negotiations and reducing litigation.

In parallel with this initiative, the Commission has updated its Standardisation strategy[22] (EU Strategy) and is revising the Horizontal guidelines[23]. The new EU Strategy, published in February 2022, aims to strengthen the EU's global competitiveness, preserve the high quality of EU standards, and enable a resilient, green and digital economy. The present SEPs initiative is complementary to this EU Strategy and to the ongoing work to revise the Horizontal Guidelines.

Furthermore, this initiative is important in the context of global developments. For example, certain emerging economies are taking a much more assertive approach, not only in promoting home-grown standards, but also by actively supporting participation by domestic companies in global standardisation efforts, providing their industries with a competitive edge in terms of market access and technology roll-out. Moreover, courts in the UK, US and China have, with their own specificities, decided that they have jurisdiction to determine global FRAND terms in specific cases, which may impact the EU industry.[24] Some countries have released[25] or are considering guidelines governing SEP licensing negotiations as well.[26]

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[22] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on an EU Strategy on Standardisation: Setting global standards in support of a resilient, green and digital EU single market, COM(2022) 31 final, 2.2.2022, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022DC0031&qid=1675955640882.

[23] https://ec.europa.eu/competition-policy/public-consultations/2019-hbers_en.

[24] United Kingdom's Supreme Court, Judgment of 26 August 2020, *Unwired Planet v. Huawei*, UKSC 2018/0214, [2020] UKSC 37, https://www.supremecourt.uk/cases/uksc-2018-0214.html; Decision of the United States District Court for the Central District of California, *TCL v Ericsson*, Case No. 8:14-cv-00341-JVS-DFM with consent of both parties; Chinese Supreme Court, ruling of 19 August 2021, *OPPO v Sharp,* Zui Gao Fa Zhi Min Xia Zhong No. 517; Order of the Wuhan Intermediate Court of 23 September 2020, *Xiaomi v. Interdigital*, (2020) E 01 Zhi Min Chu 169 No. 1, https://patentlyo.com/media/2020/10/Xiaomi-v.-InterDigital-decision-trans-10-17-2020.pdf; Order of the Wuhan Intermediate Court, *Samsung v Ericsson*, (2020) E 01 Zhi Min Chu No. 743. Due to concerns about the compatibility of China's policy in this area with its WTO obligations, the EU has challenged certain measures before the WTO and initiated dispute settlement proceedings (China – Enforcement of intellectual property rights DS611). The EU seeks to ensure that its high-tech industry can effectively protect its patents before courts outside China. The EU internal initiative aims at increasing transparency and improving the licensing environment for SEPs within the EU.

[25] Japanese Patent Office Guide to Licensing Negotiations Involving Standard Essential Patents, https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/document/rev-seps-tebiki/guide-seps-en.pdf; South Korean Guidelines on unfair exercise of Intellectual Property Rights, https://ftc.go.kr/eng/cop/bbs/selectBoardList.do?key=2855&bbsId=BBSMSTR_000000003632&bbsTyCode=BBST11; Singapore's Competition & Consumers Commission Guidelines on the treatment of Intellectual Property Rights, https://www.cccs.gov.sg/-/media/custom/ccs/files/legislation/ccs-guidelines/revised-guidelines-jan-2022/9-cccs-guidelines-on-the-treatment-of-ip.pdf?la=en&hash=4B788CFD35E23E6E6D680F898C3A339FD3B43E0A.

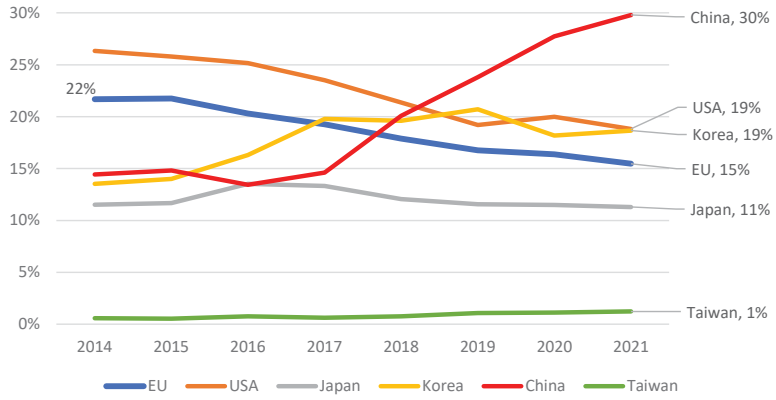
[26] The United States of America withdrew its Policy Statement on Licensing Negotiations and Remedies for Standards-Essential Patents Subject to F/RAND Commitments and concluded a Memorandum of Understanding with the WIPO Arbitration and Mediation Centre. The UK has launched a process in 2021 on SEPs and innovation, which is ongoing. India's Department of Telecommunications is discussing a proposal to set up a Digicom Intellectual Property Management Board to facilitate IPR licensing and IP management in the telecommunication sector. China has consulted on the draft amendments to the implementing regulations of its Anti Monopoly Law. Japan's Patent Office is revising its guidelines and METI launched a Study Group on Licensing Environment of SEPs.

2. PROBLEM DEFINITION

2.1. Market description

SEPs represent approximately 2% of the population of the patents that are currently in force. Standards to which FRAND commitments are made and SEPs are declared include communication standards (e.g. 4G, 5G, WiFi) (90% of declared SEPs), computer technology (5% of declared SEPs), audio/visual field (e.g. codecs) (2% of declared SEPs). The remaining 3% cover machinery, measurement, semiconductors, optics or medical technology. The number of declared SEPs was estimated at around 75 000 (patent families) worldwide in 2021 following a six fold increase over the last decade. They are owned by approximately 260 companies (companies with at least 10 SEPs).[27] One third of all SEPs is owned by Chinese companies, doubling their share in just seven years. Also shares of Korean and Taiwanese SEPs increased over that period to respectively 19% and 1.2%. On the other hand, both the EU and the US shares in SEPs decreased from 22% to 15% and from 26% to 19% respectively. The share of Japanese companies remains stable at around 11% (see figure below). Around 80% of all SEPs held by EU companies are owned by just two companies, Nokia and Ericsson, and a further 10% by Philips and Siemens. The remaining 10% are shared by around 27 firms including telecoms (e.g. Orange, KPN, Deutsche Telekom, Teliasonera, Telecom Italia, T-Mobile, Alcatel), engineering firms (e.g. Bosch), or research institutions (e.g. Fraunhofer Gesellschaft) to name just a few.[28] It has to be noted that the number of declared SEPs may not provide information on the strength of the SEPs portfolio of the different companies. The latter would depend *inter alia* on which of those declared SEPs are actually essential, which features of the standard they cover and what is their quality.

Figure 1: SEP ownership share by year and country (top 50 owners)



Note: Based on top 50 owners representing from 88% (2014) to 95% (2021) of all SEP families
Source: IPLytics database

The FRAND commitment underlies the SEP owners' approach to licensing SEPs to implementers, which may be done either free of charge or for royalties. For instance, SEPs in the area of internet (e.g. URL, HTML, XML, TCP, Java Script) are predominantly licensed royalty-free. Cellular standards (e.g. 4G, 5G) are subject to royalty payments, similar to short range communication standards WiFi and NFC, with the exception of Bluetooth, which is royalty-free but requires a small annual membership fee. SEPs related to CD, DVD, digital image formats (JPEG) and most

[27] The number of patent families presented. -Baron, J., Arque-Castells, P., Leonard, A., Pohlmann, T., Sergheraert, E., Empirical Assessment of Potential Challenges in SEP Licensing, European Commission, DG GROW, 2023; Figure 4 and 5, p. 17 (chapter 2.1.1. Potentially large numbers of declared SEPs per standard).
[28] The statistics concern firms with 10 or more SEP patent families.

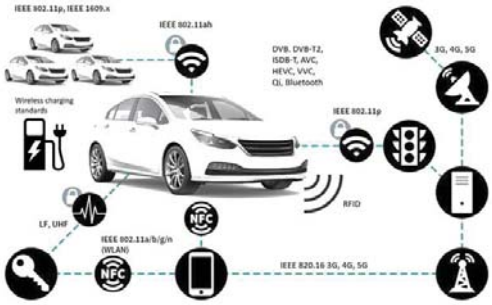
audio/video compression technologies (MPEG, AAC, HEVC) are also subject to royalty payments.[29] Royalty bearing SEPs can be licensed through bilateral arrangements or via joint licensing programmes, including "patent pools" (consortia of patent owners created to license their patents jointly, through a single transaction). SEP holders are expected to license their patents on FRAND terms[30] so as not to abuse their monopoly position.

> An empirical study (Biddle et al., 2010) identified 251 technical interoperability standards implemented in a modern laptop computer. The intellectual property rights policies associated with 197 of the standards were assessed. The results show that 78% were developed under "FRAND" terms and 22% under "royalty free" terms.

The largest share of royalty payments for SEP licenses comes from the mobile telecommunications industry, which generates an estimated patent royalty yield of EUR 14 – 18 billion per year[31] with additional EUR 4 billion of non-monetary benefits from cross-licensing.[32] The EU's share could be estimated at around EUR 3 billion per year.[33]

One standard can consist of thousands of technical contributions protected by patents owned by dozens or even hundreds of SEP holders (for example, in the case of 5G, major SEP holders include Ericsson, Huawei, Intel, Nokia, Qualcomm, Samsung, and ZTE, just to name a few). Moreover, a single product (e.g. a car) can implement multiple standards (see figure below).

Figure 2: Standards with FRAND commitments implemented in a modern connected car



Source: Tim Pohlmann, Intellectual Asset Management, May/June 2017, pp. 22-27

Historically, with regard to SEPs in communications technologies, SEP licensing occurred in large part between phone and network equipment companies who licensed their SEPs to each other (i.e.,

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[29] See: Annex 5. 'SEP – free or royalty bearing'.

[30] The FRAND commitment is a voluntary contractual commitment given by the SEP holder to the benefit of third parties. Each commitment may be different, depending on each Standard Development Organisation's policy.

[31] Galetovic et al. produce an estimate of the cumulative patent royalty yield in the mobile telecommunications industry, which they estimate to reach USD 14.2 billion in 2016, see Galetovic, A., Haber, S., and Zaretzki, L., 'An estimate of the average cumulative royalty yield in the world mobile phone industry: Theory, measurement and results', *Telecommunications Policy*, April 2018, Vol. 42, Issue 3, pp. 263-276, https://www.sciencedirect.com/science/article/pii/S0308596117302240?via%3Dihub, quoted in Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023. Régibeau et al. cite an estimate of the yearly SEP royalty yield generated by 2G, 3G, and 4G technology of EUR18 billion per year, see CRA, Régibeau, P., De Coninck, R. and Zenger, H., *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing: A Report for the European Commission*, 2016, https://ec.europa.eu/docsroom/documents/48794?locale=en. Converted to EUR using EUR1:USD1 rate.

[32] Sidak, G. 'What aggregate royalty do manufacturers of mobile phones pay to license standard-essential patents?', *The Criterion Journal on Innovation*, 2016, Vol. 1, pp. 701-711, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3178336.

[33] Under assumption that it is proportional to EU's share in the world GDP (roughly 1/6).

"cross licensing")[34], because they all had products using the standards. With the market entry of pure SEP holders and pure SEP users, divestiture and licensing of SEPs for monetization purposes, lead to the rise of patent assertion entities (PAE).[35] More recently, the rise of the Internet of Things (IoT) is resulting in more and more devices using connectivity and the landscape of SEP licensing is shifting even more. Today, (i) some companies incorporate standards into their products while not owning SEPs covering such standards, (ii) others own and license SEPs without using them in any products, and (iii) major SEP holders have significantly reduced their product businesses and focus more on licensing their SEPs. Whereas over the last two decades most high-stakes SEP disputes have centred around mobile communication devices (i.e. smartphones), we are already witnessing more disputes in the automotive sector and expect other IoT sectors to be similarly affected.

See Annex 5 for more explanations on SEP market and SEP licensing.

McKinsey[36] estimates that by 2030 IoT could enable USD 5.5 trillion to USD 12.6 trillion in value globally[37], including the value captured by consumers and customers of IoT products and services.

The total number of IoT connected devices[38] is estimated to grow rapidly from 13 billion in 2022 to 30 billion by 2030[39], with the share of devices connected to cellular networks gradually increasing[40]. The total number of cellular IoT connected devices is expected to grow from 1.7 billion in 2022 to 5.4 billion in 2030 (representing 18% of all IoT connected devices).[41] 98% of these will be using either 5G or 4G standards.[42] At the same time, the number of mobile phones is expected to grow moderately from 8.4 billion in 2022 to around 9.5 billion in 2030.[43]

The largest SEP licensing market continues to be mobile phones, in which the top ten phone makers are Samsung, Apple, and 8 Chinese companies, including OPPO, Xiaomi and Vivo. SEP licensing, however, is now moving more towards the growing IoT market, including automotive, smart energy (smart meters and smart grids), payment terminals, tracking devices, drones, medical devices, wireless charging stations and other products.

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[34] Sidak estimated the implicit value of cross-licenses of large implementers, i.e., the licensing revenue that firms like Samsung, Huawei or Apple would have obtained had they not engaged in cross licensing deals but charged royalties to one another. Sidak's estimates imply an additional USD 4 billion in non-cash value of cross licenses in 2013 and USD 3.7 billion in 2014 (roughly one percent of mobile phone sales in each year). See Sidak, G. 'What aggregate royalty do manufacturers of mobile phones pay to license standard-essential patents?', *The Criterion Journal on Innovation*, 2016, Vol. 1, pp. 701-711, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3178336, cited in CRA, De Coninck, R., von Muellern, C., Zimmermann, S., and Mueller, K., *SEP Royalties, Investment Incentives and Total Welfare*, 2022, p. 6.

[35] Companies that acquire a patent or patent rights but do not practice the patented invention.

[36] McKinsey & Company, Chui, M., Collins, M. and Patel, M., 'The Internet of Things: Catching up to an accelerating opportunity', November 2021, https://sitic.org/the-internet-of-things-catching-up-to-an-accelerating-opportunity/.

[37] See also IHS Markit, Campbell, K., Cruz, L., Flanagan, B., et. al., 'The 5G Economy: How 5G will contribute to the global economy', November 2019, https://www.qualcomm.com/content/dam/qcomm-martech/dm-assets/documents/the_ihs_5g_economy_-_2019.pdf?mod=article_inline.

[38] Transforma Insights defines IoT connections as connections to remote sensing and actuating devices and includes associated aggregation devices.

[39] Number of Internet of Things (IoT) connected devices from 2019 to 2030 calculated by Transforma Insights. Retrieved from Statista: https://www.statista.com/statistics/1194677/iot-connected-devices-regionally/.

[40] https://www.statista.com/statistics/1194688/iot-connected-devices-communications-technology/.

[41] Current IoT Forecast Highlights - Transforma Insights: https://transformainsights.com/research/forecast/highlights.

[42] Connection numbers will be dominated by 5G mMTC (massive Machine Type Communications, which includes the NB-IoT and LTE-M technologies) and 4G, driven to a great extent by 2G and 3G network switch-off.

[43] CRA, De Coninck, R., von Muellern, C., Zimmermann, S., and Mueller, K., *SEP Royalties, Investment Incentives and Total Welfare*, 2022, p. 19. Using: "Mobile phone units are approximated using SIM connections (excluding licensed cellular IoT). SIM connections are reported in GSMA's report 'The Mobile Economy 2022', available at https://www.gsma.com/mo-bileeconomy/wp-content/uploads/2022/02/280222-The-Mobile-Economy-2022.pdf".

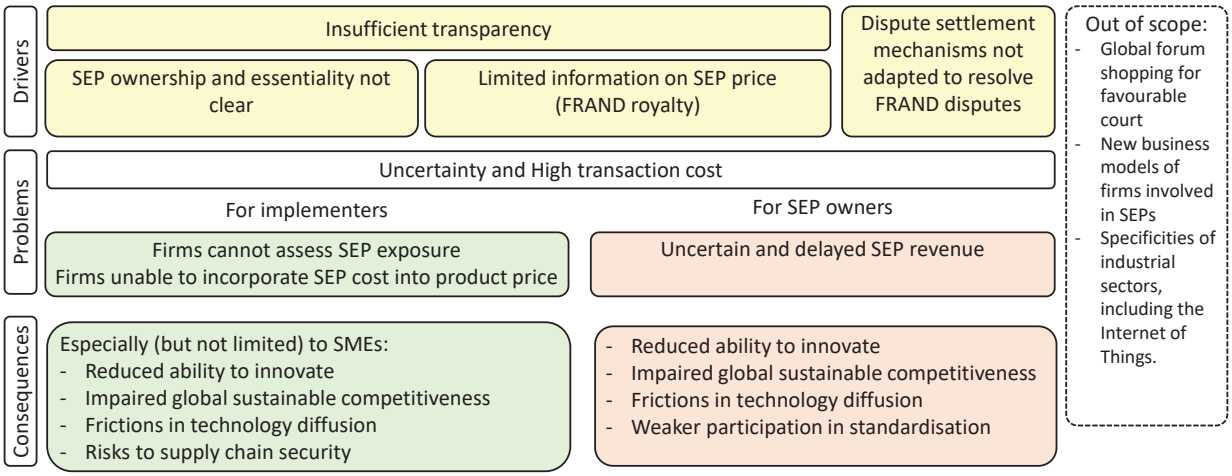
Based on the Orbis[44] database, in 2022 there were around 47 500 potential manufacturing firms worldwide that may implement standards that are subject to FRAND commitments. Around 3 800 (8%) were located in the EU. Among those EU firms, 16% were large and 84% were SMEs (based on employment figures). They employed 2.2 million persons. The combined turnover of these firms for the last available year amounted to around EUR 600 billion. 88 of the companies reported a total R&D spending of EUR 26 billion in the last available year, on average 7% of their turnover.[45]

Furthermore, we estimate that each year around 600 SEP license agreements are signed with approximately 230 EU based implementers (including 80 SMEs) and around 190 non-EU based firms with subsidiaries in the EU. For more information on the implementers' landscape, please see Annex 5.1.

2.2. What are the problems?

In this section we will present the current problems of SEP licensing, in a situation when a SEP holder makes a FRAND commitment to an SDO, from the point of view of SEP holders and implementers. As SEP licensing concerns commercial deals between two parties and is often subject to non-disclosure agreements, there is only limited public information available (for instance when there is a court dispute). Hence the information below is based on evidence obtained through public consultations, numerous interviews with stakeholders and dedicated studies. The examples provided below are anonymised and aggregated versions of evidence the Commission obtained from testimonies, but which are subject to commercial secrecy. The figure below outlines the argumentation logic of this chapter.

Figure 3: Problem tree



The overarching problematic issues are uncertainty and high transaction costs, which affect differently the behaviour of SEP implementers and owners (this may not be the case when an implementer also owns SEPs as e.g. in case of mobile phone companies, but increasingly with the rise of IoT, the two groups are distinct).

2.2.1. SEP owners' perspective

In order to participate in standard creation, prospective SEP holders had to invest considerable resources and time in R&D activities to first develop new technology and then to patent it worldwide.

[44] ORBIS is a private global database which has information on almost 60 million companies.
[45] It should be noted however, that we cannot attribute neither the share of revenue, employment nor R&D expenses to products embedding SEPs.

CRA (2022) estimates R&D amounts of between USD 2 and 9 billion annually for standards used in a smartphone.[46] All that is done without guarantee that first, the inventor's patents will be used by the standard, and second, that the standard will be accepted by the market.[47] Even if a standard is accepted, it takes years before it is widely used while an invention is patented for maximum 20 years. As a result, SEP holders have limited time to generate a return for their R&D investments through royalties for the use of the patents.

A SEP owner, as any patent owner, may license implementers for the use of the protected technology and request remuneration. In contrast to other patents, a SEP holder has to license subject to the FRAND commitment. According to the public consultation[48], in order to be able to better assess the value that their technology brings to the standard implementations, a SEP holder would wait a few years (around 2 to 4 years)[49] until the standard is implemented in the market and then approach companies in specific markets to offer them licences. This is followed by negotiations, which take on average 3 years[50], and potentially litigation in case parties cannot reach an agreement (adding another 1 to 2.5 years).[51]

Work on the 4G standard began in 2002 with the first commercial use in 2009[52], by 2021 around 60% of phones used this technology. Work on 5G started in 2008,[53] and phones with this technology only now emerge on the market. One of the leading SEP holders told the Commission it spends around 20% of its annual sales on R&D.

The Avanci platform was created in September 2016 to license 2G, 3G and 4G technology to vehicle producers. Even though it included only a few SEP holders at the outset, once its first licence was concluded with a German automotive manufacturer at the end of 2017, more SEP holders joined the platform, and it now represents about 52 SEP holders in these technologies (about 60% of SEP).[54] In September 2022 it announced that more than 80 automotive brands selling 100 million connected vehicles are covered by its licence. Prices range from USD 3 (eCall) to USD 20 (2G, 3G and 4G) per vehicle.[55] The figure below illustrates progress in license coverage of connected vehicles. Most OEMs took a licence before the announced increase in the price of the

[46] CRA, De Coninck, R., von Muellern, C., Zimmermann, S., and Mueller, K., *SEP Royalties, Investment Incentives and Total Welfare*, 2022, pp. 3-5, data for 2020, lower bound based on relation of R&D to SEP royalties, upper based on SEP royalties. Based on the lower bound, the largest estimated smartphone R&D are Qualcomm (USD1.1bn in 2020), Nokia (USD256m) and Ericsson (USD159m). Other upstream innovators are estimated to have invested USD 406 million in smartphone related R&D.

[47] Not all R&D expenses targeted at a certain standard (or a certain field of innovation more generally) lead, in the end, to usable contributions to this standard. This reflects the generally risky nature of innovation.

[48] Public consultation, see summary of comments to "Access to all" and "licensing in the value chain".

[49] OPC results, Q9 9. How much time after the first implementation of a standard in your products are you, on average, contacted by a SEP holder with an invitation to take a licence?

[50] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 145: "We observe significant heterogeneity in the duration of negotiations prior to litigation, ranging from 0 to almost 9 years; with a median duration of 2.1 years (mean duration 2.9 years) from the first contact to the filing of the (first) lawsuit".

[51] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 148: Once a complaint has been filed, the average duration of SEP litigation cases (the period from first filing date to resolution) range from 14.4 months in Germany, 15.8 months in the Netherlands, to 32.2 months in France (only first instance).

[52] https://en.wikipedia.org/wiki/4G.

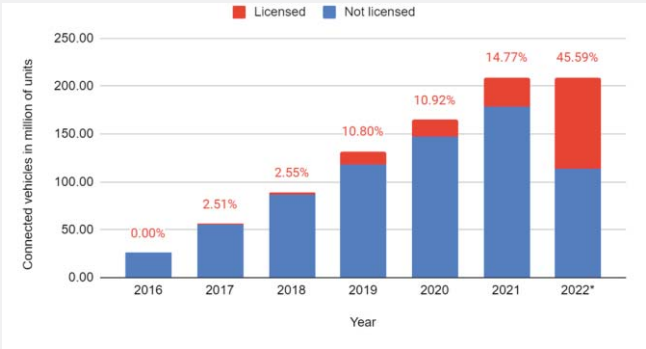
[53] https://en.wikipedia.org/wiki/5G.

[54] Companies missing from Avanci include among others Huawei, Samsung, Apple, Google, ETRI. Source of % IPlytics.

[55] https://www.avanci.com/2022/09/21/avanci-expands-4g-coverage-to-over-80-auto-brands/; USD prices converted to EUR using EUR1:USD1 rate.

licence from USD 15 to USD 20. According to major SEP owners, the process of licensing the automotive industry is about 10 years.[56]

Figure 4: Estimated accumulated sales of licensed and unlicensed connected vehicles based on Avanci announcements



** Including licenses signed up to August 4, 2022*
Source: - Baron, J., Arque-Castells, P., Leonard, A., Pohlmann, T., Sergheraert, E., Empirical Assessment of Potential Challenges in SEP Licensing, European Commission, DG GROW, 2023;, using estimates, p. 156

In the public consultation, SEP holders identified their most important problem to be the various reasons used by the implementers to delay the taking of a licence.[57] Examples are provided in Annex 2.

The costs related to SEP licensing are also significant for both SEP holders and implementers. The average bilateral negotiation cost per licence for both the SEP holder and the implementer is estimated at EUR 2 million to EUR 11 million (see Table 1 and examples in Annex 2). Such high cost (both, in terms of time and money) also explains why major SEP holders usually have licensing deals signed with only around 100-200 implementers[58], that have a sufficiently high volume and/or value of sales that would allow for absorbing these costs. There are also SEP holders whose main source of income is licensing. They constitute a very heterogeneous population, including R&D specialist firms (e.g. InterDigital), public or semi-public research institutes (e.g. Fraunhofer, CSIRO, ETRI), universities, and different types of patent assertion entities (PAE).[59] PAEs are entities whose business model is the licensing and assertion of patents acquired from other parties. They usually conclude below 100 licenses, yielding a modest revenue. Finally, patent pools are platforms through which multiple SEP holders offer a single license to multiple licensees, promoting more efficient licensing. For an overview of licensing practices see table below:

Table 1: Licensing cost and revenue for different SEP holders (worldwide)

	Major net licensors	Patent Assertion Entities/Non practicing entities	SEP Pools
# SEP Licenses per year (Total)	100-150	< 100	1 000-2 000
Licensees (types)	Large multinationals	Large and medium-size firms	Large, medium-size and smaller firms

[56] Major SEP holders reported approaching the automotive industry for licences already in 2013.
[57] Public consultation – responses to question 19.
[58] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, Section 6.2.3.1. SEP licensing by major net licensors.
[59] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 114: "NPEs constitute a very heterogeneous population, including R&D specialist firms (e.g. InterDigital), public or semi-public research institutes (Fraunhofer, CSIRO, ETRI..), universities, and different types of patent assertion entities (PAE)".

Average yearly royalty value (royalty revenue per license)	EUR 15M	EUR 300k	?
Duration of license	6 years	6 years	6 years
Negotiation cost	>1M EUR	<500k EUR	small
Dispute cost per license	EUR 500k	EUR 900k	< EUR 25k
Average cost per license[60]	EUR 2M-11M	EUR 1.75M	EUR 300k-600k

Source: - Baron, J., Arque-Castells, P., Leonard, A., Pohlmann, T., Sergheraert, E., Empirical Assessment of Potential Challenges in SEP Licensing, European Commission, DG GROW, 2023;, Table 16, pp. 138-139

Consequently, SEP owners, in particular those who pursue bilateral licensing, face two main challenges: long negotiations and high cost of SEP licensing. This could potentially reduce their income base and might reduce incentives for participation in development of new standards, especially where strategic licensing markets stagnate and/or move to low-cost business models.

Stakeholders reported that the royalty rates earned by the firms that specialise in technology development have been steady for years in the mobile phone market.[61] It appears that the income uncertainty is currently mitigated by relatively high SEP prices charged to those who are licensed (first example below). And the rate of standard development does not appear to have been affected (second example below).

There are indications that investment in the development of SEPs, certainly for cellular standards, is commercially attractive. For instance, while Bekkers et al. (2002) count 14 different SEP holders for 2G[62], more than 100 parties had declared 5G SEPs as of February 2021 according to IPlytics (2021).[63]

In 2013 and 2014, royalties requested by SEP holders for patents essential to the 802.11 Wi-Fi standard were slashed in multiple bench trials and jury verdicts in the United States, in some cases considerably, by up to 90%. Yet incentives for innovation remained strong and the contributions to the next generations, Wi-Fi 6 and Wi-Fi 7 – whose development began in 2014 and 2019, respectively, are significantly larger than the contributions to Wi-Fi 4 and Wi-Fi 5.[64]

The ability of the SEP holder to seek royalties is likely to be put under pressure in the future. Some phone manufacturers reported to the Commission that they adopted a low-cost business model to serve lower income consumers, and the royalty demands are not commensurate with their business model. An IoT supplier and an IoT mid-cap[65] reported that the IoT market is very fragmented, competitive and cost sensitive.

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[60] Average licensing cost = marginal cost of licence + (licensor fixed costs/ # licences/programme) + (implementer fixed cost/ #licences/product).

[61] Submission by the 4iP Council to the European Commission Call for evidence for an impact assessment.

[62] Bekkers, R., Duysters, G., Verspagen, B., 'Intellectual property rights, strategic technology agreements and market structure: The case of GSM', *Research Policy*, 2002, No. 31, pp. 1141-1161, DOI:10.1016/S0048-7333(01)00189-5, https://www.researchgate.net/publication/239904150_Intellectual_Property_Rights_Strategic_Technology_Agreements_and_Market_Structure_The_Case_of_GSM.

[63] IPlytics, 'Who is leading the 5G patent race?', February 2021, p. 4, https://www.iplytics.com/de/report/5g-patent-race-02-2021/.

[64] CRA, De Coninck, R., von Muellern, C., Zimmermann, S., and Mueller, K., *SEP Royalties, Investment Incentives and Total Welfare*, 2022, pp. 15-16., quoting: IPlytics: https://www.iam-media.com/article/whos-ahead-in-the-wifi-6-patent-race.

[65] Mid-cap (or mid-capitalisation) is the term that is used to designate companies with a market cap (capitalization) – or market value – between USD 2 and USD 10 billion, https://www.investopedia.com/terms/m/midcapstock.asp.

These developments, together with the fact that many SEP holders are no longer implementers, or implementers on a much smaller scale (in particular in the IoT), is likely to have an impact on the FRAND royalty negotiations as the disagreements about the FRAND royalty determination are likely to become more pronounced. This in turn will have a negative impact on both the length and the cost of the negotiations.

2.2.2. Implementers' perspective

While SEP holders need time to assess the value of the technology in standard implementations and make decisions about who and how to license, and for how much, in particular in new markets, implementers encounter great uncertainty and prospects of much higher than anticipated costs associated with the use of standards, potentially discouraging the implementation of these new technologies.

In principle, goods sold should be free from any right or claim of a third party based on intellectual property, if known to the seller or the seller "could not have been unaware".[66] If a company discovers that it may be infringing a patent[67], it has the choice, among other things, to (i) "work around", using a solution that does not result in patent infringement; or (ii) stop the product development unless the company is able to secure a license from the patent owner for the use of the patented technology.[68] The rationale is to respect the law by ensuring first, that a company does not infringe on another person's property rights, and second, anyone who buys such a product has legal certainty. The same rules apply to exports.

50% of the companies who replied to the public consultation claimed that they have proactively sought SEP licences.[69] Not infringing a SEP, having legal certainty over costs and an enhanced ability to plan business activities were mentioned as the top reasons for seeking a license by around three quarters of respondents to the public consultation.[70] Some of those who sought licences did not obtain such licences, mainly because of disagreement on a FRAND royalty (especially in new markets where the SEP holder has not yet decided on its licensing policy and where the SEP holder prefers licensing at end-product level). 17% of the companies who replied to the public consultation reported not to have requested a licence proactively. 33% expressed no opinion. There are various considerations in the decision not to proactively seek a licence.

A manufacturer of medical devices for the treatment of various critical health disorders wishes to implement cellular connectivity in its product to enable remote patient health monitoring and enhancing patient adherence to prescribed treatments. Development, clinical trials and regulatory

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[66] Pursuant to Article 42 United Nations Convention on Contracts for the International Sale of Goods "The seller must deliver goods which are free from any right or claim of a third party based on industrial property or other intellectual property, of which at the time of the conclusion of the contract the seller knew or could not have been unaware…", "The obligation of the seller … does not extend to cases where: (a) at the time of the conclusion of the contract the buyer knew or could not have been unaware of the right or claim" *United Nations Convention on Contracts for the International Sale of Goods*, 2010, p. 12, https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/19-09951_e_ebook.pdf.

[67] Whether or not a product infringes a patent is established with legal certainty only through court proceedings, where the validity and enforceability of a patent is also examined. A product developer may preliminarily assess whether it could be infringing a patent to determine what course of action may be appropriate.

[68] See Annex 9, Q12 "What is the main effect for SEP implementers, in particular start-ups and SMEs, of the costs involved in licensing SEPs (search, negotiation and litigation costs)?": "I look for alternatives (e.g. not using standardised technology or royalty free standards)" – 38% all, 52% implementers; "I go out of business/change business" – 20% all, 38% implementers.

[69] See Annex 9, Q7.

[70] See Annex 9, Q10 "What would be the main reason for you to request a licence?": "Not to infringe a SEP without a licence" (72% all, 82% implementers); "To have legal certainty over my costs and plan my business activities" (60% all, 73% implementers).

approvals for a medical device take years (up to 10 years or more). Thus, the company needs certainty at an early stage about the cost of cellular SEP licenses, as this must be taken into account to consider total costs and alternative technologies. Moreover, once the company enters into licensing negotiations, it faces the prospect of an injunction order potentially affecting patients' access to telehealth services and derailing its product financially. With no indication of an aggregate royalty for implementing the standard and given the large number of SEP owners, evaluating the patents and negotiating the necessary licenses is beyond the firm's capability.

In practice, it is impossible to sign a SEP licence with all SEP holders whose standardised technology the firm uses. For example, Avanci represents 52 SEP holders of 2G, 3G and 4G but does not include certain large SEP holders such as Huawei, Samsung and others in their membership. SEP holders with whom a company did not sign a licence may ask the firm to enter into a licence at any time (and some may never seek royalties).

Standards are in most cases embedded into components that are used in an end-product sold to the consumer. Suppliers of such components may not have the necessary SEP licenses when they sell such components to the end-product manufacturers. As a result, such end-product manufacturers could be subject to a demand for SEP licenses. For example, in the automotive industry, while component manufacturers were buying their chips licensed for 2G and 3G, they were not licensed for 4G.[71] With the adoption of the 4G standard, SEP holders chose not to license component manufactures but to license the car manufacturers. Component suppliers are not able to pay the royalty requested from the OEMs and pass the cost downstream. Some European suppliers chose to exit the market[72], others are still litigating[73].

The likelihood of SEP holders asserting their SEPs in courts is greater in regions with more efficient judicial systems and large markets. During the webinar on enforcement, to which 893 persons registered for participation[74], 51% of the participants indicated that they prefer to litigate in Europe against 30% who preferred the US. To the question in which jurisdiction they have litigated, 58% of the participants indicated Germany, 7% indicated France and 4% indicated the Netherlands. 31% specified jurisdictions outside of the EU. Using the number of court cases as a proxy, we can estimate that implementers are targets of court actions in the EU primarily in Germany (around 44 court cases per year), France (around 2) and the Netherlands (around 1).[75] Note that not every SEP holder decides to litigate, but only court cases are observable.

An EU small SME reports: "European companies are at a disadvantage compared to foreign producers that might fly under the radar."[76]

As the threat of a court injunction/cessation of production means income loss and loss of market share to competitors and switching to another technology is costly or impossible (because of standard implementation), implementers can engage in court procedures that are cost- and time intensive, attempt to negotiate, or agree to licence agreements at any price (especially SMEs, if they are targeted). This holds true especially for licensing in the IoT, where there is continuous entry of new start-ups that implement standardised technologies in their IoT devices. 82% of SMEs in the targeted

[71] If the supplier is licensed for all patents (SEPs), the downstream user does not need a licence. Otherwise, the SEP holder will receive the price twice, the so called 'double dipping'.
[72] Bury, Thales and U-Blox.
[73] Continental and partially Thales (for damages).
[74] GROWTH, Webinar series on Standard Essential Patents, https://ec.europa.eu/newsroom/growth/items/701874/en.
[75] Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023, p.133, Table 15.
[76] See Annex A8.3 SME survey.

survey stated that they do not have resources to negotiate with SEP holders or engage in court proceedings.[77]

Start-ups and SMEs lack not only the resources but also the SEP and licensing expertise.[78] Two thirds of SMEs replying to the Commission's targeted survey stated that there is uncertainty regarding SEPs and that royalty payments affect their competitive position.[79] Currently, there is no public support available to start-ups and SMEs for handling SEP licensing negotiations. So, the majority are *de facto* not licensed. One third of the SMEs replying to the targeted survey believe that it is unlikely they will be invited to take a licence by a SEP holder (small size and insufficient volume of sales). Another third of the replying SMEs thought otherwise.[80] In principle, nothing prevents a SEP holder from demanding that an SME take a licence.

> EU SME: It is said that large SEP holders 'do not target SMEs', our case shows that this is not entirely accurate. Even if some do not, the financial uncertainty SMEs face is unreasonable and unfair: an SME has to wait and fear that any SEP holder can approach it at any time (perhaps when the SME becomes larger) and ask for payment of past royalties.
>
> An SME reported: We received multiple SEP licensing requests. Some SEP holders have litigated (one litigation cost amounted to tens of thousands of Euros, more than the few thousand Euro value of the licence it concerned). We have taken several licences, but we know we have unfairly paid much more than others.
>
> Another SME noted: "As we are a small company, we often do not even have the option to negotiate." [81]

Whether big or small company, this uncertainty makes business planning more difficult.[82] We will elaborate in the next section on the problem drivers. For more examples of problems that implementers face, see Annex 2.

2.3. What are the problem drivers?

The problems above are caused in large part by the following drivers, which this initiative aims to tackle: insufficient transparency on SEP ownership and essentiality; lack of information about FRAND royalties; and a dispute settlement system not adapted for FRAND determination. There are also other drivers affecting the problem, which this initiative cannot solve directly, such as the use of foreign courts to resolve SEP cases.

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[77] See Annex A8.3 SME survey, Q12.

[78] CRA, De Coninck, R., von Muellern, C., Zimmermann, S., and Mueller, K., *SEP Royalties, Investment Incentives and Total Welfare*, 2022, p. 11: "SMEs – and in particular start-ups - are likely to lack licensing experience, expertise, and resources to properly evaluate and challenge the demands of SEP holders. For this reason, they could be more intimidated by the possible consequences of patent infringement (e.g., facing an injunction) and thus be prone to simply accept non-FRAND royalty demands instead of engaging in further negotiations.".

[79] 65% (17 out of 26) and 64% (18 out of 28) respectively. See Annex 8.3 SME Survey, Q16.

[80] See Annex A8.3 SME Survey, Q16.

[81] See Annex A8.3 SME survey.

[82] In the Public consultation companies estimated their internal costs of assessing SEP exposure before they put a new product onto market at on average EUR 155 000, with median in range of between EUR 10 000 and 50 000. See Annex 9, Q11.

2.3.1. Unclear SEP ownership and essentiality

To negotiate a SEP licence, a standard implementer should know which SEP holders license for a fee, how many *declared* SEPs[83] each has, and how many of those are actually essential (necessary to implement a standard).

Information on patent ownership and essentiality is not readily available.[84] The vast majority of SMEs replying to the Commission's survey said they did not know who owns SEPs relevant to a standard they implement and stated they did not know if all the patents that a SEP holder presented to them during negotiations were actually essential to the standard.[85] This is consistent with the results from the public consultation.[86] Without such information, the cost and complexity of SEP licensing negotiations increases. With regard to almost all standards, expert third party analysis is required to obtain reasonably reliable estimates of the number of actual SEPs. The cost for implementers of assessing the essentiality of individual patents could be significant from an average cost of EUR 355 to EUR 7 860 per SEP, depending on the evaluation rigorousness.[87]

There are three main reasons for the lack of transparency on the number of essential patents for different standards:

First, many Standards Development Organisations (SDO) do not provide comprehensive data on self-declared potential SEPs, as they allow for blanket disclosures. Patent owners may simply declare that they own potential SEPs and are prepared to license on terms compliant with the SDO's IPR policy, without specifically identifying any of these patents or their relevance to the standard(s) in question. Some estimates indicate that only about 10-20% of all Wi-Fi SEPs are specifically declared at its SDO: IEEE,[88] and approximately 20-30% of all High Efficiency Video Coding ("HEVC") SEPs are specifically declared at the relevant SDO: ITU-T[89]. Hence, the large majority of potential SEPs are not specifically declared at either SDO. As a result, these SDOs' databases provide no useful information about the numbers of potential SEPs held by the various owners.

Second, while some SDOs (for example ETSI) require patent owners to identify specific patents and/or patent applications that they believe are or may become essential to a standard, the disclosure (also called declaration) process is complex. This process is geared towards standardisation activities and not adapted for SEP licensing negotiations.

Third, declarations of potential SEPs are often made during the standardisation process (firms wishing to contribute to a new standard identify their patent assets that may cover the standard, depending on what contributions are accepted) and hence do not provide reliable information on the actual SEPs covering the final standard. This is one of the reasons why experts estimate that only between 25% and 40% of the patents found in the ETSI IPR database are in fact essential to the final

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[83] Declared SEPs are patents that the holder declares as either being or likely to be essential to a standard. This is the SEP holder's position, largely without any independent evaluation. Some SDOs required such declarations of specific patents (e.g. ETSI) but most do not. Thus, even the number of SEPs a holder believes to be essential is not available for most standards.

[84] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12510-Intellectual-Property-Action-Plan.

[85] 80% (16 out of 20) and 90% (19 out of 21) respectively. See Annex A8.3 SME Survey, Q12.

[86] Public consultation – responses to Question 19.

[87] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, pp. 38-39, Table 8: SEP evaluation rigorousness level description.

[88] Estimations in Microsoft Corp. v. Motorola, Inc. 2013 U.S. Dist. LEXIS 60233.

[89] Based on comparing ITU-T declaration data with patent lists of MPEGLA's and Access Advance's HEVC patent pools.

published standard[90], as supported by empirical research.[91] In the case of 5G, the essentiality rate can be as low as 15%.[92]

Depending on the SDO, SEP holders are not required to regularly update the information originally provided to SDOs, for example by removing non-essential patents or specifying a change in ownership.

Patent pools provide more transparency[93] and conduct essentiality checks. Typically, not all SEPs of an individual SEP holder are checked for essentiality. In addition, the SEP holder chooses which of its SEPs to submit for essentiality check. The likelihood of those SEPs being confirmed essential is, therefore, very high. The essentiality check system of the pools is thus not designed to determine the rate of essentiality in the portfolio of an individual SEP owner. Furthermore, there is no patent pool that has gathered all SEP holders for a given standard. It follows that patent pools are not capable of providing sufficient information on the overall SEP landscape.

More readily usable data is available from commercial providers. The cost varies from EUR 5 000 to EUR 25 000.[94] These private databases are thus available only at high cost, and it is unclear how reliable their assessments of essentiality are.[95]

80% of SMEs responding to the SME survey said they did not know who owns SEPs relevant to the standard they use and 90% did not know if patents presented to them during negotiations were essential to the standard.[96]

2.3.2. What is a FRAND royalty for SEPs?

FRAND refers to the grant of licences on fair, reasonable and non-discriminatory terms ('FRAND terms') in relation to a patent right. Individual patent holders give an undertaking to the SDO that they are prepared to grant licences on FRAND terms.[97]

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[90] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, Part 2, Section 4.2, https://ec.europa.eu/docsroom/documents/45217.

[91] Brachtendorf, L., Gaessler, F., and Harhoff, D., 'Truly Standard-Essential Patents? A Semantics-Based Analysis', *CEPR Discussion Paper No. DP14726*, May 2020, https://ssrn.com/abstract=3603956; estimate that in case of LTE standards (4G) around 32.3% of SEP in the database are essential, in case of UMTS (3G) - 37.7%; GSM (2G): 38.5%.

[92] IPLytics.

[93] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, Annex 10, https://ec.europa.eu/docsroom/documents/45217.

[94] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 30, Section 3.2.1.3. Commercial patent databases.

[95] Professional software solutions provide a fast and easy access to SEP declaration data, allowing to break down patent counts of self-declared patent families by current patent holder, standards generation, even release or working group within a few minutes or hours. Some have created designated patent declaration analytics solutions that allow searching across the full text of patent and standard documents. The solutions vary in terms of quality and scope. See: Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, pp. 31-32.

[96] See Annex A8.3, Q12 (16 out of 20), Q12 (19 out of 21) respectively.

[97] According to Horizontal guidelines: Compliance with Article 101 by the standard development organisation does not require the standard development organisation to verify whether the licensing terms of participants fulfil the FRAND commitment. Participants must assess for themselves whether their licensing terms and in particular the fees they charge fulfil the FRAND commitment. Therefore, when deciding whether to commit to FRAND for a particular IPR, participants will need to anticipate the implications of the FRAND commitment, notably on their ability to freely set the level of their fees.

Any SEP holder may demand royalties from an implementer, irrespective of the number of SEPs it owns. Standards such as 5G can have around 200 SEP holders and each of them may own a different number of SEPs covering different patented technologies included in the standard. It is, however, unclear how many truly essential patents each owner has, as explained above. Furthermore, the value of such patented technologies may be different. Therefore, the number of patents contributed by each owner could be seen as an imperfect proxy. Finally, the products of the implementers almost always include many other features and technologies that contribute to the value of their products. This makes it even more difficult to determine the value of the standardised technology. In addition, determining the share of royalties for each SEP holder is also a complex process.

When a SEP holder approaches a standard implementer for royalties, the implementer can choose to engage in in-depth and lengthy negotiations to determine what would be a reasonable royalty (i.e., FRAND) or to accept the demanded rate. Engaging in negotiation requires technical competence, knowledge of patent law and licensing skills, all of which may be less available capabilities in smaller companies as compared to larger firms. Thus, SMEs for example may tend to accept the SEP holder's offered terms fearing an injunction/stop of production. Moreover, if a company (even a large one) is implementing the standard by using a component supplied by a third party, it will most likely have no knowledge of the relevant technology and must engage external expertise to assist in the assessment of the royalty demand.[98] This comes in addition to the legal resources necessary to negotiate and finalise a licence agreement.

One way of determining the added value of a standard to a product is to compare its price with and without the standardised technology. For instance, the price of a phone with and without 5G. The problem is that any new technology (such as 5G) is first implemented in high end/flagship products, which are the most expensive. Second, such products incorporate additional features on top of the standard (e.g. better camera), and the additional value is partly attributable to the interaction of the new standard with those features. A relatively high FRAND rate determined for flagship product can then linger on also for cheaper models (unless an adjustment mechanism is in place), slowing the rate of technology diffusion and adoption.

A SEP owner's refusal to comply with their FRAND licensing obligation may give rise to liability under competition law. However, FRAND may be a range and could mean that the royalty rates differ in different market segments based on the specific use for the standard or parts thereof (e.g. car versus connected vacuum cleaner) and even between producers of the same product, depending on whether they are considered to be "similarly situated" (a FRAND rate should be the same for a company in a comparable situation). SEP holders often disclose their FRAND rate demand at the outset of the licencing negotiations (they may ask for a non-disclosure agreement to be signed, but many do not), however they typically refuse to share information about "comparable licences" or are selective about which comparable SEP deals they will show to the implementer (this kind of information is typically not public). Some SEP holders announce a SEP price in advance, yet in many cases this is a maximum price that can be reduced during negotiations. In most cases this is not a price for all relevant SEPs (of all SEP holders) for a standard ("aggregate royalty"), but a rate the particular SEP owner(s) would like to get for their share of the total SEPs.

Avanci (52 SEP holders in 2G/3G/4G) prices for connected vehicles range from USD 3 (eCall) to USD20 (4G) per vehicle. Sisvel's price for WiFi6 for certain products is from USD 0.5 to USD 3.6 per unit.[99] Sisvel for DVB-T2 entrance fee of EUR 10 000 and EUR 0.60 to EUR 1 per

[98] Half of SMEs reported that they "did not understand the technology (e.g. of component I use) to engage in meaningful negotiations". See Annex A8.3 SME survey, Q12.

[99] Wireless connectivity standard, https://www.sisvel.com/licensing-programs/wireless-communications/wifi6/patent-pool/license-terms.

consumer product.[100] The MPGLA video coding standard AVC/H.264 is royalty free for the first 100 000 units per year, and then USD 0.2 per unit sold with an enterprise cap of USD 9.75 million per year until 2025.[101]

Stakeholders consider that the FRAND licensing concept could benefit greatly from some clarification, notably with regard to the determination of an aggregate royalty burden, the level in the value chain at which SEPs should be licensed (e.g. at end product, or component level), or whether an initial offer by a SEP holder must be FRAND (e.g. guidance in addition to that provided in the 2017 Communication). From our analysis and meetings with stakeholders it emerged that especially the level of licencing issue is very controversial with no one-size-fits-all solution,[102] and may not be mandated. It could be recommended, however, that customary industry practices are considered in this respect.

Issues related to SEP licensing are also regularly raised to competition authorities, including the Commission's department responsible for EU competition enforcement. SEP holders raise concerns regarding implementers unduly delaying negotiations. Implementers complain mostly about SEP holders not following the *Huawei v. ZTE* process, offers that are not on FRAND terms or about SEP holders refusing to licence at a certain level of the value chain.[103]

Almost all SMEs reported that in negotiations they do not know what a fair price for the SEPs would be.[104]

2.3.3. Dispute settlement not adapted to resolve FRAND rate disagreements

SEP holders and implementers often disagree about what constitutes FRAND terms and conditions (primarily royalties) for a SEP licence. If parties cannot agree on a FRAND rate, SEP licensing disputes can turn into patent infringement proceedings before national courts (around 35 per year in the EU)[105] in which SEP holders usually seek injunctions. On average, the annual costs of SEP related court proceedings in the EU are estimated at around EUR 6 million. However, already the costs of a complicated case alone can reach millions of euros.[106]

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[100] Digital Video Broadcasting – Terrestrial 2 ("DVB-T2") is a standard for broadcasting digital television on terrestrial networks available since 2009. https://www.sisvel.com/licensing-programs/digital-video-display-technology/dvb-t2/license-terms.

[101] https://www.mpegla.com/wp-content/uploads/avcweb.pdf.

[102] It should be noted that implementers, especially SMEs (see Annex A8.3 SME Survey, as well as survey to SMEs conducted by Apple) opt for component level licensing. On the other hand, SEP holders are adamant that they should remain free as to the level they license. See Annex 9 "Questions on FRAND", for instance see Q36: "Licensing could take place at every level of the value chain" 93% of implementers and only 13% of SEP holders agree; or Q37 "Licensing should take place at the most upstream level of the value chain" 69% of implementers and 0% of SEP holders agree. See also Annex 5.4 for extended discussion on level of licensing.

[103] Without taking any position on the merits of complaints, by way of example, one company has recently made public its complaint: "HMD has now also filed competition law complaints against VAEVS before the European Commission in order seek the authorities to intervene in issues such as over-standardization, requirements for open standards and apparent non-FRAND demands and behaviour.", see https://www.hmdglobal.com/evs-substandard-of-4g-press-release#id-2hm0baKaAwcCJlKW0dRYY3-0.

[104] See Annex A8.3 SME survey, Q12.

[105] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, Table 15, p. 133.

[106] During the public consultations we received a limited number of replies on cost of court disputes. Among eight respondents who replied to Q51 on cost of FRAND disputes, the median amount was between EUR 3 and 6 million. Among five who provided estimates on the costs of essentiality related disputes, the median amount was between EUR 1 and 2 million. According to Baron (2023) (see footnote 105) the average cost of a SEP related dispute in the EU amounts to EUR 170 000 for around 70 cases per year (this figure however also includes for instance EPO opposition proceedings). It is estimated that around half (35) are court cases, hence the EUR 6 million cost reported. For subsequent

An EU SEP holder reached out in 2016 to a car producer who was using cellular connectivity in its cars. The SEP holder made several offers to the implementer which were rejected (for instance the implementer was directing the SEP holder to license its suppliers instead). The SEP holder spent tens of millions euros on legal counsels and litigation – resources that could have been spent on R&D. The two firms signed a licence agreement in 2021.

It is very difficult to properly determine FRAND rates in patent infringement proceedings before a national court, because the SEP holder selects a limited number of SEPs from its national portfolio to adjudicate, but seeks to license all of its SEPs for the particular technology (e.g., 4G or HEVC), including those in other jurisdictions (global FRAND licence).

The CJEU judgment in *Huawei* v *ZTE* established that the SEP holder's offer, and the potential licensee's counteroffer must be FRAND and left it up to national courts to assess whether the parties observed the process before granting an injunction. National courts in the EU typically focus on establishing whether the good faith negotiation process has been complied with and have so far not been involved in global FRAND determinations. Thus, potential remedies tend to focus primarily on the availability of an injunction, as well as on damages for the past infringement of the asserted patents and only in the relevant jurisdiction. Thus, the parties are still left with little certainty regarding FRAND royalties for future sales.

To deal with this uncertainty, a number of courts outside the EU have declared to have jurisdiction to determine a global FRAND rate, if the parties do not themselves reach agreement on global FRAND royalties (e.g., UK[107] and China[108]). Courts in the EU have so far refrained from making any FRAND royalties determinations at a national or global level.

While traditional alternative dispute resolution ("ADR") mechanisms are available to SEP holders and implementers and could potentially result in broader FRAND determinations, ADR is rarely used to settle FRAND-related disputes.[109] Among the key concerns are that (i) implementers may not be able to obtain information regarding comparable licenses and other relevant data from SEP holders (available through discovery proceedings in certain judicial proceedings), and (ii) the proceeding itself as well as the resulting decision are kept confidential and are not publicly available, so they have limited precedential value for future FRAND-related cases.[110]

In response to the public consultation, however, a number of respondents acknowledged the potential for ADR processes to help resolve global SEP disputes, provided that the above concerns are addressed.

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calculations and in order to remain prudent we have used the lower figure from the study rather than figures reported during the public consultations. See Annex 9, Q51.

[107] Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet v. Huawei*, UKSC 2018/0214, [2020] UKSC 37, https://www.supremecourt.uk/cases/uksc-2018-0214.html. Note that UK courts allow also different prices per region.

[108] Chinese Supreme Court's ruling of 19 August 2021, *OPPO v Sharp,* Zui Gao Fa Zhi Min Xia Zhong No. 517. China's Supreme People's Court has decided that Chinese Courts can set global FRAND rates at the request of one party, but so far no court has made such a determination.

[109] 375 persons registered for a Webinar on Enforcement which took place on 4 May 2021 and responded to a survey during the registration process. To the question in what type of dispute settlement the respondents were involved, 65% indicated to have been involved in litigation before a court, 20% in settlements between the parties and 4% in mediation. None indicated to have been involved in arbitration. The responses to the public consultation also revealed that those mechanisms may be useful subject to conditions.

[110] The responses to the public consultation identified this lack of information and transparency as an important obstacle – see comments to responses to questions 53 to 55. Response of Continental to the Call for Evidence.

There is also no mechanism enabling the use of the customs enforcement regulation[111] by SEP holders because the regulation does not require that the negotiating steps set out in *Huawei v ZTE* be followed. Customs authorities do not have the competence, resources and expertise to establish whether the negotiating steps set out in *Huawei v ZTE* were conducted (for more explanation see Annex 5.4)

2.3.4. Drivers out of the scope of this initiative

There are also other factors that may contribute to the uncertainty and high transaction costs for both SEP holders and implementers. These factors include, without limitation, the global nature of standards and products; changes in the business models such as low-cost smart phones; specificities of the IoT markets, which are fragmented, competitive and often a low margin market; and the fact that SEP licensing is sector-specific depending on the nature of the use of the standards. Furthermore, because both SEP holders and implementers typically operate globally, SEP disputes can be adjudicated in different jurisdictions including outside the EU. As such, SEP holders and implementers alike are free to exploit jurisdictional differences to their benefit.

2.4. What are the consequences?

As new standards are developed, additional contributors participate in the standardisation process (particularly from Asia), putting more pressure on existing SEP holders due to further fragmentation of the SEP landscape. Existing SEP holders also face increased challenges to their pricing policies from their main licensing market, mobile devices (primarily for cellular standards). Chinese phone makers are increasing their market share and are focusing on low-cost business models to serve lower income populations. SEP holders need to adapt their licensing model to the realities of these new emerging markets, especially the price pressures.

The IoT market presents additional challenges. It is a market that is growing at a high speed but is fragmented. Volumes for certain applications may be small and profit margins seem tight.[112] Licensing may prove difficult and expensive as those industries are not familiar with SEPs (see Annex 2). The combination of all these factors is likely to deepen the disagreements about FRAND royalties, which is likely to cause more delays in negotiations and to increase the parties' licensing costs, potentially impacting SEP holders' revenues. This uncertainty about future revenues could impact the decisions of SEP holders to invest into R&D and may in turn have an impact on participation in standardisation.

On the other hand, the lack of transparency and unpredictability of royalty demands, plus the cost of negotiation and disputes also puts pressure on the costs of products by implementers that are entering the market. This is likely to put pressure on the innovation capacity of implementers as well. CRA(2022) noted that there is a trade-off between high SEP royalties and more innovation upstream (by SEP owners), on the one hand, and less innovation downstream (by implementers) as a result of high SEP royalties, on the other hand.

Both SEP holders and implementers are likely to (i) lose incentives to innovate; (ii) reduce sustainable competitiveness; and (iii) adversely affect supply chain security.

1) Incentives to innovate. Uncertainty regarding SEP licensing, price and conditions, with the risk of litigation may impact investment and R&D decisions as explained above.

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[111] Regulation (EU) No. 608/2013 of the European Parliament and of the Council of 12 June 2013 concerning customs enforcement of intellectual property rights and repealing Council Regulation (EC) No. 1383/2003 ('Regulation concerning customs enforcement of IPRs'), OJ L 181, 29.6.2013, pp. 15-34, http://data.europa.eu/eli/reg/2013/608/oj.
[112] According to testimonies from an IoT supplier and an IoT end-product manufacturer.

2) Sustainable competitiveness

Global competitiveness

SEP holders often face challenges to the royalty rates offered. Although some implementers may push to obtain lower rates without consideration of what constitutes FRAND, there is also a lack of certainty and transparency with regard to factors that would support a determination of FRAND rates. Uncertainty about which SEPs are essential and the inability of implementers (large and small) to determine the overall essentiality and validity of the SEP owner's portfolio through technical discussions (which are often limited to one or two dozen SEPs) lead to questions whether the value of the SEP owners' portfolio is overestimated. The testimonies listed in Annex 2 all refer to a lack of trust in the system and regarding the FRAND-ness of the SEP owners' offers.

Implementers are typically challenged at courts in the EU first, particularly if they have important sales in the EU. Those that take a licence first face competition from unlicensed competitors.

> A European IoT device manufacturer who uses 3G/4G standards for connectivity was approached by a SEP holder to pay royalty. The proposed licence would increase the product price by 3%. At the same time, a Korean manufacturer sells similar products without a licence, as it has not yet been approached by the SEP owner. The EU manufacturer fears losing its market share.
>
> EU semiconductor firm: Not having a SEP license adds to uncertainty, both for us and for our customers. If we make a provision for estimated royalties and our competitors do not, we are at a disadvantage. Our module customers generally do not understand the technology and want a solution with SEP indemnification as they feel unable to navigate the licensing process. If we do not offer such indemnification and our competitors do, we are at a disadvantage.

Furthermore, EU companies implementing more expensive standards face difficulties to effectively compete in markets which have adopted their own competing standards. For example, China promoted the creation of a Chinese patent pool for its audio-visual standards (AVS) and standard contributors accepted to contribute patented technologies for an aggregate fee of one yuan (approximately EUR 0.14) per hardware device.[113] EU implementers of the competing AVC standard may not be able to compete in that market.

The public consultation confirms that if European companies in the IoT sector, such as smart meters, wireless charging stations and payment terminals, are licensed first at rates that their competitors in other jurisdictions would not pay, they are likely to lose competitiveness.[114] More testimonials are available in Annex 2.

Technology diffusion

There are risks that standards' take-up will be slower or implementation will be delayed in the EU until applicable SEP royalty rates become more affordable.

> Royalty free Bluetooth gained 100% phone market coverage in 8 years, while royalty bearing NFC gained only 36% coverage in the same period.[115]

Companies may also try to work around the SEP technology by creating their own (not standard) solutions or develop a competing standard on a royalty-free basis, where investment cost permits it.

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[113] AVS-Audio and Video Coding Standard Workgroup of China and Webinar on Patent Pools – 20 April 2021, Summary report, p. 9, https://ec.europa.eu/docsroom/documents/45814/attachments/1/translations/en/renditions/pdf.
[114] Public consultation, answers to Questions 8, 13 and comments on non-discrimination.
[115] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 180.

It is also possible that older/less efficient, but lower-royalty or royalty-free technology will be used to avoid high SEP royalty exposure. Half of the SMEs stated they try to use free or older technology in order not to pay for SEPs, while one in five stated that they would try to develop in-house alternatives.[116]

Royalty bearing FireWire (at least initially) was superior to the royalty-free USB standard, but USB became the dominant one.[117]

Although the study commissioned to support this IA concluded that at least currently there is no systematic evidence of mass scale occurrence of slower than expected or delayed implementation of standards,[118] the public consultation and several testimonies show that the IoT sector is adopting the newest standards slower than the mobile phone market.[119] Many IoT devices can operate on older standards such as 2G (patents expired) and 3G (which is cheaper) but the 2G and 3G infrastructure will be removed in the near future.[120]

Both EU SEP holders and implementers are set to lose from this situation.

3) Supply chain security

Delays in the negotiations and increasing costs of licensing, may disincentivise EU SEP holders to continue their participation in standardisation. This would benefit non-EU contributors to the standards. The EU would thus lose its ability to contribute European technology to the global market, also related to critical infrastructure.

There is already proof in the automotive industry that because of SEP royalties, European suppliers are no longer able to compete and exit the automotive supplier market. In a submission to the Commission, the automotive manufacturers' organisation ACEA reported a shortage of supplier offers and a growing dependence on Chinese suppliers.

2.5. How likely is the problem to persist?

With an increasing demand for connectivity (particularly for IoT) and other standards that promote interoperability, the problem of SEP licensing is set to gain prominence and affect a much larger number of companies. About 70% of surveyed SEP experts[121] as well as conclusions from the Expert Group Contribution confirm that the licensing of SEPs for IoT applications is expected to be more challenging. This is because of current trends in standard development, including the increasing complexity of new standards, the high number of SEP holders with varying interests and business models, a lower volume of products for a larger number of implementers, and increased use of standards across different sectors of the economy. These factors in combination are likely to amplify frictions in the SEP licensing environment, further spotlighting the need for more certainty and transparency.

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[116] 48% (12 out of 25) and 19% (5 out of 26) respectively. See Annex A8.2 SME survey, Q16.
[117] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 176.
[118] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 179.
[119] See Annex 9, Q12.
[120] Michael Bosson, 2G and 3G sunsets and how to prepare, Onomondo, 2022, https://onomondo.com/resource-hub/2g-3g-sunset/#Europe.
[121] Results of a Survey conducted with SEP industry experts by the Technical University of Berlin in October 2020. See Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 24.

On the other hand, the level of information on SEP ownership and essentiality is not expected to improve absent a push from outside sources. The Commission has been trying to stimulate voluntary industry solutions since its Communication in 1992 on Intellectual Property Rights and Standardisation[122], and most recently in 2017 when the Commission issued a Communication on SEPs[123]. Attempts to improve the quality of SEP declarations at SDOs since then show little progress.[124] The polarised responses to the many surveys, webinars, conferences and the Public Consultation have made it clear that the industry will not act on its own.

SEP holders will continue to selectively approach successful SEP implementers for royalty payments (70% of SEP holders in the public consultation answered that they do not contact all known implementers).[125] Although patent pools are likely to emerge for certain IoT applications, such as Sisvel pools for Wi-Fi 6 products,[126] smart meters and tracking devices,[127] such pools will not represent all SEP owners. Consequently, most implementers will not be fully licensed and will operate under the threat of an injunction (particularly if they become successful with higher volumes). Furthermore, due to the increasing number of SEP implementers in an increasingly connected world, SEP holders could choose to outsource SEP licensing (and resulting litigations) to specialized patent assertion entities[128] in the future.

About 70% of the implementers take a licence without litigation according to the results from the public consultation.[129] There is no indication that traditional alternative dispute resolution mechanisms currently available to SEP holders and implementers will be used more often going forward to settle FRAND-related issues.[130] Respondents to the public consultation considered mediation insufficient as the mediator has no authority to request information and no authority to make a price recommendation.[131] The newly established Unified Patent Court[132] is not yet operational, and it remains unclear how the court will assess and grant injunctions in the context of SEPs and whether it will engage in the assessment of (global) FRAND rates.

No other initiative by the Commission or Member States is going to help provide solutions for these SEP issues.[133] At the same time other jurisdictions already have (Japan, South Korea, Singapore) or

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[122] Communication from the Commission on Intellectual Property Rights and Standardisation, COM(92) 445 final, 27.10.1992, https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:1992:0445:FIN:EN:PDF.

[123] Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee on Setting out the EU approach to Standard Essential Patents, COM(2017)712 final, 29.11.2017, https://ec.europa.eu/docsroom/documents/26583.

[124] For example, ETSI has taken some incremental steps to improve its database and to make it more user-friendly. CEN-CENELEC improved its declaration system. Other industrial associations, like the Next Generation Mobile Networks (which brings together mobile network operators and their suppliers) are working on proposals to improve transparency.

[125] See Annex 9, Q15. Do you contact all known SEP implementers from the selected category?

[126] https://www.sisvel.com/news-events/news-events/news/sisvel-launches-a-patent-pool-on-wi-fi-6.

[127] https://www.sisvel.com/news-events/news-events/news/sisvel-launches-its-cellular-iot-patent-pool.

[128] This includes state-owned entities (such as Japanese IPBridge or FranceBrevets), 'privateering' spinoffs from large operating companies (e.g. Unwired Planet from Ericsson, Panoptis from Panasonic etc), former operating companies who have ceased other activities to concentrate on patent licensing (e.g. Sisvel), and private companies acquiring patents from a variety of predecessors (e.g. IPcom, Uniloc, etc.). PAEs contribute to further fragmentation of the SEP holders market.

[129] See Annex 9, Q17. What percentage of the SEP implementers that reply take a license without litigation?

[130] WIPO arbitration and mediation centre has reported an increased interest in mediation and referrals by national courts to WIPO for mediations on FRAND terms and conditions by non-EU courts. There is no public data as to whether EU courts use this possibility. https://www.wipo.int/amc/en/center/caseload.html.

[131] Public consultation – responses and comments to question 53.

[132] https://www.unified-patent-court.org/en.

[133] The Commission is currently reviewing of Horizontal Guidelines (https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1371). However, the revised draft Horizontal Guidelines address issues in the context of standardization agreements, but do not tackle issues related to license negotiations, litigation and lack of information on SEPs once the standard is adopted. The Horizontal Guidelines also remain voluntary.

are considering SEP related initiatives (including China, India and the UK). If the EU does not take the initiative, it will have to follow developments in other jurisdictions, which will affect EU companies as well as the EU-related businesses of global companies.

3. WHY SHOULD THE EU ACT?

3.1. Legal basis

The initiative concerns standards to which a patent holder has contributed a patented technology and which it has committed to an SDO to license on FRAND terms and conditions. Standards for which patent holders make FRAND commitments are applied cross-border among Member States and globally. SEP licensing is also seldom national. Usually, licensing contracts are global and may take into account certain regional aspects. The international standards in question cover technologies such as 4G, 5G, Wi-Fi, HEVC, AVC, DVB and others that ensure interoperability of products worldwide.

Article 114 TFEU constitutes the appropriate legal basis as the objective is to improve the conditions for the establishment and functioning of the internal market. The initiative seeks to ensure the efficiency of SEPs licensing, facilitating lawful access to the standards and promoting wider adoption of standards. There are no specific EU or national rules on SEPs and it has been left to competition law to regulate.[134] In addition, as acknowledged by the CJEU in *Huawei v ZTE*, apart from common rules relating to the grant of a European patent, a European patent remains governed by the national law of each of the Contracting States for which it has been granted as is also the case of national patents.

The CJEU has confirmed[135] that recourse to Article 114 TFEU is possible, if the aim is to prevent the emergence of obstacles to trade between Member States resulting from the divergent development of national laws. However, the emergence of such obstacles must be likely and the measure in question must be designed to prevent them. Dutch[136], French[137] and German[138,139] courts have been considering FRAND-related issues in national litigation, based on the laws of the Member states and the specificities of the disputes brought before them. Those cases show different approaches (not necessarily different results) with regard to FRAND determinations concerning SEPs covering regional or global standards. It is difficult for EU national courts to handle SEP-related cases and make detailed and consistent FRAND determinations. This is in large part due to the lack of transparency and complexity of the issues that are central to such determinations, such as essentiality of patents, comparable licences and compliance with FRAND requirements. While the initiative will neither interpret the CJEU case-law nor dictate methodologies for FRAND determinations per se, it will establish mechanisms that promote the necessary transparency, increase certainty and reduce the

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[134] 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, OJ C 11, 14.01.2011, pp. 1-72, CELEX: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011XC0114(04) and competition case-law.

[135] Judgment of the Court of Justice of 12 December 2006, *Germany v Parliament and Council*, Case C-380/03, [2006] ECR I-11573, para. 38 and the case-law cited, and Judgment of the Court of Justice of 10 February 2009 , *Ireland v Parliament and Council,* Case C-301/06 [2009] ECR I-593, para. 64; see also, to that effect, Judgment of the Court of Justice of 2 May 2006, *United Kingdom v Parliament and Council*, Case C-217/04, [2006] ECR I-3771, paras. 60 to 64.

[136] Court of Appeal of The Hague, judgment of 2 July 2019, Philips v Wiko, Case number : C/09/511922/HA ZA 16-623; Hoge Raad, Judgment of 25 February 2022, Wiko v Philips, Nummer 19/04503, ECLI:NL:HR:2022:294; District Court The Hague, Judgment of 15 December 2021, Vestel v Access Advance, ECLI:NL:RBDHA:2021:14372.

[137] Paris Court, order of the pre-trial judge of 6 February 2020, TCT v Philips, RG 19/02085 – Portalis 352J-W-B7D-CPCIX; TJ Paris, 3.3, judgment of 7 December 2021, Xiaomi v Philips and ETSI, RG 20/12558.

[138] German Federal Court of Justice ('Bundesgerichtshof – BGH'), judgement of 5 May 2020, Sisvel v. Haier, KZR 36/17, and German Federal Court of Justice, judgment of 24 November 2020, FRAND-Einwand II, KZR 35/17.

[139] Order of the President of the Court of 24 June 2021, Nokia Technologies Oy v Daimler AG, Request for a preliminary ruling from the Landgericht Düsseldorf, Removal from the Register, Case C-182/21, ECLI:EU:C:2021:575.

potential for inconsistent rulings. This will be a significant improvement in these courts' abilities to handle SEP disputes.

EU-wide rules on transparency regarding SEPs and FRAND terms would have a harmonising effect within the EU, which would facilitate the work of national courts and the future Unified Patent Court. The instrument to implement this initiative should be a regulation. A regulation would be directly applicable, including by empowering an EU agency with the tasks of managing a register of SEPs, and establishing a common FRAND determination procedure that would ensure uniformity across the EU and provide greater legal certainty. These outcomes cannot be achieved by means of a Directive.

3.2. Subsidiarity: Necessity of EU action

Measures taken at national, regional or local level aiming at increasing transparency and facilitating licensing of SEPs may not be efficient for the following reasons. First, instead of one EU-wide solution for SEPs, there might be different national solutions for the SEPs on one specific standard. Second, under an EU-wide approach, it will not be necessary to conduct more than one essentiality check per patent family to find that patents are indeed truly essential to a standard. The check would be done based on a single EU-wide methodology. Third, non-centralized alternative dispute resolution processes may come to different results for the same SEP portfolio, opening the door to "forum shopping" within the EU. An EU-wide approach can help avoid these problems.

3.3. Subsidiarity: Added value of EU action

Action at EU level is expected to save costs for stakeholders, both SEP holders and implementers, and for Member States. For instance, there would be one register, one essentiality check per patent family, one common methodology for the conduct of such checks, and a streamlined and transparent conciliation (FRAND determination) process. SEP holders and implementers would not have to incur the same costs in each EU Member State which would be the case with national solutions, especially in a situation where most standards are regional or global.

4. OBJECTIVES: WHAT IS TO BE ACHIEVED?

4.1. General objectives

This initiative aims at:

- Ensuring that end users, including small business and EU consumers benefit from products based on the latest standardized technologies at reasonable prices.
- Making the EU an attractive place for innovation and standards development (including for global participants).
- Ensuring that both EU SEP holders and implementers innovate in the EU, make and sell products in the EU and are competitive on global markets.

In particular, the goal is to facilitate SEP licensing negotiations for both SEP holders and implementers, by reducing current uncertainties as to the level of SEP exposure (implementers) and return on research and development activities (SEP owners) thereby also lowering the transaction costs.

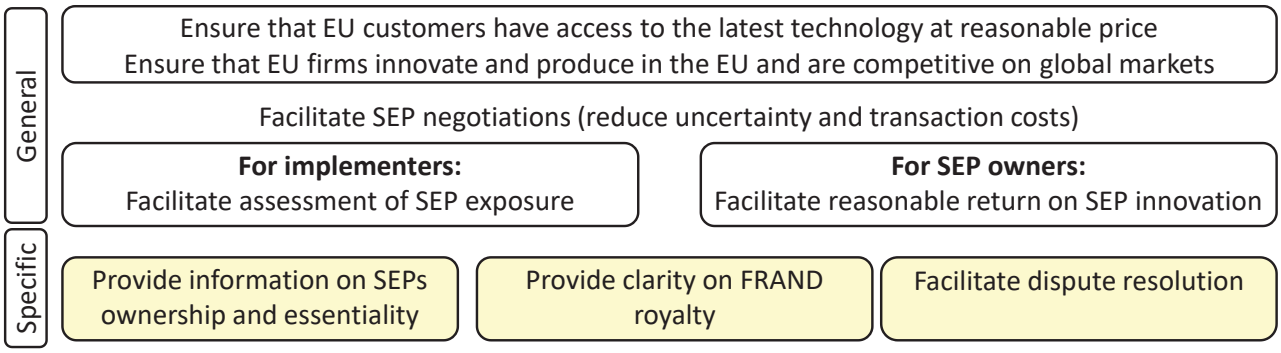
4.2. Specific objectives

This initiative has three specific objectives:

- Provide more clarity on who owns SEP and which SEPs are truly essential.
- Provide clarity on FRAND royalty and other terms and conditions

- Facilitate SEP dispute resolution.

Figure 5: Objectives tree



5. WHAT ARE THE AVAILABLE POLICY OPTIONS?

5.1. What is the baseline from which options are assessed?

The baseline was described in section 2.5 above. In essence, SEP holders will continue to selectively approach implementers, and both will bear the costs of protracted negotiations and court disputes. The information asymmetry between SEP holders and implementers will remain, with the latter having to bear additional costs either by committing resources to long negotiations (including own essentiality checks) or by accepting the SEP owner's offer and paying potentially higher fees to continue production. With time, patent pools offering more efficient licensing solutions for selected applications may emerge and facilitate licensing, if they gain acceptance in the market. This is not likely to happen because the new emerging pools gather SEP holders who do not implement the technology, for example in the IoT. The FRAND royalty expectations are likely to be higher than the market would suggest.[140]

None of the other patent related initiatives announced in the IP action plan of 2020 (i.e. Supplementary Protection Certificates[141] and Compulsory Licensing[142]) is tackling nor affecting development of SEP specific problems identified in this impact assessment.

5.2. Description of the policy options

The options concern international standards for which a patent owner has made a FRAND commitment and SEPs are in force in one or more EU Member State(s). The initiative will exclude national standards and standards with royalty free licensing policies. The options are constructed following an incremental approach from the least to the most ambitious. More details on options are provided in Annex 6.

[140] For example, Sisvel launched a new IoT pool with 20 licensors who claim to represent about 30% of all SEPs. The price for a smart meter is announced at USD 2, so the total aggregate royalty would be around USD 7 (EUR 6.7 on 15 February 2023). The value of a consumer smart meter is reported to be around EUR 65.

[141] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13353-Medicinal-&-plant-protection-products-single-procedure-for-the-granting-of-SPCs_en

[142] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13357-Intellectual-property-revised-framework-for-compulsory-licensing-of-patents_en

5.2.1. *Option 1 (PO1): Voluntary guidance*

This option consists of non-binding guidance that provides further clarification of FRAND concepts and conditions such as, for example, i) the economic value of patented technology should not be conditional on market success of a product that implements it, ii) the value may depend on actual functionalities of the standard used, iii) similarly situated entities using the same functionalities of a standard in similar applications should receive similar terms and conditions; iv) an aggregate royalty must be "reasonable"; v) promote the use of FRAND rate discounts for early standard adopters; vi) differentiation of FRAND terms and conditions between sectors and over time; vii) a recommendation that SEP licensing takes place at the level (component or final product) where intellectual property is customary licensed in an existing industry; viii) an explanation of the legal rules on liability for infringement of third-party intellectual property in commercial contracts and their application in the context of SEPs (e.g. indemnification obligations, passing the cost of the SEP licence downstream; ix) clauses in arbitral agreements that should be avoided (e.g. a prohibition to challenge the validity of a patent). The guidance will also recommend measures to facilitate SEP license uptake by SMEs. Additionally, the Commission may recommend to (or require) SEP holders to adopt existing SEP pool practices addressed to SMEs, such as royalty-free licences for small volume production or discounts. The guidance will be reviewed and updated regularly to take account of legal (e.g. CJEU jurisprudence, other case law) and market developments.

An EU Competence Centre on SEPs will be created within the European Union Intellectual Property Office (EUIPO). Its tasks will include monitoring of the SEP licensing landscape, gathering and providing easy access to SEP-related policies from key jurisdictions globally as well as case-law summaries (including arbitrations) related to FRAND issues, also for foreign jurisdictions, supporting EU SEP policy making (e.g. via studies). The Competence Centre would also seek to sign an agreement with the World Intellectual Property Organization (WIPO) to promote the use of the WIPO Arbitration and Mediation Centre for SEP disputes in the EU and to exchange information.[143]

Additionally, the centre will become an SME[144] SEP licensing assistance hub. It will offer European SMEs free SEP advice, both for SME SEP holders and SME implementers, provide trainings on SEP licensing/FRAND negotiations and conduct studies concerning SEP-related issues. These activities will be available at least in English, free of charge and may be funded from the existing SME support mechanisms such as the SME Fund or the IP Helpdesk.[145]

5.2.2. *Option 2 (PO2): SEP register with essentiality checks*

PO2 builds on PO1 and establishes a SEPs register[146] where SEP holders that seek to license their SEPs in the EU will specify which patents they consider to be essential to a particular standard. Registration will be mandatory for enforcement purposes, such that if a SEP is not registered, the SEP holder will not be able to assert it in court and/or it will not be able to collect royalties or past damages for any use of a SEP prior to the date of registration. This condition will apply to patents for standards (or new versions of existing standards) adopted after the entry into force of the rules implementing this option.[147] A number of standards, however, rely on older technical documents in

[143] Similar to the agreement signed between USPTO and WIPO in mid-2022: https://www.uspto.gov/about-us/news-updates/uspto-and-wipo-agree-partner-dispute-resolution-efforts-related-standard.
[144] SMEs as defined by the EU recommendation 2003/361, https://single-market-economy.ec.europa.eu/smes/sme-definition_en
[145] https://euipo.europa.eu/ohimportal/en/online-services/sme-fund.
[146] This register would provide an interface for SEP holders to submit their patents.
[147] It will also not affect ongoing license agreements, only the new ones, or renewal of existing agreements (if it concerns patents in the SEP register).

order to function (for example, a 4G phone should be able to also support 3G) and many IoT applications rely on 4G. Therefore, it will be possible to determine the scope of the standard by listing the relevant technical documents. All SEPs relevant to those documents will have to be registered. SEP holders can register their SEPs anytime following the publication of the relevant standard or the granting of their patents which are declared SEPs. Once a registration is done, any changes, such as ownership, invalidation or other court judgments should be updated within 6 months.[148]

For the registration, SEP holders will be requested to submit: i) full details regarding their patents protected in the EU claimed to be essential, including the patent office that granted the patent; ii) proof of their ownership; iii) identification of the commercial name of the standard for which the patent is essential; iv) information that helps to link the patent to the standard such as the specific section(s) of the standardisation document(s) for which the patent is potentially essential[149] and an identification of which features of the standard are normative or optional; v) evidence of the SEP owner's FRAND commitment and any other relevant information, such as links to standard licensing terms and conditions as well as contact details. SEP holders will have to update the information in the register to reflect relevant changes (including e.g. validity of a patent).

The essentiality checks on SEPs included in the register[150] will be performed in accordance with a pre-determined EU methodology to be developed by industry experts under the auspices of the Commission. Essentiality checks could concern either: sub-option i) all SEPs in the register or sub-option ii) up to a fixed number (e.g. 50 or 100)[151] of patents selected by a SEP holder (or implementer) and a representative random sample of all SEPs in the register conducted annually to ensure the quality of the register. No SEP holder or other interested party will be able to choose the evaluator for any given essentiality check. The SEP holder will have an opportunity to submit a claim chart (a detailed document that links a standard to the claims of a patent) for each SEP that is checked. The SEP holder will receive the preliminary results of the essentiality checks and have the opportunity to comment before the opinion is issued.

The results of the non-binding essentiality checks will be published in the register (for each essential patent of the "up-to-100" group, and information on the percentage of essential patents for a given SEP holder based on random sampling). After the annual essentiality check process is completed, a SEP holder may request the cancellation of a SEP registration, if the result is negative. A certain number of the essentiality checks will be the subject of a peer evaluation, to be performed annually by a group of evaluators with significant experience. This will ensure the quality and consistency of the essentiality checks. Essentiality checks conducted by an independent person prior to the publication of the standard in the context of pools and essentiality determinations in courts will be reflected in the register. Those SEPs will not be re-checked for essentiality. Any court decision determining the essentiality or lack thereof will be reflected in the register.

Both register and essentiality checks will be managed by the Competence Centre[152] created under PO1. The persons that will conduct the essentiality checks (evaluators) will have to satisfy pre-determined criteria regarding competence and independence and will be designated and remunerated

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[148] There could be a mandatory rule that the FRAND commitment must be transferred with the SEP ownership. This is currently in the Horizontal Guidelines as a guiding principle but could be reinforced in a Regulation as Canada did. Technically some changes could be automatically updated by connecting the SEP register to patents registers/databases.
[149] Such as 'ETSI TS 125 215', Section 'claim charts'.
[150] This register will provide an interface for subject evaluators to chart patents and submit the results to this register.
[151] The public consultation revealed that in most cases no more than 50 SEPs will be discussed individually in SEP licensing negotiations, even if the number of SEPs licensed may be significantly higher. The number could be doubled to facilitate/encourage SEP holders to join patent pools, some of which conduct essentiality checks.
[152] Its main tasks would be: (i) creating and maintaining the register; (ii) setting up a scheme that would ensure that the assessing bodies are able to perform the assessments in a harmonised manner and meet the requirements for reliability, impartiality, quality, and performance; (iii) administrating the essentiality checks, etc.

by the EUIPO. The essentiality check methodology and criteria for the selection of evaluators will be adopted as an implementing act under the Regulation.

There will be an administrative fee for SEP holders to enter SEPs into the register and to cover the costs of essentiality checks. Interested stakeholders will be able to access certain basic information in the register for free (for example the list of SEP owners). Fees will be required, however, from implementers and any other interested stakeholder to access detailed information from the register. SMEs (both SEP holders and implementers) will benefit from reduced fees.

5.2.3. Option 3 (PO3): SEP register with essentiality checks and conciliation procedure

This option adds a conciliation (bilateral FRAND determination) process to PO2. Conciliation aims at assisting parties in negotiations of a SEP licence with the FRAND royalty determination designed for their needs.

The Competence Centre will administer the conciliation procedure. It will create a "roster" of conciliators that satisfy the requirements of competence and independence, as well as a repository of conciliation reports, the confidential version of which would be accessible only to the conciliators. The conciliator would be a neutral party with extensive experience in dispute resolution and substantial understanding of the economics of FRAND licensing to be credible. The parties will be given an opportunity to agree on (a) conciliator(s) from that roster and failing to do so will empower a representative of the EU Competence Centre to choose the conciliator(s).

The conciliation procedure would have to be initiated by either the SEP holder or the implementer and concluded within nine months. Neither party would be able to initiate an action in a court of any EU Member State (either patent infringement or FRAND determination) until the conciliator has issued a report[153] (or optional: the procedure has been initiated).

The conciliator would examine the parties' offers/counteroffers and consider the *Huawei v ZTE* negotiation steps among other relevant factors. The conciliator would have the power to request and receive information necessary to conduct the task (including access to the SEP register, essentiality checks and past conciliation reports), observing the level of confidentiality attributed to the relevant information in the proceedings. However, the parties would be free to engage in the proceedings and would not be prevented from leaving the process at any time or even not engaging at all. At the conclusion of the procedure, the conciliator would issue a report recommending a FRAND rate. Either party would have the option to accept or reject the conciliator's report and/or recommendation. The conciliation procedure would be confidential, as well the report the parties would receive at the end, unless they settle beforehand. A non-confidential version of the report containing the FRAND rates and the methodology used (excluding any confidential information) will be provided to the Competence Centre for further publication. The SEP holder would also have to use the report or a notice of termination of the procedure before customs to support a request for customs action with regard to goods infringing SEPs.

The conciliation procedure would be conducted in English, unless parties decide otherwise. All costs of the conciliation process would be in principle shared equally between parties. Each party would bear its own costs in the process. As a support measure for SMEs, the EU Competence Centre would provide free advice to SMEs on SEPs licensing, the conduct of the conciliation and how the SME can best represent itself. SMEs would also be able to benefit from a reduced administration fee for the conciliation and potentially a discount or financial support from e.g. the SME Fund to cover the conciliator's fees.

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[153] Except if one party is not participating or has started parallel court proceedings in a third country, the other party can terminate the conciliation without a report.

5.2.4. Option 4 (PO4): Aggregate royalty for SEP

This option adds to PO3 a process for determining (ex-ante) an estimated maximum aggregate royalty.

Ex-ante *i.e.,* before (or shortly after) the publication of a standard, contributors to a standard should inform the Competence Centre about the maximum aggregate royalty for all SEPs essential to that standard. For complex standards with multiple implementations there may be a need for different aggregate royalties depending on the implementations known at the time of the publication of the standard.[154] It would be possible, however, to reassess the aggregate royalty after a reasonable period of time following the adoption of the standard. Standard contributors would have the right to ask the Competence Centre to appoint a neutral party (a conciliator from the roster set in PO3) to assist them in setting an aggregate royalty.[155] Additionally, a group composed of contributors to a standard and/or (potential) implementers would be able to ask the Competence Centre within a predefined time after the publication of a standard or after a new implementation becomes known, for an expert opinion on the aggregate royalty. An expert opinion would be delivered by a panel of three conciliators, following an open process where any party demonstrating a legitimate interest in the standard (and upon paying a participation fee) will be able to provide information to the panel. There will be a fixed time for the panel to deliver its opinion.

In case an aggregate royalty is not set by any of the methods described above, during the first bilateral FRAND determination (conciliation) procedure related to the relevant standard, the conciliator may make a recommendation for an estimated aggregate royalty (in addition to the determination of a FRAND rate for the parties' specific dispute). Whether the conciliator makes such a recommendation would depend on the methodology it uses for the determination of the FRAND rate for the specific dispute at hand. Such an aggregate royalty will be specific to the dispute at hand. An aggregate royalty can also be determined or updated during any subsequent conciliation(s).

An aggregate royalty set by any of the above methods will be published in the register and will be non-binding on the negotiating parties. Under this Option there will be no determination of the allocation of the aggregate royalties among different SEP owners.

5.2.5. Option 5 (PO5): SEP clearing house

This option adds to PO4 a one-stop-shop facility for implementers. The aggregate royalty determined under the procedure under PO4 will become a binding aggregate royalty for those using the one-stop-shop. Once the aggregate royalty is determined, any implementer will be able to request a licence from all SEP holders by informing the Competence Centre and depositing in an escrow account either the full amount of the published aggregate royalty (in case of lump sum payment) or the amount corresponding to at least an estimated monthly sales volume of a product concerned (in case of per unit royalty payment). At fixed intervals (at least once a year) the implementer should deposit further royalty payments to the escrow account, provide evidence on real sales volumes (e.g. VAT, financial statements) and correct past royalties to actual sales. Any royalties not collected by SEP holders within a year from the deposit shall be returned to the implementer. The Competence Centre will charge fees to cover the costs of the "clearing" service.

The Competence Centre will notify all SEP holders who have registered, checked and confirmed SEPs in the EU register, so that they may conclude a licensing agreement with an implementer. SEP holders should also inform the Competence Centre how to allocate the aggregate royalty among them.

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[154] Once new implementations become known at a later stage, contributors will again have an opportunity (within a fixed time period) to inform the Competence Centre on the aggregate royalties for those implementations.
[155] Those requesting will have to bear the cost of such service.

Until they do so, they will not be able to collect royalty payments from the escrow account. Should SEP holders fail to agree on such method, the Competence Centre upon request from any SEP holder involved will appoint a conciliator from the roster set in PO3 to recommend an allocation method (the cost of the facilitator will be borne by all SEP holders involved). Once an allocation is established, any implementer will be expected to deposit in the escrow account the aggregate royalty. Each SEP holder will have a period of time to conclude a licensing agreement. The implementer will be reimbursed the part of those SEP holders that do not conclude licensing agreements. Following notification, SEP holders may not start infringement proceedings in any EU court against an implementer who deposited security for an aggregate royalty in the escrow account.

An implementer may choose not to use the one-stop-shop and to have bilateral licensing with SEP owners.

5.3. Logic of options construction. Could options be standalone?

The options are constructed following an incremental logic proposed already in the Call for evidence.[156] PO1 is voluntary and thus the least ambitious option. PO2 adds to PO1 a SEP register with essentiality checks. PO3 adds conciliation to the register. Conciliation could be a standalone option. However, in that case a conciliator will not be able to use the register and the databases of case-law and other information to complete its analysis. This means that if only one party engages in the conciliation in good faith, the conciliator will be compelled to use only the information provided by that party and any other public information it may find but not on the information available to it under PO1 and PO2. This will significantly reduce the value and credibility of its report. This is why it is important that a conciliator can benefit from the SEP register in making recommendations. This way (s)he can at least check which patents a SEP holder has and what share is essential. PO4 adds aggregate royalty to PO3. SEP holders can benefit from the help of the Competence Centre's conciliators to propose an aggregate royalty. Stakeholders will also have the right to request a non-binding expert opinion on the aggregate royalty by a panel of three conciliators. If no aggregate royalty is announced or proposed by the panel of conciliators, an aggregate royalty may be determined by any conciliator who decides to use this methodology for FRAND determination in a bilateral process (as explained in PO3). Finally, PO5 can only work when both aggregate royalty (set in PO4) and SEP holders eligible to get a share of that royalty (PO2) are known.

5.4. Options discarded at an early stage

The following sub-options to those presented above were discarded following an initial assessment. For details see Annex 6.

In case of PO1, determination of the level of licensing by the Commission was discarded as currently there are different practices with different standards and there does not seem to be a one size fits all solution. Therefore, such an intervention in the contractual freedom would be disproportionate.[157] In

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[156] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents_en.

[157] Competition law (Article 102 TFEU) does not imply a preferred licensing level. SEP holders argue that any intervention undermining a SEP holder's discretion over licensing level would likely contravene Articles 30 and 31 of the TRIPS Agreement. Furthermore, some respondents explain that courts in Europe and other jurisdictions have rejected the contention that SEP holders are required to grant licenses to component and chip makers (see, District Court Mannheim, decision of 18 August 2020, *Nokia v Daimler*, 2 O 34/19, http://eplaw.org/wp-content/uploads/2020/10/DE-2-O-34_19-URT-Allgemeines-Urteil-FINAL_ANONYMISIERT.pdf; District Court of Munich, judgment of 10 September 2020, *Sharp v Daimler*, 7 O 8818/19, https://www.gesetze-bayern.de/Content/Document/Y-300-Z-GRURRS-B-2020-N-22577?hl=true; US Court of Appeal for the Ninth Circuit, decision of 11 August 2020, *Federal Trade Commission v Qualcomm Inc.*). See also US Court of Appeal, *HTC v Ericsson*. The US Court of Appeals for the Fifth

case of PO2, a creation of up to 27 national SEP registers was discarded as a more expensive and cumbersome option. A SEP register without essentiality checks on a sampling basis to control the quality of the register was also discarded because it would have only helped to create some transparency with regard to standards to which blanket declarations are made but would not resolve the issue of over-declaration in existing databases. In case of PO3, a voluntary conciliation was not considered as already existing voluntary alternative dispute resolutions are not frequently used by stakeholders[158] and there are usually no negative consequences for non-participation. In case of PO4, a mandatory aggregate royalty determination after adoption of a standard was rejected as by that time products incorporating the technology are already placed on the market and the price uncertainty problem would not be solved. Moreover, SEP holders would then be in a stronger negotiating position vis-à-vis implementers, shifting the negotiation power to the benefit of the SEP owner. A royalty-free SEP licensing obligation was rejected because from an economic perspective whether or not a standard should be royalty-free depends on the economic interest of standard contributors to be subject to such IPR policy and there cannot be general rules that would determine that. Similar concerns could be raised in case of a uniform SEP royalty per standard irrespective of how the standard is implemented. This applies because a too high price could limit the usage of the standard by certain lower value implementations, while a too low one would reduce incentives to participate in standard setting for SEP holders. For options 1 to 5 a sub-option to cover all past standards (e.g. 3G) was discarded as too costly, because of the large number of patents that would need to be registered, and having the effect of reducing legal certainty for existing contracts. Finally, regarding the choice of an organisation to run the Competence Centre, the EPO was not chosen as changing its mandate would require consent of all 39 member countries, including 12 non-EU countries which are not bound by the EU SEP policy goals. SDOs were not selected as this would mean a dispersed, rather than centralised register, as well as because the EU does not have jurisdiction over non-EU based SDOs.

6. WHAT ARE THE IMPACTS OF THE POLICY OPTIONS?

This chapter presents impact of the options considered as viable. The analysis is qualitative and to the extent possible quantitative. As options build on each other and to avoid double counting we present only quantification of additional features of each option. Quantifications are based on several assumptions and estimations since data on SEP licensing is largely not observable (as explained in the problem definition). The purpose of quantifications is to allow comparison of options and to present relative impacts on affected groups rather than to provide an accurate figure. The fees presented below are just an indication of the fees that would cover the costs of the Competence Centre (based on an initial cost prognosis by the EUIPO). Details on quantitative analysis as well as all the assumptions used for calculations are presented in Annex A7.1.

6.1. PO1: Voluntary guidance

SEP guidelines are necessary to provide clarity on the most problematic and contentious issues in SEP negotiations. Those proposed under PO1 will be voluntary, thus not limiting the negotiating flexibility and customisation of terms and conditions to the specific needs of both parties. At the same time, they will shed light on current best practices and solutions, and can thus serve as a reference

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Circuit ruled on 28 February 2022 that the supplier does not have a legal right to a licence and that Avanci and its licensors have not breached their FRAND obligations, No. 20-11032. See Questions on FRAND in Annex 9.

[158] During the webinar on enforcement from the 463 registered participants only 4 responded that they were involved in arbitration and only 3 responded to have been involved in mediation. 20% were involved in settlements and 65% in court cases. GROWTH, Webinar series on Standard Essential Patents, https://ec.europa.eu/newsroom/growth/items/701874/en.

point especially for less experienced parties in negotiations (e.g. SMEs). The Guidelines could also be relatively easily and frequently updated to reflect e.g. new court rulings, or market developments.

The Competence Centre will centralise information from diverse public sources (e.g. different licensing policies, published or otherwise revealed (e.g. in court judgements), FRAND terms, conditions and SEP rates/royalties, SEP judgements etc.), produce *ad hoc* studies to identify SEP holders and their share in different standards, promote WIPO Alternative Dispute Resolution mechanisms,[159] give trainings and advise SMEs on SEP negotiations (e.g. around 80% of SMEs in our survey noted that they do not know strategies to defend themselves in SEP negotiations).[160] Therefore, it may become the first place to be visited by potential SEP implementers, especially SMEs, who are not experienced with SEPs.

In order to limit operational costs, it is proposed that all activities are carried out in English only. The technology firms applying modern standards are most likely already dealing with most of the technical specifications in that language, consequently using only one language is not expected to become an access barrier.

It is estimated that around 400 firms (including up to 80 EU based SMEs), 261 SEP holders and up to 500 other users (e.g. judges, legal counsels) would use services of the Centre each year. The annual costs of operating the centre are estimated at EUR 0.6 million per year. The benefits users could derive from the centre's activities such as trainings or studies are estimated at EUR 5.9 million (based on cost of buying such services commercially).[161]

While guidance will be important and will help to improve transparency and knowledge about SEP licensing, including by providing specific advice to SMEs, it will not be sufficient to help resolve disputes around FRAND royalties.

The public consultation clearly revealed several major issues: e.g. lack of transparency about the FRAND royalties (68% of all respondents, 100% of implementers and 19% of SEP owners), lack of transparency about the SEP landscape (67% of all respondents, 97% of implementers and 13% of SEP owners) or no guidance on FRAND concepts (57% of all, 93% of implementers and 19% of SEP owners).[162]

The Competence Centre can gather all public information about pricing but much of it is under non-disclosure agreements. A guidance is not capable of promoting more transparency in this respect. The Competence Centre may also commission SEP landscape studies on a regular basis, but it will need to use existing third parties' commercial solutions with their limitations. The limitations concern both the information available to these third parties (e.g. missing data and over-declaration mentioned above) and the different methodologies they use. Such methodologies are deemed commercial secrets, have a different level of robustness, and thus may lead to different results.

Finally, while the WIPO Arbitration and Mediation Centre is reporting some positive results, the public consultation revealed that only 35% of all respondents consider mediation useful. Two key concerns are (i) implementers may not be able to obtain information regarding comparable licenses and other relevant data from SEP holders (available through discovery proceedings in certain judicial proceedings), and (ii) the proceeding itself as well as the resulting decision is maintained as

[159] WIPO informed us that since 2021 there have been 65 SEP related mediation cases and over 60% of parties to WIPO SEP ADR proceedings are companies based in the EU. As of January 2023, most of these cases were still pending. In many other cases, requests for WIPO Mediation prompted renewed licensing negotiations between parties with potential settlement outside the mediation procedure. Source: WIPO Arbitration and Mediation Centre.
[160] See Annex A8.2: Q12 (16 out of 19 replies).
[161] See Annex A7.1.
[162] See Annex 9, Q19.

confidential and is not publicly available, so it has limited precedential value for future FRAND-related cases.

In order to offer valuable information to interested parties on the SEP landscape, FRAND licensing and royalties, the Competence Centre would need to develop its own data on the basis of independently conducted essentiality assessments and FRAND determination procedures, which this option is unable to achieve.

This option bears similarities with SEP Expert Group Proposal 28 on three licensing principles.[163]

6.2. PO2: SEP register with essentiality checks

This option is expected to bring more clarity to the SEP landscape. The register under this option will not replace SDO databases, the purpose of which is to create transparency ex-ante during the standardisation process. It will be created ex-post, after the publication of the standard for the purpose to facilitate licensing negotiations and will be updated regularly. As such it is complementary to the activities of the SDOs.

SEP holders will have to register their SEP(s) in order to be able to enforce their patents and/or collect FRAND royalties for the past. This is reasonable given that on average the SEP holder invites the implementer to conclude a licensing agreement within 2 to 4 years after the publication of a given standard. The registration will be simple (comparable to the declarations at ETSI) and provide information to implementers about the identity and contact details of SEP owners. Moreover, details provided (e.g. link between standard and patent) should help an implementer to judge if the patents cover the functionality/technology it uses (as not all implementers are using the full potential/all functionalities of a standard).[164]

The initial stock of patents that could be registered is estimated at maximum up to 72 000 patent families.[165] Some of the new standards may need to include older technical documents (for example a 5G mobile phone will need to also support 4G). So, all SEPs relating to those older technical documents will also have to be registered. The register will serve a dual purpose. First, the register will be used to prove that a SEP holder has true SEPs. Second, the register will provide additional information regarding the size and value of the SEP owner's portfolio, if the SEP holder registers all its SEPs.

Since the register may include patents that are not truly essential to the standard, it is necessary to have a mechanism for essentiality checks to ensure the quality of the register. With regard to 4G, experts claim that only between 25% and 40% of SEPs declared to ETSI are truly essential.[166] It is unlikely that the essentiality rate of the new register will be so low. This is because the ETSI database includes patents and patent applications made during the standardisation process. Some of those technologies were not accepted in the standard and some of those patents were not granted or their scope was reduced so that they do no longer fall under the scope of the standard.

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[163] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, https://ec.europa.eu/docsroom/documents/45217.

[164] Between 70 and 80% of all respondents to the public consultation considered that the following information should be provided publicly: Patent and application number; contact details of the SEP holder; the relevant standard, version, section of the standard; transfer of ownership, if any; licensing programs; Standard FRAND terms and conditions.

[165] This is a generous estimate which includes an estimate of 60 000 patent families and a 20% increase in SEP patenting rate.

[166] Expert Group on Licensing and Valuation of SEPs, Contribution to the Debate on SEPs, Section 4.2.

The new register will be created after the publication of the standard and will require that the SEP holder indicates the section of the standard to which its patented technology refers. The rate of essentiality would thus be higher. However, it cannot be excluded that patents that are not essential are also included. One should note that no assessment can give 100% assurance that a patent is truly essential until a court has ruled on the essentiality (even then, the court would rely on experts). A recent JRC study found that assessors correctly identify as essential or not around ¾ of patents they check. However, the authors also explain that this share will be higher in practice due to improving routines, and because identifying non-essentiality of the patents in the experiment was particularly difficult (the examiners had a lot of limitations, including no access to support tools and support group).[167]

The cost of an essentiality check is estimated at EUR 5 000 per one patent from a patent family.[168] There is no need to check the other members of the family as most European patents have the same claims being examined by the European Patent Office. The cost should also cover the peer evaluation process for some of the patents already checked for essentiality.

A SEP holder will be given the opportunity to submit a claim chart (a document linking the standard to the patent), if a registered SEP is selected to be checked for essentiality.[169] According to experts, all SEP holders who proactively license or cross-license their SEPs have claim charts or internal expertise to create them. The most impacted will be the patent assertion entities that buy the patents from others solely to license for revenue. We estimate that for about half of the patents selected for random essentiality checks, SEP holders will decide to update or produce new claim charts at a cost similar to the one indicated above.

In sub-option (i) all registered SEPs will be checked for essentiality. This will result in the most accurate SEP landscape analysis (subject to the uncertainties mentioned above, including the portion of SEP patents registered by owners). 72 000 patent families are likely to be checked in the first year(s) (registering only those of the family members that are in force in the EU). Following a negative assessment, SEP holders are likely to request re-check for up to 40% of patents.[170] In the following years, the number of patents registered and checked is expected to drop to 10% of the initial numbers.

To implement this option the back-office costs of the Competence Centre are estimated at around EUR 5 million initially and EUR 1.5 million in subsequent years. In order to cover this cost SEP holders will be charged a registration fee of around EUR 140 per patent family registered.

The average total cost to SEP holders of registration and essentiality checks is estimated at EUR 1.9 million and EUR 94.5 million per year respectively. Additional indirect cost of filling the forms and production/update of claim charts is estimated at EUR 2.7 million and EUR 34 million respectively

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[167] According to experiments by Bekkers et al., 74% of patents with claim charts checked by examiners working for patent offices were consistent with checks done by a patent pool. Regarding different types of possible errors: an essential patent has 17% probability of not being found essential in a check, and a non-essential patent has 38% probability of being found essential. See Bekkers, R., Henkel, J., Tur, E. M., et al., *Pilot study for essentiality assessment of standard essential patents*, Publications Office of the European Union, 2020, pp. 76-78, https://data.europa.eu/doi/10.2760/68906.

[168] The evaluators will be remunerated by fees established by the Commission through an implementing act. Assessment of one SEP per patent family was supported by two thirds respondents to public consultations (54% of implementers and 71% of SEP owners). See Annex 9, Q32.

[169] Many or most existing claim charts may relate to foreign, in particular US members of global potential SEP families. In such cases claim charts would have to be produced/updated for European patents.

[170] Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023.

per year.[171] Around 15% of that cost will be borne by SEP holders based in the EU. As indicated in the market description almost all EU based SEP holders are large companies.

The register is expected to give a fairly accurate overview of the number of true SEPs and their ownership.

In sub-option (ii), the same number of patent families will be registered but not all will be checked for essentiality. The checks will be done based on two complementary steps. First, the SEP holders may select up to 100 patent families of which one patent from a family will be the subject of an essentiality check. These are expected to be patents they use often in licencing negotiations (typically up to 15 patents are discussed according to experts, an average of 49 SEPs was indicated by SEP holders in the public consultations).[172] Having checked patents might also facilitate/encourage participation in patent pools as some require essentiality checks. Under this step, it is expected that up to 3 550 patents will be initially submitted with 355 added each year. Following negative assessment around 25% re-check requests are expected (lower percentage than in sub-option i) reflects better quality of SEPs used in negotiations). Second, the Competence Centre will select a random sample from all SEPs registered by each SEP owner, including those designated by the SEP holders under the first step. This is necessary to ensure a statistically valid sample. The Commission will commission a study to develop the sampling methodology that would render the most optimal results. If the sampling includes a patent also selected by the SEP owner, there will be only one essentiality check. Our study[173] finds that the effects of checks conducted based on sampling from the register will be similar to those discussed under sub-option (i) with an acceptably low margin of error. However, sub-option (ii) will limit the number of checks to around 10 000.

To implement this option the back-office costs of the Competence Centre are estimate at around EUR 3.7 million initially and EUR 1.1 million in subsequent years (figures lower than in i) due to lower workload). In order to cover this cost SEP holders will be charged a registration fee of around EUR 100 per patent family registered.

The average total cost to SEP holders of registration and essentiality checks is estimated at EUR 1.35 million and 13.7 million per year respectively. Additional indirect cost of filling the forms and production/update of claim charts is estimated at EUR 2.7 million and EUR 6.4 million respectively per year.[174] Around 15% of that cost will be borne by SEP holders based in the EU.

The register is expected to give as accurate overview the number of true SEPs as in sub-option i). However, except for patents in the “up to 100” list only a percentage of essential patents in a SEP holder’s portfolio will be indicated.[175] Additionally, the register will reflect any decisions of essentiality by courts and for patents that are examined by an independent examiner of a patent pool prior to the creation of the register. This is however sufficient to allow comparison between portfolios of different SEP owners.

Since sub-option i) is ten times more expensive than sub-option ii) and provides only a marginally more accurate picture, the preferred choice should be sub-option ii).

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[171] Average cost over ten years: including initial year with a higher number of patent registrations/essentiality checks and subsequent nine years with the number of registrations/essentiality checks at 10% of the initial figures. For more details see Annex A7.1

[172] See Annex 9, Q6.

[173] -Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023.

[174] See footnote 171.

[175] The percentage will indicate the date on which it was produced and the number of patents checked and in the register at that time. This is to avoid a situation when a SEP holder registers initially only its best patents to obtain a high essentiality percentage and subsequently adds more patents of potentially lower quality.

Implementers and interested stakeholders will have free access to some basic information (for example the list of SEP owners, number of registered SEPs, etc.) but they will be required to pay a fee to access detailed SEP information in the register and the various databases of the Competence Centre. This requirement has two objectives. First, it will enable the development of high-quality data that can be used for aggregate royalty and bilateral FRAND determinations. Second, it will give SEP holders the reassurance that the data they provide is accessed by persons interested in SEP licensing and their representatives, and to specialised professionals. We estimate that at least 380 firms that conduct license negotiation per year will buy access. The fees will cover cost of activities of the Competence Centre described in PO1 and at minimum should amount to around EUR 1 700 for large firm and EUR 850 for an SME for an annual subscription.

SEP holders are likely to withdraw non-essential patents from the register following negative checks and save on patent maintenance fees. This should be considered beneficial to all parties – SEP implementers will have more certainty in negotiations in which only essential patents are presented to them. On the other hand, if the register will be perceived by SEP holders as a means of indicating portfolio strength (and e.g. used in negotiations to determine the share of aggregate royalty applicable to them), they may increase the number of registered patents.[176] Under sub-option i) as all patents are checked, the withdrawals are likely to be higher than new registrations. This is expected to produce net savings for SEP holders of EUR 11.6 million per year (15% applicable to the EU based SEP holders). The savings to SEP holders are losses to the EPO and EU patent offices. In case of sub-option ii) in which a lower number of patents is checked, the opposite is expected. SEP holders are likely to patent more than to withdraw, with a net impact of EUR 29 million in new patent registration/maintenance fees to the benefit of the EPO and EU patent offices. Nevertheless, the impact on the number of patents is uncertain and may not materialise (see also common impacts on patent offices below).

The costs mentioned above should be seen in comparison to an average license revenue a SEP holder gets on its patents. An average worth (net present value) of a positively assessed patent family would be approximately EUR 6 to 10 million (EUR 1 to 1.7 million net present value if the effect of the checks is limited to the EU only).[177]

The objective of the register is to have all SEPs in force in the EU registered, irrespective of who the SEP holder is. With the help of essentiality checks, implementers will know approximately what share of the registered SEPs are truly essential. This will determine the scope of the negotiations.

SEP holders will receive a powerful argument when approaching implementers with a licence offer that they have truly essential SEPs and are thus more certain to have the right to ask for royalties. The evidence from the register will allow a SEP holder to justify the FRAND rate demand, and the implementer can better determine whether the offered rate is FRAND. SEP holders with smaller portfolios, who could not afford the costs of licensing until now, would be able to license.

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[176] This does not necessarily mean new innovation though.

[177] Study estimates that there currently are approx. 60 000 potential SEP families, generating approx. EUR 18bn annual royalty revenue (EUR 300 000 per patent family). If, on average, a potential SEP family will generate significant royalties for approx. 10 years, the net present value of a potential SEP family early in life would be approx. EUR 2.5 million. If FRAND royalties are determined by apportionment among confirmed SEPs only, and 25 to 40% of the potential SEPs are confirmed essential, the average NPV of these confirmed SEP families would be EUR 6 to 10 million (whereas non-confirmed potential SEPs have no value). Proportional to the EU's share in world GDP, we estimate that approx. one sixth of that value is attributable to the licensed use of SEPs within the EU. See -Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023.

The option also provides efficiency gains as implementers will no longer need to assess essentiality on their own or negotiate without that knowledge. With an estimated around 575 new SEP licensing agreements signed per year (and associated negotiations), the value of information in the register to implementers and SEP holders is estimated at EUR 6.2 million each.[178] These benefits could increase if the number of SEP licensing contracts is going to accelerate due to, among others, a growth in importance of IoT. Almost two thirds of respondents to public consultations (93% implementers and 24% SEP owners) considered that a system of essentiality checks would be useful if assessors are independent.[179]

Moreover, it is expected that the registered SEPs will reflect better the size of the SEP holder portfolio than currently. This is because the SEP holders will have to review their declarations to ETSI or review their portfolio if they made a blanket declaration and register only those SEPs whose claims can be linked to the standard. Since the registration will require them to also indicate the section and features of the standard to which the SEP relates, it will make it easier to determine which SEPs pertain to core features of the standard and which to optional parts of the standard. This will help level the playing field among SEP holders.

Finally, conditioning patent enforcement or licensing on registration (with no possibility to collect royalty for the period before registration) might be considered an encroachment on property rights. This is, however, a justifiable and a very limited restriction. First, the main problem is that either SEP holders do not declare each of their SEPs to the SDO or they over-declare. The choice is made based on the individual business strategy of the SEP owners, but it is detrimental to the SEP licensing system as a whole. Because of the lack of transparency, some SEP owners' portfolios are devalued, and others are over-valued; furthermore, implementers face business uncertainty. The lack of predictability has a direct impact on both contribution to a standard and standard implementation. Second, the registration is simple and corresponds to what the SEP holders already committed to declare in the ETSI database but do so with a various degree of rigorousness. The registration will normally not impact on any negotiations as it can be done much earlier than the start of the negotiations. Pursuant to the public consultation, negotiations start on average 2 to 4 years after the publication of the standard and last for an average of 3 years.

This option will benefit SEP holders by reducing delays resulting from implementer requests for, or need to obtain their own, essentiality checks and technical documents. This in turn reduces the amount of negotiation time resulting in SEP holders starting to collect royalties earlier.

Around two thirds of all respondents (around 85-89% of implementers, and between 24 and 41% of SEP owners) named the following benefits of a system for essentiality checks: better information regarding the actual SEP exposure of a given product; reduction of the resources spent on licensing of SEPs; it may help to smoothen licensing negotiations; easier negotiations of a fair royalty (preventing over-pricing); trustworthy and reliable overview of the share of each SEP holders' essential patents.[180]

This Option bears similarities with SEP Expert Group Proposals 7, 8, 11, 13 and 14 on introducing essentiality checks by an independent body for those SEPs that SEP holders intend to commercialise. All those proposals received support with 4 out of 5 stars by the experts. It also bears similarities with Proposals 50 and 51 that when a SEP holder asserts its SEP, it should disclose certain

[178] Value per licensing negotiation estimated as cost of essentiality checks of 15 patents (number typically negotiated according to experts) – and amounts to EUR 60 000. Those typically negotiated patents are likely to be among the "up to 50" group of patents registered by the SEP holder under sub-option ii).
[179] See Annex 9, Q30.
[180] See Annex 9, Q31.

information on those SEPs and high-level claim charts.[181] Those proposals were supported with 4.5 out of 5 stars by the experts.

6.3. PO3: SEP register with essentiality checks and conciliations

Conciliation is a process for a FRAND rate determination between a SEP holder and an implementer (prospective licensee). The objective of the conciliation is to facilitate a settlement between the parties before resorting to court. For example, WIPO reports that 70% of its mediations and 33% of arbitrations end up in settlement.[182]

53% of the respondents to the public consultation considered arbitration useful and 35% of the respondents considered mediation useful. Some of them explained that the problem with arbitration and mediation is that the results are not published. For mediation, an additional disadvantage was that the mediator has no authority to request information and no authority to make a price recommendation.[183]

The conciliation thus has all the additional features that have the potential to address those concerns. It provides powers to the conciliator to (i) request relevant information and documents from the parties, (ii) propose a recommendation for a FRAND rate and (iii) to issue a non-confidential report (containing the methodology for the calculation of the FRAND rate).

> EU phone producing SME: "For an SME it is difficult to estimate whether the offered terms are FRAND, particularly if the terms are not published."[184]

Since conciliation will likely take place before concluding a licence agreement, and it will be a mandatory step before initiating a patent infringement proceeding or a FRAND assessment before a court, it can be even a more effective tool in limiting the number of court cases. The ability to negotiate a FRAND rate with the assistance of an independent conciliator without the threat of an injunction is important for any implementer. Conciliation can also help SEP holders (e.g. when negotiating with large multinationals). The SEP holder who has made a FRAND offer confirmed by the conciliator will increase its credibility also for future negotiations. Credibility is important as evidenced by this example: The WIPO Centre has seen one party make systemic use of WIPO Mediation – filing numerous requests for WIPO Mediation as one way of demonstrating its willingness to take a licence.[185]

Moreover, the conciliation would be more acceptable than arbitration to the parties (where a decision is final) as a conciliator only issues a non-binding suggestion and report on FRAND terms and conditions. The conciliation report will contain a factual summary of the process before the conciliator and include information whether the SEP holder has made a FRAND offer and whether the implementer has responded to that offer. This summary will *de facto* also cover the information needed to assess whether the SEP holder engaged in the *Huawei v. ZTE* process with an implementer. The conciliator's suggested FRAND royalty could also be used by both SEP holders and implementers to determine the appropriate amount of the security that the implementer needs to provide under the *Huawei v ZTE* process. The non-confidential report (or notice of termination of the

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[181] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, https://ec.europa.eu/docsroom/documents/45217.

[182] Out of 900 mediation, arbitration and expert determination cases during 2012-2021 concerning patents, copyrights, trademarks.

[183] Public consultation – responses and comments to questions 53 and 54.

[184] See SME survey in Annex 9.

[185] https://www.wipo.int/wipo_magazine/en/2022/04/article_0007.html?utm_source=WIPO+Newsletters&utm_campaign=a4eeca0fb5-DIS_MAG_EN_201222&utm_medium=email&utm_term=0_-a4eeca0fb5-%5BLIST_EMAIL_ID%5D.

procedure) could also be used before customs to support a request for customs action with regard to goods infringing SEPs.[186]

Although the conduct or commencement of the conciliation will be obligatory before initiating a court action, it will be up to the parties to decide on their level of engagement (e.g. participation in meetings, providing supporting documents on request by the conciliator). In an extreme case, the conciliator could draw up an opinion based on input from just one party if the other decides to 'boycott' the process. This is why it is important that a conciliator has access to the SEP register, the databases of the Competence Centre and confidential reports from other conciliations, so (s)he can receive information on the concerned patents in any event.[187]

During the webinar series on SEP enforcement, it was underlined that parties prefer to agree on FRAND terms rather than having a third independent party determining the FRAND rate for them, even if it would be not binding. Furthermore, the participants in the webinar noted the need of specialised knowledge for FRAND determinations.

Mandatory conciliation should benefit both SEP holders and implementers in reaching a licence agreement faster without costly court proceedings. Since the procedure would be limited to maximum nine months, it would expedite the negotiation process thus making delaying tactics on either side less attractive. This should be especially useful for SMEs (according to WIPO in 94% of SEP ADR at least one party was an SME).[188]

On the other hand, the procedure may potentially lead to delays in licence payments. However, past payments are either resolved in the license agreement or the SEP holder can request damages for past use before the court, albeit depending on national laws requiring commencements of national proceedings before Member States' courts of choice.

An indicative hourly wage of a conciliator is about EUR 500.[189] We estimate that a conciliator would spend on average around 40 hours per case (e.g. as a conciliator may need to come to a conclusion and draw up a report in case the parties do not settle). With estimated around 70 conciliation cases per year (35 based on the current number of FRAND related court cases in the EU and another 35 not related to court proceedings), the cost of back-office support to conciliation is estimated at EUR 800 per case. Thus, the total cost of a conciliation should amount to around EUR 20 800. This is eight

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[186] If a note of termination of conciliation were required to be submitted to customs to effectively request customs' action with regard to SEPs, this would require:
1. An amendment of the Implementing Regulation 1352/2013 establishing the forms provided for in Regulation (EU) No. 608/2013 of the European Parliament and of the Council concerning customs enforcement of intellectual property rights (OJ L 341, 18.12.2013, p. 10);
2. IT developments in the following IT systems: - anti-Counterfeit and anti-Piracy Information System (COPIS) used to process, store and manage information from applications for action (AFAs) and decisions between right holders, the Commission, the European Union Intellectual Property Office (EUIPO) and customs authorities of the Member States; - IP Enforcement Portal (IPEP); national IT systems of DE, ES, IT, PL, CZ, NL.
3. Additionally, the EU anti-Counterfeit and anti-Piracy Information System COPIS (established by Regulation 608/2013) used for the processing and management of all AFAs would need to be adapted accordingly, as well as the national systems linked to COPIS used by certain Member States. The EUIPO database IPEP (Intellectual Property Enforcement Portal), which is one of the trader portals offered to right holders to lodge electronic AFAs would also be impacted and would need to be adapted accordingly.

[187] Conciliation could also be introduced without SEP register, in that case however the conciliator could end up with no information to draw an opinion in case one party is unwilling to provide documents.

[188] Source: WIPO Arbitration and Mediation Center.

[189] "The WIPO Center often sees mediations where a mediator spends approximately 15 hours on a case. With indicative mediator fee rates between USD 300 and USD 600 per hour split between the parties", https://www.wipo.int/wipo_magazine/en/2022/04/article_0007.html?utm_source=WIPO+Newsletters&utm_campaign=a4eeca0fb5-DIS_MAG_EN_201222&utm_medium=email&utm_term=0_-a4eeca0fb5-%5BLIST_EMAIL_ID%5D.

times lower that the average SEP court cost in the EU of EUR 170 000.[190] Based on WIPO experience (70% settlement rate) we estimate that up to 24 court cases could be avoided. Additionally parties could receive help on FRAND terms determination in at least 35 cases per year. Altogether the additional benefits of this option are conservatively estimated at EUR 6 million and could increase further as the mechanism becomes more known and used.

This Option bears similarities with the Expert Group Proposals 68 and 70 on establishing an independent board of experts for determining FRAND royalty upon request and a specialised mediation institute for FRAND licensing disputes.[191] Proposal 68 was supported with 4.5 out of 5 stars and Proposal 70 was supported with 4 out of 5 stars by the experts.

6.4. PO4: Aggregate royalty for SEPs

Aggregate royalty can be considered a total potential cost of licensing a standard.[192] Economically, an aggregate royalty makes sense because implementers value the standard as a whole, not a collection of inventions represented by an incomplete portfolio of SEPs. It may also help to overcome problems of royalty stacking, a modern version of Cournot's (1838)[193] well-known problem that the independent pricing of complementary goods – here: licenses to different SEP portfolios on the same standard – leads to excessive prices, above those that a single party offering all those goods jointly would charge. As Contreras (2017)[194] notes, "[t]op-down approaches [i.e. aggregate royalty] avoid many drawbacks associated with bottom-up approaches in which royalties for individual SEPs are assessed, often in an inconsistent and piecemeal manner, without regard for the other SEPs that cover the standard."

70% of all respondents to the public consultation and 100% of implementers considered that it is important to know the aggregate royalty. Views of SEP holders were mixed, with more (40%) considering it not important, than those who thought it was (20%). Moreover, 70% of all, 93% of implementers, and 25% of SEP holders considered it important to have a transparent process for aggregate royalty determination (38% of SEP holders disagreed). [195]

Knowing it for different applications would simplify cost planning for SEP implementers and assessment, if their business model is profitable. As *Henkel* (2022, Section 4.1) shows, these are very real concerns for SMEs implementing SEPs: "During the development of an IoT device, it is unknown which demands for SEP royalties will surface later, so innovators cannot make reliable cost calculations." For SEP holders it will allow to decide if they wish to contribute their technology to a standardisation process and help estimate potential future revenues.

Under this option standard contributors may announce jointly an aggregate royalty to the Competence Centre. Finding an agreement among contributors might however be a challenging task due to often opposing interests of contributors. Some may also be implementers and thus are likely to favour lower royalties, while others are "pure" SEP holders whose primary source of income is licensing

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[190] Please note this is an average court cost, but there are court cases where one party costs can approach millions of euros (See example in Annex 2).

[191] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, https://ec.europa.eu/docsroom/documents/45217.

[192] An implementer is unlikely to pay the full aggregate rate since not all SEP holders will be seeking royalties, or it may enter into cross-licenses.

[193] Cournot, A. A., *Recherches sur les principes mathématiques de la théorie des richesses*, L. Hachette, 1838, https://gallica.bnf.fr/ark:/12148/bpt6k6117257c.texteImage.

[194] Contreras, J. L., 'Aggregated royalties for top-down FRAND determinations: revisiting "joint negotiation"', *The Antitrust Bulletin*, 2017, Vol. 62, Issue 4, pp. 690-709, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3051502.

[195] See Annex 9, Q44 and Q45 respectively.

and who are interested in higher aggregate royalty levels. To help contributors in reaching an agreement, the Competence Centre upon request may appoint a conciliator to facilitate their discussions. Finally once royalty is set, it will not be for ever, there will be a mechanism to adjust the aggregate royalty to reflect changing market conditions (e.g. the fact that a standard ages with time).

The aggregate royalty could be irrespective of the level of licensing[196], and it should be possible to pass the cost of the licence downstream without a mark-up (the commission usually charged by the various levels in the value chain on top of the price). As per PO1 guidelines, the industry is expected to figure out the appropriate level of licensing to avoid the so called "double dipping" (collecting royalties twice for the same SEPs).

From the point of view of an implementer, one risk could be that the aggregate royalty announced by the standard contributors is too high. SEP holders might set it high strategically in order to have room for negotiation.

SEP holders publish maximum expected royalties in order to be able to negotiate. Stasik (2010) found that the sum of individually published handset royalty rates for 4G amounted to 14.8% of the sales price – representing only 60% of declared SEPs.

This may, however, dissuade implementers from taking a licence, which should have a self-limiting effect on SEP holders, as wide implementation of the standard is of interest to the SEP owners. Nevertheless, in order to cater for such situations, a group composed of standard contributors and/or implementers may ask the Competence Centre for a non-binding expert opinion on the aggregate royalty. The process will be inclusive where any interested party would be able to submit its views. We estimate that around three such requests will be coming each year and that the cost of delivering one expert opinion (consisting of approximately 240 working hours of experts' time and Centre's back-office support) is estimated at around EUR 135 800. The costs would be shared by requesting parties.

Besides predictability, this option is also expected to facilitate SEP license negotiations. Asked about problems in negotiating with SEP owners, 90% of respondents to the SME survey rated a fair price for SEPs as either a "very important" or an "important" issue.[197] In fact, SEP licensing negotiations are mainly about royalty rates. By combining an aggregate royalty with a SEP owner's share in all essential patents for a standard (from PO2), one obtains a proxy (albeit imperfect) of a royalty level to be expected. This could establish a reference point to help negotiating parties in reaching an agreement. It might be especially useful for smaller and SME implementers (who have limited resources to conduct own research or gather evidence), but also for (smaller) SEP holders who could underpin their FRAND offer with additional, publicly available evidence.

With an estimated 575 SEP licensing negotiations taking place in the EU each year, we conservatively estimate the value of publicly known aggregate royalty rates at approximately EUR25.3 million per year.

In case licensing negotiations fail, an aggregate royalty would also facilitate the work of conciliators and judges by providing a clear reference maximum price for using a standard. This will not prejudice the use of other valuation methods in bilateral FRAND determination processes. For instance, during any conciliation process, the conciliator may choose the methodology (s)he uses to propose a FRAND rate and may also choose to look at the aggregate royalty. The non-confidential version of the report will be published and will inform any future discussion on an aggregate royalty.

[196] 68% of the respondents to the public consultation consider that the fair and reasonable terms should not depend on the level of licensing – see question 40.
[197] See Annex A8.2, Q12.

The publication of aggregate royalties is not expected to impact on innovation by SEP owners, as exemplified by the following research:

> In 2007, the patent policy of VITA[198] (SEP on critical embedded computing architectures) was revised to require ex-ante disclosure of maximum patent royalty rates. Contreras (2011) finds that this policy change had no detrimental effect on the output and participation at VITA. As measures of output and participation, Contreras looked at the number of disclosures, the number of new standards-development activities that were initiated, the number of standards that were approved, the average time between the introduction of a draft standard and its final approval, the number of members participating in VITA, and the number of citations for newly approved standards.[199]

For a more developed analysis of economic rationale for an aggregate royalty please consult Annex A7.2.

This Option bears similarities with SEP Expert Group Proposals 38 and 42 on encouraging SEP holders to announce ex-ante most restrictive licensing terms and determine a reasonable aggregate royalty.[200] Both proposals received support with 4 out of 5 stars by the experts.

6.5. PO5: SEP clearing house

This option depends on an aggregate royalty established above, and adds a clearing house facility, or one-stop-shop for implementers to acquire SEP licenses with a single (annual) payment and without any negotiations.

PO5 would be most helpful for mid-caps and SMEs developing solutions in the IoT as it will enable them to simply deposit the aggregate royalty in an escrow account and then just sign standard deals with SEP holders.[201] One third of respondents to the SME survey quoted too much efforts to enter license agreements with all SEP holders as a reason for not obtaining a license; and around 80% complained they did not have sufficient resources to negotiate with SEP holders.[202] However, any implementer may always choose not to use the clearing house and negotiate with SEP holders bilaterally instead, to receive better conditions.

The initial escrow account would be based on the estimated volume and value of sales by the implementers. Once SEP holders are informed by the Centre, those that are interested in a licence will reach out to the implementers concerned to conclude a licensing agreement on standard terms. This agreement will detail the sales and the monitoring mechanism and will regulate the relationship between the SEP holder and the implementers. The amount allocated to SEP holders that chose not to conclude a licensing agreement will be returned to the implementer within one year of the deposit.

Given the fragmentation of the IoT and the large number of potential licensees this option should also benefit SEP holders. In particular, those SEP holders with small portfolios (e.g. SMEs) who have limited resources to engage in bilateral negotiations with many (or larger) implementers. The clearing

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[198] VITA is accredited as an American National Standards Institute (ANSI) developer. Website: VITA - Home.

[199] CRA, De Coninck, R., von Muellern, C., Zimmermann, S., and Mueller, K., *SEP Royalties, Investment Incentives and Total Welfare*, 2022, p. 16, quoting: Contreras, J., *An Empirical Study of the Effects of Ex-ante Licensing Disclosure Policies on the Development of Voluntary Technical Standards*, National Institute of Standards and Technology, GCR 11-934, 2011, https://www.nist.gov/system/files/nistgcr_11_934_empircalstudyofeffectsexantelicensing2011_0.pdf.

[200] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, https://ec.europa.eu/docsroom/documents/45217.

[201] It should be noted that 75% of all, 73% of implementers and 88% of SEP holders indicated that "Providing a security at a fair and reasonable amount" is a relevant behaviour of an implementer, which indicates willingness to take a license. See Annex 9, Q49.

[202] See Annex A8.3: Q8 (9 out of 26 answers) and Q12 (18 out of 22 answers) respectively.

house would allow them to reach a wider audience of implementers at limited cost. All money transfers will be dealt with by the Competence Centre.

There are two main challenges regarding this option. First, the aggregate royalty from PO4 would have to become binding on the parties. Consequently, a mechanism should be established to allow both updates and challenges of this royalty (e.g. in case it is set at too high level, or when the standard ages). However, changes to the aggregate royalty levels should not occur too often, as this would be rather disruptive to the licensing process, especially as regards predictability.

Second, the problem is how to incentivise SEP holders to agree on the allocation of the aggregate royalty between them as they will be able to access escrow deposits only after doing so. In practice, it may not be possible for the SEP holders to agree on allocation methods because not all SEP holders license their SEPs for remuneration, and they may have diverging commercial interests. For some licensing is a business model, for others this is just a gateway for building business relationships. To get to an agreement SEP holders may use services of Centre's facilitator. We estimate that on average there would be three such request per two years. Remuneration of facilitator(s) is estimated at EUR 120 000 per case and will be borne by the requesting parties. In any case however, it is likely that at least some SEP holders will be dissatisfied either with the level of binding royalty or allocation method. This can result in numerous legal challenges against both the Commission and the Competence Centre.

Nevertheless, if the allocation is agreed upon, the transfer of royalties should be automatic without the need for individual negotiations. We estimate that the majority of implementers will want to use the clearing house for at least some of the standards they use. We estimate that this option has the potential to eliminate the need for up to 500 negotiations per year, producing net benefits of up to EUR 76 million annually. Fees for using the service and covering cost of the Centre are estimated at just below EUR 100 per payment.[203]

A potential drawback of this option from the point of view of implementers is that more SEP holders (also those who did not actively seek royalties in the past) might register to get their share of royalties. So, it is likely that more SEP holders will decide to license their SEPs, e.g. once Avanci became known and used by vehicle manufacturers, the number of SEP holders grew from an initial five in 2016 to around 20 in 2018).[204] In practice this could mean that the implementers will pay (almost) the full aggregate royalty. Currently not all SEP holders seek royalties, so the implementers are likely to pay only to those who proactively request royalties. Second, it may happen that due to ease of licensing under the new system, standards that thus far were in practice royalty free could become royalty bearing.

This option bears similarity (but is different from) Proposal 74 from SEP Expert Group "On demand collective licensing agencies".[205] This proposal received 2 of 5 stars support from the experts. To the extent that it bears similarities, the objections to that proposal would apply. Those include that mandatory patent agencies would create strong disincentives for companies to participate in standard setting and 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.

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[203] Fee based on an average number of payments per year during a ten year period, assuming that each year there's also payment for licenses taken in previous year(s). See Annex A7.1 for details.
[204] https://en.wikipedia.org/wiki/Avanci.
[205] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, https://ec.europa.eu/docsroom/documents/45217.

6.6. Common impacts

The general objectives are to ensure that end users, including small businesses and EU consumers benefit from products based on the latest standardized technologies at reasonable prices; and to make the EU an attractive place for innovation and standards development. Ultimately, the initiative wants to ensure that both EU SEP holders and implementers innovate in the EU, make and sell products in the EU and are competitive in non-EU global markets.

Specifically, the initiative aims at providing the tools for the parties to negotiate and conclude a FRAND license agreement successfully. All options aim at facilitating SEP licence take-up in the EU by reducing information asymmetries and redundant transaction costs. The initiative is thus likely to balance the negotiating power between SEP holders and implementers. It should provide SEP implementers with predictability as to their SEP exposure, allowing for proper business planning and usage of the latest technology in the EU. It should also ensure sustainable licensing income for SEP holders thus enabling them to continue participating in standard development. It would promote a level playing field for SEP holders with good quality SEP portfolios.

A SEP holders has been negotiating the renewal and extension of its existing patent license agreement with a Chinese implementer that is also a SEP holders. The Chinese company did not accept FRAND offers and did not make a FRAND offer to the SEP holders. The Chinese company provided very limited material on its own SEP portfolio and it sought a significantly higher valuation, which was also inconsistent with a third-party analysis. The SEP holders offered to engage in neutral mediation or arbitration to agree on FRAND rates, but the Chinese company rejected those offers.

The precise impact of the options on SEP holders and on costs of implementers is difficult to predict. As transaction costs go down (progressively with each option) it will be easier for implementers to take a licence (options mainly reduce information asymmetry that implementers currently face) and thus, not to infringe on patents. SEP holders would also benefit from such wider market increasing their licensing income base.

Impact on fundamental rights

This initiative may impact the right to intellectual property of patent holders (article 17(2) of EU Charter), if it is viewed as a restriction on the ability to enforce individual patents within a standard for which a FRAND commitment was made, but that has not been registered. The same may apply to the requirement to conduct a conciliation procedure before enforcing individual patents. IP rights are not absolute rights and limitations to the exercise of these rights are allowed under the EU Charter, provided that the proportionality principle is respected. According to settled case-law, fundamental rights can be restricted, provided that those restrictions correspond to objectives of general interest pursued by the European Union and do not constitute, with regard to the aim pursued, a disproportionate and intolerable interference, which infringes the very essence of the rights guaranteed.[206] In that respect, this initiative is in the public interest in that it provides uniform, open and predictable information and outcome on SEPs for the benefit of SEP holders, implementers and end users, at EU-wide level, and in that it aims at promoting technological innovation and the dissemination of technology to the mutual advantage of the SEP holder and implementers.

[206] Case C-44/79 *Hauer* of 13 December 1979, para. 32; ECJ Case C-265/87 *Schräder* of 11 July 1989, para. 15, and Case C-5/88 *Wachauf* of 13 July 1989, paras. 17 and 18.

Furthermore, the rules concerning the conciliation procedure and the determination of the aggregate royalty are aimed at improving and streamlining the process, but are not ultimately binding. [207]

The initiative should also improve the conduct of business for both SEP holders and implementers, and ultimately other businesses downstream (Article 16 of the Charter).

The initiative is also entirely consistent with the right to an effective remedy and to access to justice (Article 47 of the Charter), as the implementer and the SEP holder fully retain that right. In case of failure to register, the exclusion of the right to effective enforcement is *limited* and necessary, and genuinely meets objectives of general interest, described above (see the first paragraph of this Section).[208]

Impact on innovation

Reducing uncertainty about costs and legal exposure will have a positive effect on implementer-level innovation. Reasonable SEP licensing costs and a reduction of negotiation delays will have a positive impact on SEP holder innovation. Both SEP holders and implementers may experience negative impact if a balance is not achieved in the determination of the FRAND terms.

A more sustainable standardisation system and the availability of open standards to a wider range of implementers will have a positive effect on innovation that builds up on those standards.

SEP licensing is expected to remain a profitable business after the options considered are implemented. For instance, the total costs (including indirect costs and excluding benefits) for SEP holders of PO2 of EUR54 million annually account only for 0.3% of the estimated global royalty payments on cellular standards alone (EUR 18 billion).[209] Thus, incentives to innovate are likely to continue.[210] Two thirds of respondents to the public consultations considered that efficient SEP licensing would foster innovations by implementers, including start-ups and SMEs.[211]

Social and environmental impacts

The options have no direct social impacts. Indirectly by facilitating take-up of new technologies they can help in the digital transition such as e.g. smart cities, connected cars, telework, etc. More jobs could emerge in the new technology sectors.

The options have no direct environmental impacts. They comply with the "do no significant harm" to the environment principle. Indirectly, by facilitating application of new technologies they can help in the green transition e.g. by contributing to a reduction of energy usage (via smart grid, smart meters) or air pollution (e.g. connected cars avoiding traffic jams).

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[207] The conciliation procedure follows the conditions for mandatory dispute settlement outlined in the CJEU judgments; Joint Cases C-317/08 to C-320/08 *Alassini and Others* of 18 March 2010, and Case C-75/16 *Menini and Rampanelli v. Banco Popolare Società Cooperativa* of 14 June 2017, taking into account the specificities of SEP licensing.

[208] Since the alternative of excluding the right to collect past royalties absent a registration or the alternative to only require the initiation of the conciliation procedure before being able to enforce patent rights weighs less than the exclusion of enforcement, *argumentum a maiore ad minus*, would also be compliant with fundamental rights.

[209] CRA converted to EUR using EUR1:USD1 rate, see CRA, Régibeau, P., De Coninck, R. and Zenger, H., *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing: A Report for the European Commission*, 2016, Section 3.2, p. 57, https://ec.europa.eu/docsroom/documents/48794?locale=en.

[210] - Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023: "Essentiality checks may accentuate the difference between the returns to essential and non-essential patents; thus increasing SEP holders' efforts to produce truly essential patents. In the theoretical analysis of Wipusanawan and Schuett (2022), increasing the differential between the value of essential and non-essential patents increases potential SEP owners' incentives to contribute to standards development".

[211] See Annex 9, Q64.

Two thirds of respondents to the public consultation considered that efficient SEP licensing would i) increase employment and keep a high level of competence in the EU and ii) foster the EU's transition to the green economy.[212]

Impact on SEP holders' *royalty income and availability and cost of products to customers*

Many implementers currently use standards without having a license. Thus, the effect on availability of SEP embedding products is unknown. We expect that lower transaction costs will promote license-based applications and more implementers will take a license. It may be just a shift from unlicensed products to licensed products, or real increase in technology take-up resulting in more SEP embedding products on the market (also due to expected increase in IoT applications).

The impact on SEP prices (royalties paid by implementers) is also unknown (see Annex A7.1). Announcements of aggregate royalties and FRAND determination processes may (but do not have to) contribute to lowering the royalties paid by implementers.

Consequently, we have two effects working in different directions: i) potentially more firms taking a license (increasing implementers costs, and income of SEP holders) and ii) potentially lower royalties paid (decreasing implementers cost and income of SEP holders). Finally, the impact on prices for customers will depend on the competition on a given product market. Any change in royalties paid by producers may be internalized by a firm or passed on to final customers.

Impact on national patent proceedings

The additional information on essentiality shares, on aggregate royalty as well as information from conciliator reports are likely to facilitate judgements in SEP related cases. Moreover, mandatory pre-trial conciliations are expected to reduce the number of SEP litigation by up to 70%. The benefits for the national judiciary are estimated at EUR 2.8 million in terms of access to information, and at EUR 4 million in terms of reduction of the number of court cases. In the analysis these benefits were attributed to SEP holders and implementers.

Impact on patent offices

Options starting from PO2 may create additional demand for European patents, in case the share of SEPs in the register will become a reference point for aggregate royalty allocation. Especially larger stakeholders may take advantage of the fact that there is certain probability that a non-essential patent will be considered essential by evaluators.[213] This effect however is likely to diminish as evaluators gain experience. Thus, an increasing number of SEPs in the register may improve SEP holders position vis-à-vis other holders. We estimate that in case this effect occurs, it may result in additional income to EPO/national patent offices of around EUR 29 million annually (in case PO2 sub-option ii) is chosen).

Impact on SEP patent pools

All options will have positive impacts on patent pool formation and patent pool licensing.

First, all patent pools conduct essentiality checks for some or all patents included in the pool. In the future, SEP holders may include in the pool SEPs that were found essential under PO2.[214] Merges and Mattioli (2016) e.g. estimate that the cost of these essentiality checks related to the MPEG Audio

[212] See Annex 9, Q65 and Q66 respectively.

[213] JRC found through experiment that the probability of marking a non-essential patent as essential stands at 38%. The study noted however, that errors in assessment are likely to diminish as assessors gain experience, see European Commission, Joint Research Centre, Bekkers, R., Henkel, J., Tur, E. M., et al., *Pilot study for essentiality assessment of standard essential patents*, Publications Office of the European Union, 2020, https://data.europa.eu/doi/10.2760/68906.

[214] It should be noted however that pools do not license just the evaluated patents – they license the licensors' entire portfolios of relevant SEPs (without having identified what or how many there are), but uses the evaluated patents as an proxy for showing licensees the composition of the licensor portfolios and the pool portfolio as a whole.

pool represented USD 5 250 000, approximately two thirds of the total set-up cost of this patent pool. Patent pools may continue to do their own essentiality checks.

Second, the requirement to announce an aggregate royalty is likely to promote patent pool formation as independent patent pool administrators have significant experience in pool formation. They also have internal revenue allocation mechanisms, which may increase transparency with regard to the share of the various SEP holders and facilitate their business planning.

Finally, if a patent pool comprising all SEP holders relating to a given standard would be formed, it would replace the use of PO5.

Impact on commercial database providers

Providers of commercial solutions include companies such as LexisNexis Patentsight, Clarivate Derwent Innovation, Questel Orbit, Patsnap, Minesoft Patbase and many others. Recently such companies have integrated SEP declaration information in their databases; i.e. patent datasets include a flag whether or not a patent has been declared. Some solution providers such as IPlytics, PatentCloud Inquartik, Patently or Unified Patents have created designated patent declaration analytics solutions that allow searching across the full text of patent and standard documents.[215]

These providers may have access to the register, use it in their commercial offers and build services on top of that data. There may be new users and thus enhanced competition. Providers that are currently focused on collecting and curating the currently missing or imperfect data available are likely to lose that part of their business. The companies above, however, all offer additional services. While users may no longer need to purchase commercially produced reports on the SEP landscape, they may benefit from the price decrease and quality increase in new analytical commercial reports induced by the free availability of the Competence Centre's information on essentiality rates or aggregate royalty.

Digital impacts

The SEP database may be used for research purposes, and/or to train machine learning (ML) algorithms to recognize "true" SEPs among larger populations of potential SEPs. These methods are expected to significantly improve over the next years, and the policy options may further contribute to this evolution. The causal effects of improved ML approaches to essentiality determinations are complex, but potentially significant. Among others, it may limit significantly the costs of essentiality checks.

7. HOW DO THE OPTIONS COMPARE?

Guidelines and support measures created under PO1 will support SEP license negotiations and improve the SEP licensing environment mainly by increasing transparency and reducing some costs. Their impact, however, may be limited. The assistance package for SMEs can be seen as the biggest advantage of this option. As explained under PO1, much of the public information about pricing is under non-disclosure agreements. A guidance is not capable of promoting more transparency in this respect. Any SEP landscape study will suffer from natural limitations such as missing data and over-declaration, and the use of different methodologies to produce them, which may lead to different results. WIPO mediation will not address the key concern about transparency of the results of the mediation that are to benefit future comparable situations. In order to offer valuable information to interested parties, the Competence Centre would need to gather its own quality data through unbiased and transparent processes. This option is unable to achieve this.

[215] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 30, Section 3.2.1.3. Commercial patent databases.

By making registration in the EU register mandatory, and enforcement and/or collection of past royalties conditional on registration, PO2 will create transparency about the SEP landscape (improving on objective 1). In addition, regular essentiality checks will guarantee the quality of the register. Essentiality checks will also give an indication on the number of truly essential patents per SEP holder. With time this might lead to creating a register of 'truly' essential patents. Implementers will have a (comparative) proxy of the shares that each SEP holder has in the respective technology. There will be benefits for both the SEP holders and the implementers. The SEP holders that register will demonstrate the legitimacy of their claims and see reduction of some costs related to the technical discussions plus shorter negotiation periods. The implementers will be able to see who the SEP holders are who may have legitimate claims on SEPs, what the potential strength of those claims is and how those may impact on its business.[216] They will economise on their own essentiality assessments which should aid in negotiations – improvement on objective 2. Nevertheless, implementers will still have to negotiate licence and royalties individually with each SEP holder with, in most cases, no aggregate royalty available as a reference. PO2 also includes all impacts of PO1.

By adding an obligatory pre-litigation conciliation, PO3 is expected to speed up dispute resolution and lower its cost as compared to court proceedings, thus significantly improving on objective 3. A conciliator would also propose FRAND conditions including royalty, thus further helping especially implementers and improving on objective 2.

PO4 is going to solve one of the key issues in SEP licensing negotiations by adding an aggregate royalty to the SEP register and providing a reference price for using a standard – thus significantly improving on objective 2. It should speed up license negotiations and dispute resolution, thus further improving on objective 3. It will especially help smaller SEP implementers, facilitate production cost planning and profit calculations. It will also restrict room for exploitation by SEP holders by setting reasonable maximum royalty rates.

By creating a one-stop-shop for obtaining SEP licences, PO5 eliminates the business uncertainty about the aggregate royalty. It gives the opportunity to implementers to sign licence deals with many SEP holders. For SEP holders it gives clarity about their share of the aggregate royalty and facilitates licensing with implementers who choose to use the one-stop-shop. This option will reduce the licensing costs in a similar way as for pools. Given that all SEP holders will be covered by this option, it would represent an improvement in comparison to a pool. This option radically improves on objective 2 and could eliminate the majority of disputes, thus improving on objective 3. However, the SEP burden on implementers might increase as transaction costs get very low, more SEP holders than currently might want to participate in SEP licensing (including those that were not licensing thus far, or even those that had a royalty free policy might change to royalty bearing licensing). PO5 would eliminate the issue of licensing in the value chain as any implementer may use the one-stop-shop and its customers will be licensed. Finally, for PO5 to work, SEP holders have to be incentivised to agree on a mechanism for royalty allocation. This is a very complex exercise because of the many diverging interests of SEP holders (those whose main business is using the standard, those whose main business is SEP licensing and those who do both). It is very likely that they will fail to agree, and the issue will be referred to the FRAND determination process. This option has an impact on the freedom to conduct business.

[216] As with time new SEP holders might register, it may be necessary to check the register regularly to have up-to-date picture on the SEP holder landscape.

Table 2: Comparison of policy options against the effectiveness and efficiency criteria

Options	Effectiveness			Cost efficiency (EUR) only quantifiable costs and benefits for all stakeholders (see next table for details)
	Provide information on SEPs ownership and essentiality	Provide clarity on FRAND royalty	Facilitate dispute resolution	
Baseline	0	0	0	0
PO1 Voluntary guidance	(0/+) clarification of key issues in SEP negotiations in guidelines, effectiveness depending on market uptake. (+) Competence Centre landscape studies, collection of case-law and rules worldwide, and help/training to SME implementers.		(0/+) promotion of WIPO ADR tools.	Net effect (+)5.3 million Benefits 5.9 million Cost 0.6 million
PO2: SEP register + essentiality check (on up to 100 patents + random sample)	(++) Clarity on which SEPs can be enforced and (optionally: which damages for past use can be collected) (those in the register only), who owns them and how many essential patents there are per SEP holder.	(+) as in PO1 + proxy of SEP shares of each SEP holder based on patent count	(0/+) as above + register is another source of evidence in WIPO ADR.	Net effect (-)12.3 million Benefits 41.5 million Cost: 53.8 million
PO3: Register and conciliation		(++) as in PO2 + conciliator's opinion on royalty facilitates negotiation and conclusion of SEP licence (potentially global).	(+) Mandatory conciliation (optionally: commencement of procedure) should limit costly court cases by up to 70% Additional evidence for SEP holders in case of an application for customs' action.	Net effect (+) 6 million Benefits 7.5 million Cost 1.5 million
PO4: Aggregate royalty for SEP		(+++) as in PO3 + clarity on total SEP cost (aggregate royalty).	(++) as in PO3 but conciliation/licence negotiations should be faster when aggregate royalty is available.	Net effect (+) 24.9 million Benefits 25.3 million Cost 0.4 million
PO5: SEP clearing house		(++++) as in PO4 + clarity on split of aggregate royalty between SEP holders. (--) implementers may face higher SEP cost if more SEP holders than currently decide to license for royalty. (--) SEP holders could likely disagree with the mandatory aggregate royalty and apportionment method	(+++) can substantially reduce disputes, otherwise as in PO4.	Net effect (+)75.2 million Benefits 75.6 million Cost 0.4 million

Note: Only additional quantifiable costs and benefits of each option presented. Options build on each other thus for instance impact of PO3 consist of impact of PO1, PO2 and PO3.
Quantifications are only indicative based on several assumptions. Not all impacts are quantifiable, notably impact on SEP licensing revenue. See annex A7.1 for details.

Table 3: Comparison of the impacts of policy options on stakeholders (including quantifiable costs and benefits)

	SEP implementers	SEP holders	Courts / lawyers	Patent Offices (PO) and commercial data providers
No. affected	Around 230 EU based implementers and around 190 non-EU based implementers with subsidiaries in the EU	Altogether around 260 with more than 10 SEP families. Around 31 from the EU (owning 15% of potential SEPs)	Around 35 FRAND related court cases per year	EPO, 27 NPOs and about 20 data providers (including 4 main patent and 4 main SEP specific)
Baseline	0	0	0	0
PO 1:	(+) Guidelines will provide definition and interpretation on issues posing most problems in SEP negotiations – though they remain voluntary Competence Centre will do landscape studies on SEPs, have a repository of cases, and rules worldwide that should facilitate negotiations SMEs will benefit from free advice	(+) Guidelines could smoothen negotiations (+) Access to landscaping studies (-) Implementers due to information/resources from the Competence Centre can become more assertive negotiators	(0/+) guidelines, database of case law and landscape studies can be used in court judgements;	(0) No impact on patent offices (0/+) Case law database of the centre and produced studies are not expected to impact on database providers but can be another free source of analysed information.
Costs (€)	0 (0.6 million, cost covered by fees of PO2)	0	0	0
Benefits (€)	3.4 million	2.5 million	0 (benefit of 2.4 million)*	0
Net (€)	3.4 million	2.5 million	0 (2.4 million)*	0
PO 2: Sub-option ii) up to 50 checks + sampling	(++) clarity on which SEP holders may enforce and (optionally only) collect royalties for past damages in the EU and share of essential patents they have. Likely to reduce cost of internal investigations of each implementer engaged in licence negotiations; provides indication on the share of SEP royalty based on patent count, but also gives an indication of value as the register will create transparency as to how the patent relates to the standard.	(0,-) SEP holder risks that (some of) its patents will be assessed as non-essential to a standard. Patents in the register may be subject to invalidation procedures which might lead to weakening of SEP holder's patent portfolio. (+) SEP holder will gain credibility that it has essential patents which should facilitate approaching implementers for a licence. (+) SEP holders with a higher essentiality rate from their registered SEPs will improve their negotiating position in all SEP negotiations (also cross-licensing)	(+) information on registration and essentiality should facilitate SEP judgements (0,-) increased number of patent invalidation claims	(0,-) Patent Offices may face increased number opposition procedures (+) providers may have access to the register, use it in their commercial offers and build services on top of that data. There may be new users and thus enhanced competition. (-) providers that are currently focused on collecting and curating the currently missing or imperfect data available are likely to lose that part of their business.
Costs (€)	0.6 million (access fee: €1 700 for large and €850 for SME)	53.2 million (including 38 million of indirect costs) (filing fee 100 per patent, essentiality check 5 000 per patent)	0	0
Benefits (€)	6.1 million	6.4 million	0 (benefit of 0.4 million)*	29 million in additional patent fees
Net (€)	5.5million	-46.8 million	0 (0.4 million)	29 million
PO 3:	(+++) as in PO2 + up to 70% of SEP conflicts could be solved without court involvement (due to mandatory pre-trial conciliation). Especially smaller implementers could benefit from help conciliator provides in negotiations with SEP holder.	(++) as in PO2 + up to 70% of SEP conflicts could be solved without court involvement (due to mandatory pre-trial conciliation [optionally commencement of procedure])	(++) Reduction of SEP court cases by up to 70%. (+) In case of a trial, courts can use the non-confidential report of the conciliator (on e.g. FRAND rate assessment) in SEP judgements.	(0) No impact on patent offices (+) Providers may re-use public outcomes of conciliation procedures

	SEP implementers	SEP holders	Courts / lawyers	Patent Offices (PO) and commercial data providers
		(+) Conciliation report would be used to support an application for customs' action with regard to goods suspected of infringing SEPs. (-) Obligatory conciliation [optionally commencement of procedure] might delay SEP holder's going to court.	The court can also use the confidential report, if the parties agree.	
Costs (€)	0.7 million	0.7 million	0	0
Benefits (€)	3.7 million	3.7 million	0 (4 million)*	0
Net (€)	3 million	3 million	0	0
PO 4:	(++++) as in PO3 + Implementers will know maximum price of a standard (aggregate royalty) (0/-) Risk that aggregate royalty announced will be too high, (+) mitigated by possibility to request an expert opinion, with resulting aggregate royalty published in the register (0/-) Risk that each SEP holder approaching an implementer will demand a bulk share of the aggregate royalty, which might increase need for conciliations/trials	as in PO3 but (-) Freedom to negotiate SEP royalty will be reduced by the announced maximum SEP royalty. Implementers are likely to try to negotiate price down (+) SEP holder will still be able to claim it has the most important patents and should get the largest chunk of the aggregate royalty (+) Depending on the mechanism by which the aggregate royalty is set, the aggregate royalty may in the end be higher than under the current system. (-) potential dissatisfaction with the aggregate royalty set might trigger more conciliation requests	(+) Courts can benefit from the publicly announced aggregate royalty	(0) No impact on patent offices (+) Providers may use the data to offer additional solutions to customers.
Costs (€)	0.2 million	0.2 million	0	0
Benefits (€)	12.7 million	12.7 million	0	0
Net (€)	12.5 million	12.5 million	0	0
PO 5:	(++++) as in PO3 + + One stop shop will allow taking a licence without negotiating with individual SEP holders + any implementer can take a licence regardless of its level in the value chain (0/-) Risk that aggregate royalty announced will be too high. (--) Risk that more SEP holder holders will join "public pool" and seek royalties, risk that royalty free standards will become royalty bearing	(+) Potential for smooth licensing without negotiations or disputes, i.e. increase of licensing base (-) potential disagreements on aggregate royalty allocation method (-) In case negotiations take place, impacts as in PO3 but freedom to conduct business limited by published aggregate royalty and allocation shares	(+) Potential to reduce most of SEP court cases. (+) Courts can benefit royalty allocation between SEP holders in addition to the benefits listed under the previous POs. (-) SEP holders may challenge the allocation method before conciliators	(0) No impact
Costs (€)	0.3 million	0.2 million	0	0
Benefits (€)	37.8 million	37.8 million	0	0
Net (€)	37.5 million	37.6 million	0	0

** added in equal shares to benefits of SEP implementers and holders*

Note: Only additional costs and benefits of each option presented. Options build on each other thus for instance impact of PO3 consist of impact of PO1, PO2 and PO3. Quantifications are only indicative based on several assumptions. Not all impacts are quantifiable, notably impact on SEP licensing revenue. See annex A7.1 for details.

7.1. Compliance with the proportionality principle

None of the options goes beyond what is necessary to achieve the identified objectives. The options are characterized by progressively increasing market intervention, which is justified to balance the distorted balance of power and information asymmetry, and to reduce unnecessarily high transaction costs in licensing negotiations between SEP holders and implementers, especially with smaller (including SMEs) implementers and ensure that the principle of FRAND licensing is implemented.

7.2. Coherence with other EU legislation

The options are coherent with the application of EU competition policy as regards the enforcement of the FRAND obligation arising from Article 102 TFEU. Other instruments in the area of enforcement of intellectual property rights are not impacted by this initiative.

Possible legal instruments for implementing the policy options are in case of PO1 an EU recommendation for setting the guidelines and a regulation to create the Competence Centre (e.g. adding new tasks to the EUIPO). In case of PO2 to PO5, an EU regulation would be required, supplemented by delegated or implementing acts (e.g. establishing the methodology for essentiality checks, criteria for essentiality assessors, criteria for aggregate royalty determination, rules for conciliation).

7.3. Coherence with international obligations (WTO rights)

Certain proposed limitations on the rights of a SEP holder, including requirements to (i) register its patents in a designated register, and to (ii) conduct a specified FRAND determination process (conciliation) in order to be able to enforce their patents and/or collect FRAND royalties for the past, could be considered a legitimate limited exception as stipulated in Article 30 TRIPS to the exclusive rights conferred on SEP holders under Article 28 TRIPS (a more detailed assessment is provided in Annex 8).[217] There is only limited guidance on Article 30 TRIPS, which on the one hand seems to allow only a narrow curtailment of the legal rights of a patent holder, but on the other hand suggests that public interest objectives stated in Articles 7 and 8(1) TRIPS, are legitimate objectives permitting encumbrance on the use of intellectual property.[218]

The temporary exclusion of the right to effective enforcement of exclusive rights may be considered to be *limited*. The inclusion of a patented technology in a standard gives the SEP holder dominant market power over an implementer of the standard, as they cannot design their products around SEPs because the technology is essential for implementing the standard. SEPs holders benefit from the adoption of the standard and therefore usually tolerate the infringement of their patents to ensure the standard is widely used in products. When SEP holders commit to FRAND licences in order to promote adoption of the standard, their objective is not to stop the sale of infringing products but to collect royalties from such sales. The exceptions to the exclusive rights of SEP holders are thus consistent with the objectives of the TRIPs agreement to promote technological innovation and the dissemination of technology to the mutual advantage of the SEP holder and the user of the technology (Article 7). It would also be consistent with its principles of preventing the abuse of intellectual property rights and adopting measures for public interest reasons (Article 8).[219]

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[217] The registration of patents in a designated register could also qualify as a procedure concerning the maintenance of intellectual property rights under Article 62 of the TRIPS Agreement.

[218] The detailed assessment of the permissibility of the exceptions under Article 30 of the TRIPS Agreement and the interpretations by WTO adjudicating bodies is set out in Annex 8 WTO/TRIPS compatibility.

[219] The temporary exclusion of the right to effective enforcement also reflects the FRAND commitments of the SEP holders that involves a period of negotiation with potential licensees during which it is premature for the SEP holders to launch enforcement procedures.

The exception to the exclusive right would *not conflict with the normal exploitation of the patent*. The normal exploitation of the patent in the context of standard-compliant products is to be able to collect FRAND royalties. Thus, exploitation rights should be more strictly defined or limited because of concerns regarding potential restrictions to fair competition and discrimination.

Furthermore, the legitimate interests of the patent holder would *not be unreasonably prejudiced* either since enforcement would be possible following registration and would also include royalties due for the conciliation period. Conciliation would only temporarily suspend the enforcement and neither the conciliation result nor the published aggregate royalty would be binding upon the parties. Moreover, the proposed initiative takes full account of the legitimate interests of third parties, notably implementers and end users.

Article 40 of the TRIPS Agreement on the Control of Anti-competitive Practices in Contractual Licences provides that the TRIPS Agreement does not prevent Members from specifying in their legislation licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market. The proposed FRAND determination process (conciliation and aggregate royalty setting) is intended to address, among other issues, concerns about whether the demanded royalty is truly FRAND, which may have potential anti-competitive effects. Such anti-competitive effects may impede the adoption of the standardised technology mainly by new entrants and SMEs that lack the resources to deal with such demands or pay potentially non-FRAND royalties. Any potentially abusive practices in the licensing of IP rights may result in harm to the consumer and public interest. Therefore, the proposed registration of SEPs in a designated register prior to enforcement and the FRAND determination process are likely to fall under Article 40 of the TRIPS Agreement.

Furthermore, the introduction of a conciliation is not unreasonably expensive or burdensome, given the specific SEP practices, and is thus in line with the obligation in Article 41(1), (2) TRIPS, which requires WTO members to ensure that the different types of proceedings relating to IP enforcement shall be available under the respective national laws. SEP holders benefit from the adoption of the standard and therefore usually tolerate the infringement of their patents to ensure that the standard is widely used in products. When SEP holders commit to FRAND licences in order to promote adoption of the standard, their objective is not to stop the sale of infringing products, but to collect royalties from such sales. As such, the FRAND determination (conciliation) process cannot be considered a restriction of the SEP holder's right to enforce its patent against an implementer[220].

8. PREFERRED OPTION

Option 4 is the preferred option – a mandatory register for SEPs with essentiality checks, a process for determining an aggregate royalty, and a mandatory pre-trial conciliation, combined with voluntary guidance on SEP licensing and a central Competence Centre offering, among other services, also assistance to SMEs.

This option is expected to strike the right balance between negotiating powers of SEP holders and implementers and at the same time allow sufficient room for private negotiations between them, with more relevant information at hand. The option reduces information asymmetry between a SEP holder and an implementer by providing the latter with information who the relevant SEP holders are, how many patents they have registered in the register and what their essentiality rate is (derived from a representative random sample of all registered SEPs) and what the potential [or maximum] total cost of using a standardised technology (aggregate royalty) is. A pre-trial obligatory conciliation is likely to reduce SEP dispute settlement costs to about 1/8 as the conciliator will assist both parties in

[220] Since the alternative of excluding the right to collect past royalties absent a registration or the alternative to only require the initiation of the conciliation procedure before being able to enforce patent rights weighs less than the exclusion of enforcement, thus, *argumentum a maiore ad minus,* this would also be coherent with WTO/TRIPS obligations.

reaching an agreement. A Competence Centre will provide objective information, guidance, trainings and support to SMEs in relation to SEPs and SEP licensing. Moreover, SMEs will benefit from reduced administrative fees and/or financial support from existing facilities such as the SME Fund to cover e.g. conciliation costs.

The option is likely to reduce the time for negotiation and the cost of the negotiation for both parties. Transparency will inject trust into the system. SEP holders are likely to reach a wider set of implementers therefore securing adequate remuneration on their innovation, and incentivising participation in future standard setting. Implementers (especially smaller ones) will be able to plan their business costs and make their risk assessments.

Finally, the initiative will cover future standards (or generations of standards) and there may be a possibility to request the inclusion of older versions of the standards, such as LTE, of particular importance to the roll-out of the IoT. The option will complement and not replace the *Huawei v ZTE* process. It is expected not to impact licences that are already in force.

As far as quantification is possible, and under several assumptions, the net benefits of the preferred option are estimated at around EUR 24.5 million per annum. In terms of distribution of costs and benefits, the majority of net benefits (estimated at around EUR 24 million) will be directed to SEP implementers localised in the EU (split almost equally between firms with headquarters in the EU or non-EU firms with subsidiaries on the territory of the EU). With an approximate number of less than 600 new SEP licensing contracts signed per year in the EU, net benefits are estimated on average at around EUR 40 000 per negotiation. SEP holders are expected to bear the brunt of costs of this initiative mainly due to the cost of SEP registration and essentiality checks. The costs for this group amounts to EUR54 million, with 85% of these costs applicable to non-EU based SEP holders. The estimated benefits to this group account for around half of costs, so the net effect is negative (EUR 29 million). It should also be noted that a large part of SEP holders' costs (EUR 29 million) is due to an expected increase in patent fees due to an expected increase in number of patents. This impact is uncertain and thus may not materialise, in which case the overall impact on SEP holders would be neutral. However, if it were to happen, it would constitute a new income to the European and National Patent Offices. In terms of geographical distribution of impacts in the EU, it is expected that firms from all but three (FI, SE and LU) Member states are likely to experience net benefits, with DE, IT and FR accounting for 75% of benefits. Finally, it should be noted that certain impacts, such as e.g. a change in SEP licensing revenue are difficult to predict, thus are not included in the cost/benefits calculation. For discussion of those impacts as well as for details on all calculations see Annex A7.1.

The table below summarises costs and benefits of the preferred options:

Table 4: Ten-year-average total approximated annual costs and benefits of the preferred option per affected party and localisation (EUR million)

		EU	**non-EU**	*Total*
SEP implementers	Costs	-0.77	-0.77	-1.5
	Benefits	12.89	13.03	25.9
	Net	*12.11*	*12.26**	*24.4*
SEP holders	Costs	-8.13	-46.04	-54.2
	Benefits	3.79	21.50	25.3
	Net	*-4.33*	*-24.54*	*-28.9*
Subtotal (net effect for implementers and holders)		*7.8*	*-12.3*	*-4.5*
EPO/NPO benefit		29.0		29.0
	Total net benefit	*36.8*	*-12.3*	*24.5*

** concerns non-EU implementers with subsidiaries in the EU*
Note: numbers rounded which may affect totals
Source: Own assessment based on studies and assumptions. See annex A7.1 for more explanations

8.1. REFIT and One-in-one-out

This initiative is not part of the REFIT simplification effort as there are currently no EU rules on SEPs that could be simplified or made more efficient. The administrative costs of filing the forms necessary for SEP registration, estimated at EUR 200 per patent or around EUR 2.7 million annually over a decade are considered eligible for one in one out calculations.

9. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?

The legislation to be proposed would include a provision requiring evaluation every five years.

Table 5: Monitoring indicators

Research question	Indicators
Specific Objective 1. Provide information on SEPs ownership and essentiality	
Has access to information on SEPs improved?	- Number of standards with SEPs registered in the database - Number of SEP holders registered - Number of essentiality checks conducted (overall, per SEP holder, per standard) - Is database up to date (when SEP is registered, is information updated) - Number of times database is used (access rate) and how it is used (e.g. new private services built on these data) - Perception of quality of register and essentiality checks - Results of peer evaluations (number of confirmed essentiality checks) - Cost/quality of the central system in comparison to available private solutions
Specific Objective 2. Provide clarity on FRAND royalty	
Has information on FRAND price, terms and conditions improved?	- Number of studies done by Competence Centre - Number of SMEs receiving assistance - Perception of quality of studies, assistance - Number of standards, and their applications - Number of aggregate royalties announced, or expert opinions provided - Perception of the aggregate royalty rate setting process/and rate itself by implementers and holders; use in court cases/judgements - Frequency of changes of the aggregate royalty - Cost/quality of the Competence Centre services in comparison to available private solutions
Specific Objective 3. Facilitate dispute resolution	
How the new systems changed dispute resolution	- Usage of conciliation (number of cases per year, duration, quality assessment by courts, usage in court proceedings and in judgments; usage in support of applications for customs' action) - Change in SEP litigation cost/duration due to conciliation - Usefulness of guidelines (perception by stakeholders, usage in court cases,)
Sources of information: Competence Centre database; Feedback/Surveys of new system (Competence Centre/register/conciliation/guidelines) users such as e.g. SEP holders and implementers, judges, essentiality checkers; Court cases/judgements/injunctions analysis; dedicated evaluation studies; public consultations; desk research	
General objectives	
Impact on SEP owners	- Number of SEP holders based in the EU - Number of SEPs registered by SEP holders based in the EU - Length of licence negotiations, number of licensors - Contribution of EU firms in standard development activities - Localisation of production/R&D of such products/services (EU/third countries)
Impact on SEP Implementers	- Cost of SEP licence for EU firms, effort of obtaining a license - Percentage of SEPs covered through licensing. - Competitiveness of EU firms making SEP implementing products/services in the EU and third countries. - Localisation of production/R&D of such products/services (EU/third countries) - Contribution of EU firms in standard development activities
Impact on EU customers	- Time of introduction of new products/services using latest standards in the EU in comparison to other countries, price of such products
Sources of information: Surveys, official statistics (e.g. Eurostat's "Enterprises using IoT", isoc_eb_iot), dedicated evaluation studies; public consultations; desk research.	

ANNEX 1: PROCEDURAL INFORMATION

1) Lead DG, Decide Planning/CWP references

DG for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW).

2) Organisation and timing

This proposal is scheduled for adoption by the Commission in the second quarter of 2023.

Inter-service group meetings took place on 23.09.2021, 12.10.2021, 23.11.2021, 09.12.2021, 20.06.2022, 19.09.2022, 11.10.2022 and 27.01.2023.

The following Commission services were invited to participate: DG AGRI, CNECT, COMP, ENER, JRC, MOVE, RTD, SJ, SG, TAXUD, TRADE, and GROW. DG JUST was consulted on specific issue with regard to mediation. The EUIPO was also involved with regard to the institutional aspects. Those services were actively consulted throughout the project, including in discussions with consultants.

3) Consultation of the RSB

A meeting with the RSB took place on 15.03.2023. On 17.03.2023 the RSB delivered a positive opinion. The table below shows RSB comments and how they were addressed in the revised text.

RSB comments	***DG GROW replies***
(1) The report does not provide a clear overview of all the measures to minimise the negative impacts on Small and Medium Enterprises (SMEs) nor their combined impact.	Overview of SME measures was added to the SME test (annex A8.2). It is now more prominent in the main text including in options description and in the chapter on the preferred option.
(2) The report does not sufficiently disaggregate the costs to allow the administrative costs to be identified for the purpose of the One In, One Out approach.	Disaggregation of costs with a view to identify one-in-one-out costs was added (to the main text, and annex 3). Additional tables with more details on costs and benefits were added to annex A7.1.

4) Evidence, sources and quality

The analysis presented in this impact assessment is based on the following key sources:

- Baron, J., Arque-Castells, P., Leonard, A., Pohlmann, T., Sergheraert, E., *Empirical Assessment of Potential Challenges in SEP Licensing,* European Commission, DG GROW, 2023;
- Baron, J., *Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options,* European Commission, DG GROW, 2023;
- Charles River Associates, *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing,* European Commission, DG GROW, 2016, https://ec.europa.eu/docsroom/documents/48794;
- Commission webinar series on Standard Essential Patents (2020 – 2021);
- Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, https://ec.europa.eu/docsroom/documents/45217;
- European Commission, Joint Research Centre, Bekkers, R., Henkel, J., Tur, E. M., et al., *Pilot study for essentiality assessment of standard essential patents*, Publications Office of the European Union, 2020, https://data.europa.eu/doi/10.2760/68906;
- Number of other studies and research papers are used and references are provided in the footnotes;
- Submissions to the call for evidence, the public consultation, the survey of SMEs and numerous interviews with stakeholders and papers submitted in confidential and non-confidential format to the Commission;
- The Options considered all contributions of the Expert Group, the suggestions made during the webinar series and contributions by practitioners, academia and judiciary.

Additionally, the following data sources were used in order to perform in-house analysis:

- IPLytics Platform – data extracted in 2022;
- Experts analyses based on contracts with the Commission.

The remaining sources are provided in the footnotes, whenever they are referred to in the text.

ANNEX 2: STAKEHOLDER CONSULTATION (SYNOPSIS REPORT)

The public consultation took place between 14 February 2022 and 09 May 2022. During that period 74 replies were submitted using the EUSurvey tool.

This annex presents summary of results, a detailed question by question analysis is presented in Annex 9. All received responses are published.[221]

1) Respondents' characteristics

Respondents were asked to provide basic information about themselves, such as country of origin, area of activity, and registration in the transparency register.

Two thirds of the replies came from the European Union. The highest number of EU replies came from Germany. The remaining one third of the replies came from third countries, with the highest number coming from the USA. The graph below (Figure 6) presents responses per country of origin.

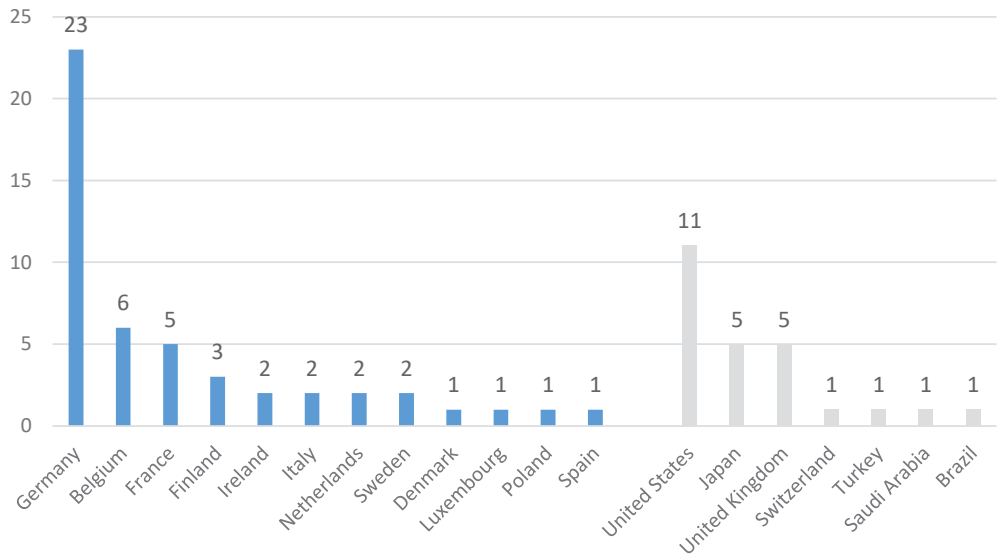
Six out of ten replies came from companies (39 replies) or business associations (7). Followed by seven replies from academia, two from public authorities, one from a non-governmental organisation (NGO) and one from trade union. Six replies came from EU and non-EU citizens (see Figure 7).

Among the 39 companies, 77% were large entities and 23% were small and medium-sized entities (SMEs).

30% of the respondents identified themselves as both SEP holders and implementers, 13% as only SEP implementers and 4% as only SEP owners. Around 50% identified themselves as "other" (which consists of for instance attorneys, advisers, academia…).

Around half of the respondents (35) are registered in the transparency register.[222] The transparency register is a tool to allow European citizens to see what interests and on whose behalf the respondent represents.

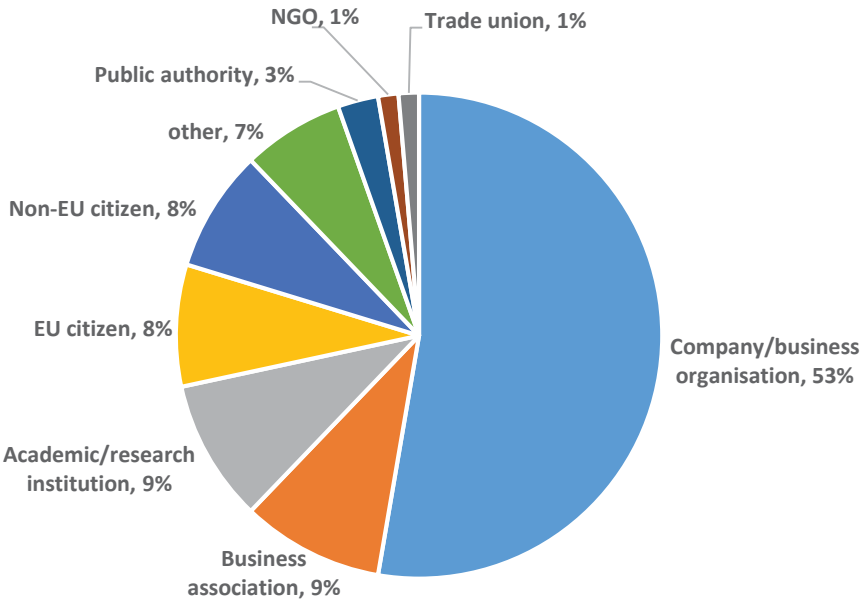
Figure 6: Distribution of responses per country of origin of respondent



Source: Commission own analysis

[221] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents_en.
[222] https://ec.europa.eu/transparencyregister/public/homePage.do.

Figure 7: Distribution of responses by type of respondent



Source: Commission own analysis

2) Summary of replies

Participants to this consultation were invited to provide answers on the following blocks of questions: general questions, questions on the licensing process and related problems, questions on transparency of SEP licensing, on essentiality of SEPs, on fair, reasonable and non-discriminatory (FRAND) licensing terms and finally questions on SEP enforcement. Below is a short quantitative summary of the responses based on selected questions per block.

Replies to general questions.

Around 60% of the respondents considered that the current legal framework sufficiently protects against implementers "hold-out" (e.g. unreasonably delaying the conclusion of a licence by an implementer). Around 30% had opposing views. The responses showed a similar pattern across different stakeholders' groups (companies, associations, academia, respondents from the EU and non-EU countries).

Respondents were divided on the issue whether the current legal framework provides sufficient protection against SEP holders "hold-up" (broadly opportunistic behaviour by SEP holders, such as using their market power to extract excessive rents or terms from implementers) with 43% agreeing and 48% disagreeing. Companies, citizens, and non-EU respondents mainly disagreed. While academia/authorities/NGOs/others, and EU based respondents tended to agree with that the current legal framework provides sufficient protection against SEP holders "hold-up".

The final question in this section asked about the impact of the current SEP licensing framework on SMEs and start-ups. Around half of all respondents assessed the impact as negative, a third thought there is no impact, and around 5% deemed it positive. Responses showed similar patterns for all analysed groups, except for associations, implementers and SEP holders. Around half of the associations and SEP holders considered that there was no impact, while around 80% of implementers thought that the impact is negative.

Questions on the licensing process

SEP implementer perspective: Around half of the respondents reported seeking a licence before a SEP holder approaches them. SEP holders usually contacted the respondents around 3 years after the first implementation of a standard in a product. Licence negotiations with a large SEP holder on average concerned around 60 patents.

Almost three quarters of the respondents request a licence in order not to infringe a SEP and 60% to be able to plan production and costs.

Reported costs of estimating SEP exposure per product amounted to on average around EUR 230 000.

In terms of consequences of the current SEP licensing practices: Two thirds of all respondents and a majority of implementers try to share SEP cost/risks with their suppliers. Around 40% of all respondents, and two thirds of the implementers will try to settle with the SEP holder as quickly as possible to avoid litigation or will search for an alternative to SEP (another technology or royalty free standard). Around a third of the respondents (and half of the implementers) will increase prices and may become less competitive.

SEP holder perspective: The main reasons for licensing/having SEP are securing the return on investment (70% of answers), followed by use of SEP for defensive/bargaining purposes (60%) and participation in the standardisation process in the future (40%).

On average SEP holders said they start contacting implementers two years after the publication of a standard. Around 70% do not reach out to all SEP implementers though. On average around 60% of the contacted implementers reply within one year. Around 70% take a licence without any litigation. It takes on average 3 years and 3 months to conclude a licence.

Questions on the problems related to SEP licensing

Lack of transparency on the FRAND royalty rate, on the SEP landscape (who owns SEP) and divergent court rulings were named as the key problems by three quarters of all respondents (and almost all implementers). From the SEP owners' point of view the main problems were hold out and anti-suit injunctions.

Questions on SEP transparency

Respondents asked for more public information on SEP as regards "patent and application number" (88% of all responses), "relevant standard, version, section of the standard" (80%), "contact details of SEP owner" (80%), "transfer of ownership" (77%), "licensing programs" (76%) and "standard FRAND terms and conditions" (72%).

Patent pools should disclose "standards subject to pool licensing" (100%), "product royalties per programme" (94%) and "list of SEP owners" (87%).

Around 70% of the respondents considered that a confidential repository of licensing agreements could help judges and arbitrators to determine a FRAND rate. Such repository should contain information on "licensed SEPs" (96%), "royalties" (96%) and "methodology used to calculate the royalty" (94%).

Questions on essentiality

Around 60% of all respondents and 90% of the implementers supported third-party essentiality checks as long as independent experts do them. Only 24% of the SEP holders supported such a solution. A third of all respondents considered that essentiality checks should serve only an advisory role with no legal consequences.

Around two thirds of all respondents and around 80% of the implementers thought that essentiality assessment might help in assessing SEP exposure of a product and deciding whom to negotiate with,

smoothen licensing negotiation and prevent over pricing. More than half of the SEP holders disagreed with these impacts but agreed that checks might provide a reliable overview of the share of each SEP owners' essential patents.

As regards practical implementation, the respondents preferred that the European Patent Office (EPO) conducts the checks (63% of all replies) on just "one SEP per SEP family" (63%).

Questions on FRAND

Between 55% and 75% of all respondents and between 85% to 100% of the implementers, consider that SEP holders cannot refuse a licence following a request from an implementer. The majority of SEP holders were of the opposite view.

60% of all respondents and 93% of the implementers consider that licensing could take place at any level of the value chain. Around 70% of the SEP holders consider that it should be at one level only (level allowing for the best monitoring of applications).

Around three quarters of respondents (93% of SEP owners) agreed that fair and reasonable terms and conditions might depend on functionalities of the standard implemented in a product. Around 70% thought these terms could depend on the level of licensing.

For non-discrimination assessment, it matters if companies that use the same functionalities of the standard in similar applications are put at a competitive disadvantage (around 75% of all answers, and 94% of holders' answers).

SEP holders considered that discounts between 28% and 40% do not cause discrimination. For implementers reasonable discounts amount to between 5% and 10%.

70% of all respondents and 100% of the implementers argued that it is important to know the reasonable aggregate royalty rate for a product. Only 20% of SEP holders shared that view.

Questions on enforcement

Respondents estimated that court costs could range from approximately EUR 2.1 million for essentiality, EUR 6.6 million for injunction and EUR 7.1 million for FRAND disputes.

Arbitration (53% of all answers) was deemed more useful than mediation (35%) for FRAND assessment, especially by SEP holders and academia/authorities/NGOs.

Two thirds of the respondents were of the opinion that efficient SEP licensing would foster innovation by implementers, increase employment and allow for keeping high level of competence in the EU as well as foster transition to the green economy.

3) SMEs survey

Internet survey targeting SMEs was active from 25/10/2022 until 27/12/2022. It used EUSurvey tool. It is not representative but gives an impression of the issues start-ups and SMEs face in the context of SEP licensing. A summary of replies is presented below, a detailed question by question analysis can be found in Annex A8.3 – SME survey.

The sample is quite diverse with respect to geography, sectors, and standards used.

In total, 39 firms responded to the survey. They are mostly start-ups and SMEs (37), from 17 different countries, mostly from the EU (30). They are active in ICT (24) and various other ICT- and IoT-using industries. In the sample, cellular standards are the most widely used or developed (by 24 firms), followed by Wi-Fi (21), LPWAN (15), NFC (12), and video/audio codecs (10).

Implementers dominate the sample; standards are very important for them.

Most firms (35) are implementers of existing standards, e.g. by producing or buying components that incorporate a standard. 12 stated that they participate in standard setting. Asked about the importance of the respective standard, 24 out of 30 responding considered the standard very important for their

business. Seven firms are SEP licensees, for cellular standards (4), video and audio codecs (4), Wi-Fi (3), and other technologies.

SEP licensing is difficult for SMEs, due mostly to resource constraints, lack of expertise, uncertainty about infringement, and the fragmentation of SEP ownership.

Most respondents have, when buying or importing components that incorporate standardized technologies, a clear preference for components with all IP rights fully licensed (25 out of 34 prefer this solution "in most cases"). One respondent described it as "ridiculous that patent pools should come after each company doing some modern radio technology, rather than settle cost per module with manufacturer." The main stated reasons not to take a SEP license are: (i) the assumption that purchased components are fully licensed (15); (ii) difficulties to find out the SEP holders (10); and (iii) an excessive effort to enter license agreements with all SEP holders (9). Related, the main stated problems in negotiating with SEP holders are: (i) lack of knowledge what would be a fair (FRAND) royalty (15); (ii) lack of resources to negotiate or engage in court proceedings (14); (iii) uncertainty if own product infringed the patents at hand (13); and (iv) the firm's ignorance how to defend against SEP holders (13). Few (8) have in-house patent specialists.

For SMEs, device-level licensing was acceptable only if it was efficient (ideally one-stop), at publicly known royalties, and consistent across all implementers (which given their fragmentation seems difficult to achieve). Respondents consider the best solution for SMEs to be upstream SEP licensing, to module or component makers.

Respondents stated that the uncertainty about SEP licensing would affect their business in various ways. Most frequently, they stated: Royalty payments will affect the firm's competitive position on the market (18); potential future SEP payments may make the firm unable to compete (13) – however, if competitors pay the same royalties, licensing will not affect the business significantly (13); the firm tries to use alternatives available on the market in order not to pay for SEPs (e.g. older or free technology) (12). In open comments, respondents expressed wishes among others for licensing to component makers. Failing this, efficient licensing through pools, ideally one-stop, rather than having multiple licensors per standard and even portfolio split-ups to several NPEs. Publicly known royalty rates that are paid consistently by all and protection from abusive licensors.

About 40 percent of firms in the sample contribute in some way to standard development, though very few own SEPs. The majority does not contribute, mostly for lack of resources.

Of the respondents, 15 participated in standard setting, though mostly not to complex ICT standards, such as cellular and Wi-Fi. Only 2 firms own SEPs. Motives to contribute to standard development comprise improving the standard, influencing the direction of standard development, facilitating adoption of the firm's own technology, learning, and networking. Reasons not to contribute to standard development comprise a lack of resources and expertise, and the domination of SDOs by large firms.

4) Interviews with stakeholders

During the course of 2021-2022, the Commission services met with various SEP holders and SEP implementers in order to assess the problems they face with SEP licensing. As these meetings concerned confidential information based on licensing negotiations, below we present selected stylised summaries of issues raised that combine the experience of several parties we interviewed.

Problems faced by SEP implementers

A manufacturer of medical devices for the treatment of critical health disorders may wish to implement cellular communication functionality in its products to enable remote patient health monitoring and efficiently improve patient adherence to treatment. Considering the multi-year (e.g. 5-10 years) medical device development process for homologation and certification from network

operators, the company needs certainty at an early stage regarding the aggregate FRAND royalty for SEP licenses as it must take such factors into account during the development and commercialization phase and as it considers total cost and alternative technologies. In addition, the inability to negotiate with dozens of SEP holders individually and the prospect of being excluded from the market for an infringement of a single SEP is a further disincentive for using the connectivity standards risking the continued access of patients to telehealth services which are crucial for public health.

A smart meter manufacturer is invited to take a licence from a SEP holder not only for the future but also for 5 years back. The smart meters are purchased by utility companies by public procurement contracts in order to promote the reduction of energy consumption under the EU Gas and Electricity Directives. The smart meter manufacturer buys communication components, which it integrates in its products. It directs the SEP holder to its supplier and the SEP holder prefers to negotiate with the smart meter manufacturer as it is its understanding that it can choose who to license. The smart meter manufacturer requests its supplier to indemnify it for the SEP royalties as per supply contract. The royalties are higher than what the supplier is willing and able to pay. The supplier expresses its wish to take the licence itself as it used to have such licences in the past. However, it is unable to get such a licence at the conditions that are acceptable to it. Its (non-EU) competitors continue promising indemnifications to their customers. The supplier is pressured by all its worried customers manufacturing not only smart meters but also payment terminals, wireless charging, medical devices, tracking devices, etc. to keep the indemnification clauses and bear the risk of SEP licensing.

An EU SME developed a robot assisting in construction works. It is innovative due to an inventive electro-mechanical structure of the robot arm, wheel drive and motion control. The user controls this robot with a tablet comprising a specific Human-Machine-Interface. The communication between tablet and robot could be wired or preferably wireless. The most desired option would be WiFi, but due to the SEP license, Bluetooth fully licensed at chip level will be implemented. Another option is a wired USB connection, which also works but does not meet customers' expectations.

An EU SME developed a smart home appliance for energy consumption control in a household. It can lower energy cost and optimise usage of renewable energy (solar, wind…). Collected data is sent to the company's central server for analysis. Initially WiFi was considered to connect to a router in a household. The company was not aware that WiFi is subject to a SEP licence. To avoid SEP costs/litigation they chose a wired connection to a router instead.

An EU SME developed a smart meter which is now implemented in hundreds of projects. Data between meters is sent using mostly Bluetooth, but for remote locations a chip with WiFi and 4G functionality was embedded. The company was not aware that the chip was not licensed for WiFi and 4G. If faced with litigation it will disable this chip in all its devices.

An EU SME developed a product to help individuals track their health metrics and report results to their doctors in real-time. The SME and its competitors had a choice of technologies to choose from when developing their product regarding wireless connectivity. After unsuccessful attempts to license various wireless technology directly from known patent holders, the company built the product. After a robust and successful market developed, and after the point in time when the product design was "locked" in and could not be changed, numerous wireless patent holders

approached the company and demanded they take a license. This effectively deprived the SME of choosing an alternative wireless technology and the patent holder did not consider other wireless technology that could have been used as a comparable value when deciding the royalty rate that was demanded.

An EU Global Navigation Satellite System (GNSS) receiver designer and wireless cellular modem designer was asked by customers to reduce the "footprint" of their modules that were used in an end product. The EU design company could not accommodate the request because it could not directly license patents from the patent holders and the "have made" rights held by the end product company did not allow the designer to innovate. It could only "make" the product design given to it by the end product company. A non-EU competitor of the GNSS receiver and wireless cellular modem designer seized the opportunity.

An EU Global Navigation Satellite System (GNSS) receiver designer and wireless cellular modem designer was asked by its EU customers to reduce the "footprint" of their modules that were used in an end product. The EU design company had a license with several cellular patent holders and took on the project. However, the EU end product company was warned there would be a significant price increase because their cellular patent license royalties were based on the average sales price of the module/modem and the combined GNSS/cellular module average sales price would be 3X higher. The EU end product company asked why the GNSS function was considered when determining cellular royalty owed and not removed from the average sales price. They learned it was standard practice in wireless licensing. The EU end product company abandoned the design improvement request.

An innovative EU IoT wireless module company that had been licensed for years by cellular wireless patent holders is now being denied licenses. The patent holders are changing to licensing only at the end product level. The patent holders claim the value of the patents they hold has increased by 4-6 times what the previous licenses demanded in royalties although many of the 3G and 4G patents have expired/are expiring and new high-speed 4G patents are not needed by the EU IoT company. The patent holders are demanding that the EU IoT companies license patents from their patent pool and that the EU IoT company acts as an agent between their customers and the patent pool, receiving a "kick-back" for doing so.

Supplier explained that its sales teams regularly get questions from prospective Cellular and Wi-Fi IoT customers about "patents", "IP rights" and "indemnification". They consider themselves in a vacuum because there is no easy way to obtain a licence or to even know the price of such licence. It is unable to sell its products with all IP rights included, nor is it able to indemnify its customers should they receive an infringement or license claim in the future. The company has lost several Cellular IoT business opportunities to both EU and non-EU competitors making misleading or false statements with regards to "selling a licensed product" or "providing full indemnification".

Supplier: "Our company has seen several potential Cellular IoT module customers either choose other wireless technologies, delay or even cancel development projects, because the license cost for using the standards (LTE-M / NB-IoT) is totally unknown and also impossible to estimate. Unless you sell high price products, like smartphones or automobiles, how are you going to build a business case for a sensor device priced at EUR 15 when you have an unknown licence fee?"

Supplier: Not having SEP license adds to uncertainty both for us and for our customers. If we make provision for estimated royalties and our competitors do not, we are at a disadvantage. Our module customers generally do not understand the technology and want a solution with SEP indemnification as they feel unable to navigate the licensing process. If we do not offer such indemnification and our competitors do, we are at a disadvantage.

EU electric vehicle equipment manufacturer told us "Complex and often lengthy SEP negotiations lead to delays and uncertainty in the development phase of our products as well as to legal uncertainty which artificially inflates the product costs."

Smart electric vehicle chargers of an EU SME need to communicate with cars, phones and electricity networks to increase energy savings. Threats from one SEP holder are causing further concerns to the firm that there may be other SEP holders claiming royalties. The company is now reconsidering whether to include cellular functionality in its future accessories or products. The firm says that SEP uncertainty is delaying technology adoption, hindering innovation and engaging resources that could be productively used.

EU SME: It is said that large SEP holders 'do not target SMEs', our case shows that this is clearly inaccurate. Even if some do not, the financial uncertainty SMEs face is unreasonable and unfair: an SME has to wait and fear that any SEP holder can approach it at any time (perhaps when SME becomes larger) and ask for payment of past royalties.

During negotiations for a FRAND licence for SEPs, a potential licensee offered binding arbitration to the SEP holder for a global FRAND SEP cross-licence. The SEP holder, however, refused to substantively engage in discussions over arbitration terms.

In 2020, a non-practicing entity (NPE) asserted 4G standard-essential patents against a potential licensee. The NPE had acquired its 4G portfolio from another SEP holder, which had split its portfolio and divested a small portion of its patents to the NPE. The NPE demanded more than 12 times the amount of royalties as the original SEP holder – even though the NPE held only a tiny fraction of the number of patents that the original SEP holder retained. Despite ongoing licensing negotiations, the NPE filed a series of patent infringement actions in Germany, seeking injunctions on various SEPs in an effort to force the potential licensee to accept a non-FRAND licence. During the litigation, it was revealed that the NPE was actually a trust that had acquired its patents from the original SEP holder at a symbolic price and had assigned back the beneficiary share in the trust to the very same SEP holder.

The Fair Standards Alliance (FSA) collected confidential testimonies from their members

Below is a summary by FSA about **some** of the reported issues:

Refusal to license

The practice of refusing to license willing licensees higher in the value chain is a recent phenomenon and was not the industry practice when 2G and 3G were developed. The refusal to offer licenses in the value chain is damaging innovation in sectors using telecommunications standards – it is not a

prevalent practice in relation to other standards. When licenses are offered to component suppliers, these deals are incredibly efficient and meet the future needs of growth sectors, such as in the Internet of Things.

Non-Disclosure Agreements

The use of non-disclosure agreements (NDAs) to protect confidential information in commercial discussions is standard business practice. However, the experience of FSA members is that NDAs by licensors in licensing negotiations are overly restrictive, and rather than protecting truly confidential information are oftentimes used as an excuse not to share important information that should be available or to refuse to respond to FRAND (counter) offers. The use of overly restrictive NDAs allows licensors to exploit information asymmetries in negotiations to lock licensees into unbalanced processes that lead to unfair outcomes. This in turn locks in unfair licensing terms that other potential licensees are later compelled to accept. What is evident from members' testimony is that NDAs should not be used to redact information, both from a pricing as well as a technical perspective, that potential licensees require to assess whether an offer is FRAND. It is evident from the testimony provided that NDAs are used so that patent holders can unfairly discriminate between licensees. It must be possible to share technical information within a supply chain so that companies are better able to assess the technical merits of the patent claim.

Problems faced by SEP owners

An EU SEP holder reached out in 2016 to a car producer who was using cellular connectivity in its cars. The SEP holder made several offers to the implementer which were rejected (for instance the implementer was directing the SEP holder to license its suppliers instead). The SEP holder spent tens of millions of euros on legal counsels and litigation – resources that could have been spent on R&D. The two firms signed a licence agreement in 2021.

A smart meter producer began incorporating cellular technology in its products in 2014. A SEP holder first contacted the company in 2017 to suggest the need for a SEP licence. While the implementer raised the issue of licensing its suppliers, the main point of discussion was reducing the price. The offer-counteroffer phase of discussions took two years. A license agreement was concluded in 2022.

A SEP holder contacted in 2015 a producer of mobile payment terminals which uses cellular connectivity. The implementer refused to enter negotiations for a cellular license and indicated that SEP holder should speak to its suppliers. The SEP holder reached out several times to the implementer with little success. Only in 2022, under threat of litigation, the implementer began serious negotiations.

Since 2017, a SEP holder has been in discussions with X. Despite countless emails, meetings/telephone conferences and a confidential third-party process X has not taken a licence. X has engaged in various delay-tactics, including arguing that it should not pay royalties for its past sales (meaning that X has a financial incentive to delay in concluding a licence for as long as possible). The SEP holder understands that X operates without having taken a licence from any European or Western SEP owner.

A SEP holder has been negotiating the renewal and extension of its existing patent license agreement with a Chinese implementer that is also a SEP owner. The Chinese company did not accept FRAND offers and did not make a FRAND offer to the SEP owner. The Chinese company provided very limited material on its own SEP portfolio and it sought a significantly higher valuation, which was also inconsistent with a third-party analysis. The SEP holder offered to engage in neutral mediation or arbitration to agree on FRAND rates but the Chinese company rejected those offers.

IP Europe collected a non-exhaustive list of negotiation delaying strategies based on case-law

- Strategy 1: Ignore notifications and other communications for months or years.[223]
- Strategy 2: Express willingness to take a FRAND licence – but only for each individual patent for which infringement and validity is confirmed by the courts.[224]
- Strategy 3: Insist on obtaining unreasonable amounts of information (e.g. a claim chart for every SEP in a portfolio) without appropriate confidentiality arrangements in place, and/or refuse or delay signing an NDA agreement as a hold-out tactic.[225]
- Strategy 4: Claim to lack information or to not understand the licence offer, or repeatedly ask for information that the SEP holder has already provided.[226]
- Strategy 5: Table counteroffers that are obviously unreasonable and unacceptable for the rights holder (e.g. a licensing rate of just 0.001 per cent per patent family), or table a counter-offer only once litigation has been initiated.[227]
- Strategy 6: Refuse to enter into a global licence agreement despite having a global business for products that use standards.[228]
- Strategy 7: Direct the SEP holder to suppliers, or to a subsidiary or holding company, for licences.[229]
- Strategy 8: Insist repeatedly that the licence offer is not FRAND without providing substantive arguments to demonstrate why.[230]

[223] For examples of this delaying strategy in practice, as evidenced in European case law, see *Saint Lawrence v Deutsche Telekom*; *Sisvel v ZTE*; *Tagivan (MPEG-LA) v Huawei*; *Philips v Wiko NL*; *Philips v Wiko DE*; *Sisvel v. Wiko*; *Sisvel v Xiaomi*; *Sisvel v Haier*.
[224] See *Sisvel v Haier*; *Nokia v Daimler*.
[225] See *Pioneer v Acer*; *Philips v Acer*.
[226] See *HEVC (Dolby) v MAS Elektronik*.
[227] See *Archos v. Philips*; *Fraunhofer-Gesellschaft (MPEG-LA) v ZTE*; *Tagivan (MPEG-LA) v Huawei*; *Philips v Wiko NL*; *Nokia v Daimler*; *Unwired Planet v Huawei*; *Sharp v Daimler*. See *Philips v Wiko*, the Court analyzed Wiko's counteroffer to Philips, involving a licensing rate of just 0.001 per cent per patent family, based on the proportion of SEPs owned by Philips.
[228] See *Saint Lawrence v Deutsche Telekom*; *Pioneer v Acer*; *Philips v Acer*; *Unwired Planet v Huawei*.
[229] See *Nokia v Daimler*; *Sharp v Daimler*; *Fraunhofer-Gesellschaft (MPEG-LA) v ZTE*; *Philips v Wiko NL*.
[230] See *Philips v Wiko NL*; *Unwired Planet v Huawei*; *Sharp v Daimler*.

ANNEX 3: WHO IS AFFECTED AND HOW?

1) Practical implications of the initiative

This initiative introduces a register for SEPs with essentiality checks, a process for determining an aggregate royalty, and a mandatory pre-trial conciliation, combined with voluntary guidance on SEP licensing and a central Competence Centre offering, among other services, also assistance to SMEs.

It is likely to reduce duration of license negotiations and the costs of the negotiation for both parties. Transparency will inject trust into the system. Conciliation should limit the need for court trials. Implementers are going to gain more predictability as regards their SEP exposure, allowing for proper business planning. SEP holders are likely to reach a wider set of implementers therefore securing adequate remuneration on their innovation.

Cost and benefits quantifications presented below are based on several assumptions and estimations since data on SEP licensing is largely not observable (as explained in the problem definition). The purpose of quantifications is to allow comparison of options and presenting relative impacts on affected groups rather than provide an accurate figure. Details on quantitative analysis as well as all the assumptions used for calculations are presented in Annex A7.1.

2) Summary of costs and benefits

I. Overview of Benefits (total for all provisions) – Preferred Option		
Description	Amount	Comments
Direct benefits		
Services provided by the Competence Centre (e.g. SME assistance and trainings, studies, case-law repository)	EUR 5.9 million[231]	Information provided for free. Free trainings and assistance to SMEs. Information of interest of both parties to license negotiations.
Access to SEP register with information on essentiality of patents and SEP owners' portfolios	EUR 12.5 million[232]	Free access to basic information (e.g. SEP holders contact details, number of SEP registered). Fee based access to information on essentiality of individual patents, and essentiality rate of owners' portfolio. Information of interest of both parties to license negotiations.
Savings due to conciliation	EUR 7.4 million[233]	Includes potential of up to 70% decrease in court cases; as well as value of advice on FRAND rate. Both parties to license negotiations are likely to benefit.
Saving in negotiation costs due to published aggregate royalty	EUR 25.4 million[234]	Published aggregate royalty should facilitate license negotiations. Both parties to license negotiations are likely to benefit
Indirect benefits		
EPO/NPO	EUR 29 million	Potential additional income from new patents (uncertain if it will materialise)

[231] Sum of benefits of PO1 for SEP implementers and owner. See *Table 3*. For disaggregation see *Table 13*.
[232] Sum of benefits of PO2 for SEP implementers and owner. See *Table 3*.
[233] Sum of benefits of PO3 for SEP implementers and owner. See *Table 3*
[234] Sum of benefits of PO4 for SEP implementers and owner. See *Table 3*

Administrative cost savings related to the 'one in, one out' approach*		
n/a		SEP licensing is not regulated in the EU. Hence there are no administrative cost savings

II. Overview of costs – Preferred option								
		Citizens/Consumers		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent	One-off	Recurrent
Action (a)	Direct adjustment costs						
	Direct administrative costs						
	Direct regulatory fees and charges				EUR 17.6 million[235]		
	Direct enforcement costs						
	Indirect costs				EUR 38.1 million[236]		
Costs related to the 'one in, one out' approach							
Total	Direct adjustment costs						
	Indirect adjustment costs						
	Administrative costs (for offsetting)				EUR 2.7 million[237]		

3) Relevant sustainable development goals

III. Overview of relevant Sustainable Development Goals – Preferred Option(s)

[235] Consists of the following average annual costs: Register access fee for implementers (EUR 0.6); fees for SEP registration (EUR 1.4 million) and essentiality checks (EUR 13.7 million); cost of conciliations (EUR 1.5 million); cost of aggregate royalty expert determination (EUR 0.4 million). For details see tables in Annex A7.1.

[236] Consists of the following average annual costs for SEP owners: Cost of updates/preparation of claim charts for SEP registration/essentiality checks (EUR 6.4 million); cost of filling the registration forms (EUR 2.7 million); potential (uncertain) cost of registering and maintenance of additional patents (EUR 29 million). Cost in the initial year expected to be higher, while in subsequent years lower, hence an average annual cost over a decade presented. For details see tables in Annex A7.1.

[237] Consists of the following average annual costs for SEP owners: cost of filling the registration forms (EUR 2.7 million). Cost in the initial year expected to be higher, while in subsequent years lower, hence an average annual cost over a decade presented. For details see tables in Annex A7.1.

Relevant SDG	Expected progress towards the Goal	Comments
SDG no. 7 - affordable and clean energy, 13 - climate	This initiative has no direct environmental impacts. Indirectly, by facilitating application of new technologies it can help in the green transition e.g. by contributing to a reduction of energy usage (via smart grid, smart meters) or air pollution (e.g. connected cars avoiding traffic jams).	Two thirds of respondents to the public consultation considered that efficient SEP licensing would i) increase employment and keep a high level of competence in the EU and ii) foster the EU's transition to the green economy. See Annex 9, Q66.

ANNEX 4: ANALYTICAL METHODS

This impact assessment is not using any econometric models.

All the assumptions are presented either in the annexes where they are used (for instance assumptions on cost/benefit analysis are presented in Annex A7.1).

Assumptions used in supporting studies are not repeated in this document.

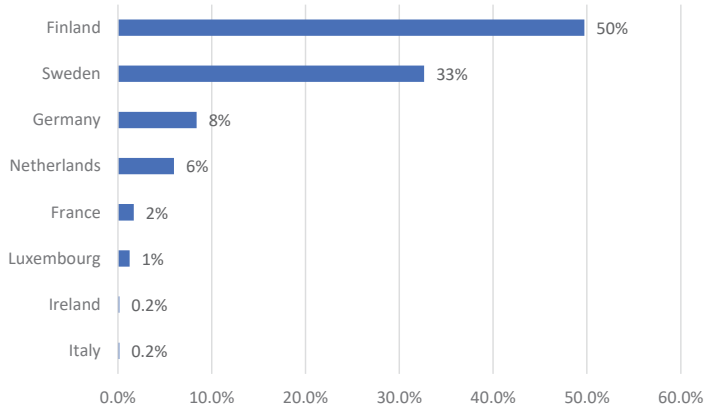
ANNEX 5: ADDITIONAL INFORMATION IN SUPPORT OF PROBLEM SECTION

A5.1 Market description

SEP owners

The number of companies that declared to own 10 or more patent families including potential SEPs was, in 2021, around 261 based on search in IpLytics database.[238] There were around 31 companies from the EU.[239] It was possible to match 27 of these companies to ORBIS database to obtain company characteristics. Information on employment was available for 16 firms and on revenue for 18 firms, out of which 3 were SMEs. Unfortunately, among these companies there are firms with huge turnover that seems to be from other activities than SEP licensing (for firms such as Bosch, Deutsche Telekom or Siemens), while for others with main activity in SEP licensing no data is available (e.g. Sisvel). Therefore, below we present information only on two companies Nokia (FI) and Ericsson (SE). Although licensing SEP is not the main source of their income, they are the largest SEP holders of declared SEPs in the EU (responsible for around 80% of declared SEP). The two firms employed in 2021 around 190 000 persons, sold goods and services totalling EUR 45 billion and invested in R&D around EUR 8 billion.

Figure 8: Share of declared SEPs by EU firms by country



Source: Commission own analysis based on IPLytics database (SEP holders with 10 SEPs or more only)

It is estimated that approximately 1 700 SEP licenses are concluded worldwide every year (the approximation is based on several assumptions as information on number of licensing deals is not observable).[240]

SEP implementers

There are no detailed statistics on the number of companies implementing SEPs into their products. In order to approximate the number of firms potentially affected, we have used Orbis database – a

[238] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 17, Figure 5. Not all declared potential SEPs are standard-essential. This number does not include potential SEPs subject to blanket disclosures.
[239] Identification of headquarters of all companies was not always possible due to generic or ambiguous name available in the database.
[240] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 138, Table 16.

database containing information on companies worldwide. We have searched the database for keywords that can describe a potential SEP using company,[241] and selected only manufacturing firms (NACE2 section C).

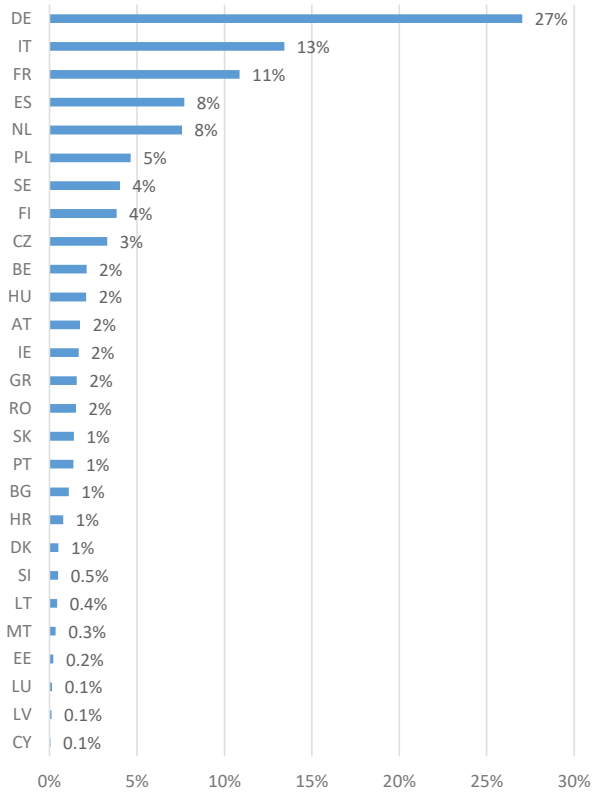
The result was that in 2022 there were around 47 500 potential SEP implementers worldwide, and around 3 800 (8%) were located in the EU. Around a quarter of the companies were from DE, 13% from IT, 11% from FR, 8% from ES and NL, and 5% from PL.

Among EU firms 16% were large and 84% were SMEs (based on employment). They employed 2.2 million persons. Average employment for large firms was around 4 200 persons (median 650), and for SME – 50 persons (median 26). The combined turnover of these firms for the last available year amounted to around EUR 600 billion (numbers based on the last available year). Average turnover for large firms was around EUR 1.2 billion (median EUR 140 million) and for SMEs – EUR 21.5 million (median EUR 6.5 million)

For around 200 firms financial information on R&D expenses was available. Less than half (88 firms) of these firms had been spending on R&D (in the last available year). Together they spent EUR 26 billion, on average 7% of their turnover, or around EUR 300 million per firm (median EUR 23 000).

It should be noted however, that we cannot attribute neither the share of revenue, employment nor R&D expenses to products embedding SEP.

Figure 9: EU SEP implementers by country (share of total number of firms)



[241] We have searched for "'IoT" or "Internet of things" or "smart meter" or "connected device" or "phone" or "mobile phone" or "TV" or "television" or "TV decoder" or "DVD player" or "connected car" or "connected lorry" or "connected truck" or "tracking device" or "connected machinery" or "connected medical device" or "payment terminal" or "semiconductor" or "ICT" or "4G" or "5G" or "LTE" or "Wi-Fi" or "WiFi" or "NFC" or "HEVC" or "MPEG"' in the following fields describing a company: Description and history, Full overview, Main activity, Primary business line, Product and services, Secondary activity, Secondary business line, Trade description.

Note: Approximation based on key words search results. Total number 3 781 firms in the EU
Source: ORBIS database

Having an approximate estimate of the potential number of SEP implementers, we also wanted to estimate the number of firms that actually takes a SEP license per year.

Based on public licensee lists of SEP patent pools we can estimate that around 20% of SEP licensees are firms with headquarters in the EU, and another 17% are non-EU firms with subsidiaries in the EU.[242] This allows us to estimate that EU based firms conclude around 340 new SEP related licensing agreements per year and non-EU based firms with subsidiaries in the EU conclude around 290 such agreements. Subsequently, we assumed that among these firms, on average, per year one firm takes 1.5 new licenses[243] (this is a very strong assumption and generalisation of complex reality which includes large and small implementers producing devices implementing different number and type of standards and taking licenses not every year) which would mean that approximately 230 EU based firms and 190 non-EU based firms with subsidiaries in the EU conclude new license agreement per year. Furthermore, we estimate that around 33% of EU based firms taking a new license are SMEs[244] – resulting in around 80 EU SME. Many patent pools charge no royalty for small implementers,[245] thus we assume that half of those SMEs will take a license but not be liable for any royalty. Consequently, the number of new licenses granted per year to EU based firms is estimated at 285 and the number of EU firms taking new license per year and paying royalties is estimated at 190 (composed of 150 large and 40 SMEs). It is important to stress that the figures presented in this paragraph are approximations based on several assumptions and should be treated with caution.

A5.2 How standards are developed

Baumol and Swanson (2005) noted that "standard-setting exercises normally arise only when there are technological alternatives to select among, and so, almost by definition, are likely to occur in competitive – perhaps very competitive – technology markets. Even when conditions are competitive before the selection of a standard, however, the act of selection may lead to increased ex-post market power for owners of the IP necessary to practice the winning standard".[246]

"[…] standards are set (and regularly updated) by Standard Setting Organisations (SSO). SSOs include large established organizations – such as the European Telecommunications Standards Institute (ETSI) for communications or the Institute of Electrical and Electronics Engineers (IEEE) for electronics – but also a variety of *ad hoc* informal organizations – or industry consortia – that have the same purpose but focus in general on complementary topics […]. They are open to all

[242] The contractor compiled the current licensee lists of nine SEP patent pools (2790 firms), and drawn a quasi-random sample from that list of 220 firms (quasi-random, as small pools were over-sampled, so that the sample is not dominated by the codec pools with very large number of licensees). The sample was matched with ORBIS firm database to produce a geographic distribution. This resulted in 199 (best) matches. It should be noted that best match may or may not be the global ultimate owner of a corporate group. The estimated EU share among pool licensees is around 19.6%. Pool licensees are smaller firms than other SEP licensees, and may or may not be representative of SEP licensees more generally. However as systematic data on licensees of bilateral SEP licenses is not available, this is the best possible estimate of the geographic distribution of SEP licensees.
[243] Based on expert judgement.
[244] In the sample of EU firms, 38% met SME definition (combination of employment below 250 and turnover below or equal to EUR 50 000). As share of pool licenses is estimated at around 87%, and SMEs are unlikely to take part in bilateral licence negotiations of major SEP holders, the share is reduced to 33%.
[245] E.g. use of video coding standard AVC/H.264 for the first 100 000 units, or first 100 000 subscribers per year is royalty-free. See https://www.mpegla.com/wp-content/uploads/avcweb.pdf.
[246] Baumol, W. J. and Swanson, D. G., 'Reasonable And Nondiscriminatory (RAND) Royalties, Standards Selection, And Control Of Market Power', *Antitrust Law Journal*, 2005, Vol. 73, pp. 1-58, https://www.jstor.org/stable/40843669#references_tab_contents.

relevant stakeholders, have open and published processes, and typically publish and make standards documentation available for use by all without discrimination. […]

Participants follow the standard setting process by regularly meeting in SSO working groups. They may develop proprietary (usually patented) technology ahead of these meetings, in order to submit it for inclusion in the standard […]. SSO members then discuss the technical merits of available solutions and decide by consensus which one shall become a specification in the standard.

The Standard Essential Patents (or SEPs) that cover established standard specifications play an important role in companies' incentives to invest in standardization activities […]

FRAND commitments are voluntary contracts between each SEP holder and the SSO, with standard implementers as third-party beneficiaries. Some SSO IPR policies tie the commitments with SSO membership while others request that participants disclose the patents, they believe are standard-essential along with a FRAND licensing commitment for each disclosure. […]"[247]

The table below explains the process in a basic manner.

Table 6: SEPs: from development to adoption

For 1 SEP	Before standard development	During standard development		After standard adoption	
Innovator 1	Invest in R&D	Contribution to SDO			Nothing
Innovator 2	Invest in R&D	Contribution to SDO			May ask for FRAND licence
SDO			Select contribution 2		
Implementer				Implement contribution 2	May need FRAND licence

Original source: Putnam, J. L., Economic Determinations in "FRAND rate" – Setting: A guide for the Perplexed, 2018, Fordham International Law Journal, Volume 41, Issue 4 (modified)

ETSI standard development process and SEP:

During the proposal or development of a standard, ETSI members must inform in a timely fashion if they are aware that they hold any patent that might be essential. SEP holders are requested to provide an irrevocable undertaking in writing that they are prepared to grant irrevocable licenses on Fair, Reasonable and Non-Discriminatory ("FRAND") terms and conditions. The ETSI database allows, for information, public access to patents which have been declared as being essential or potentially essential.[248]

In its Contribution to the Debate on SEPs, the SEPs Expert Group explains as follows: "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

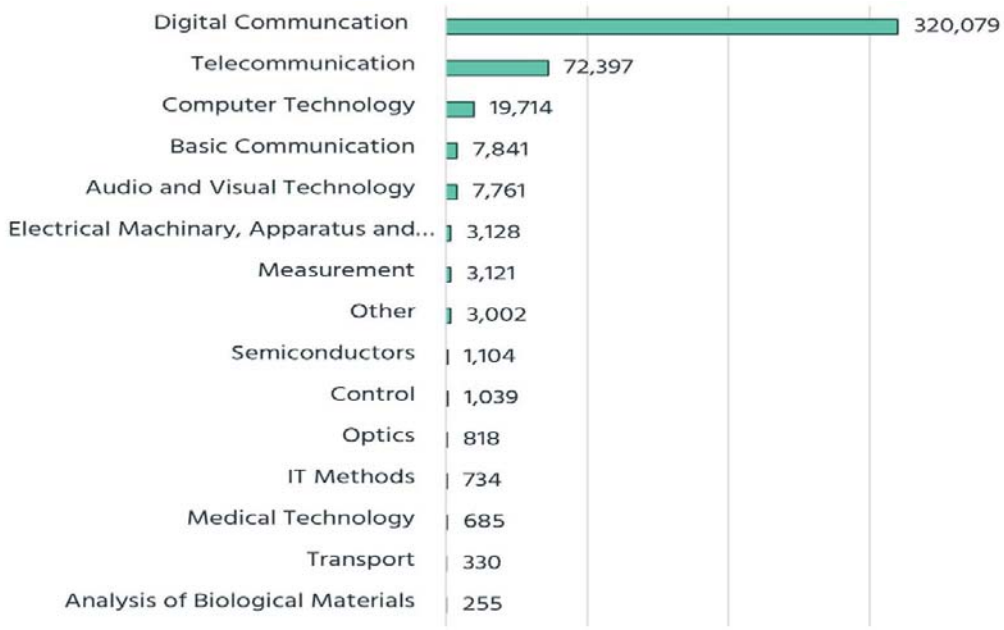
[247] Joint Research Centre, Institute for Prospective Technological Studies, Ménière, Y., *Fair, Reasonable and Non-Discriminatory (FRAND) licensing terms: research analysis of a controversial concept*, Thumm, N. (editor), Publications Office, 2015, pp. 9-10, https://data.europa.eu/doi/10.2791/348818.
[248] https://www.etsi.org/intellectual-property-rights.

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."[249]

A5.3 Trends in standards development

Standards are developed through the R&D efforts of a large and diverse set of companies participating in the process.[250] Historically, standards have been used extensively in the information and communication technologies ("ICT") sector, but they cover a variety of technology areas. The figure below provides an overview of key technology categories for which SEPs are declared and illustrates that such SEPs are by far more prevalent in the digital communication and computer technology areas, followed by audio and visual technologies. This is not surprising considering the need for interoperability to allow for (i) communication among devices and within networks, and (ii) use of audio and visual content across a broad spectrum of devices. New and upcoming areas where standards will be employed include medical technology, security and transportation, just to name a few.

Figure 10: Number of declared SEPs as to technology category (IPlytics, 2022)



According to IPlytics, (a third-party source of aggregated data and information from the ETSI IPR Database), the cumulative number of self-declared information and telecommunication (ICT) SEP families[251] surpassed 74 000 in 2021, indicating a five-fold increase in just 10 years

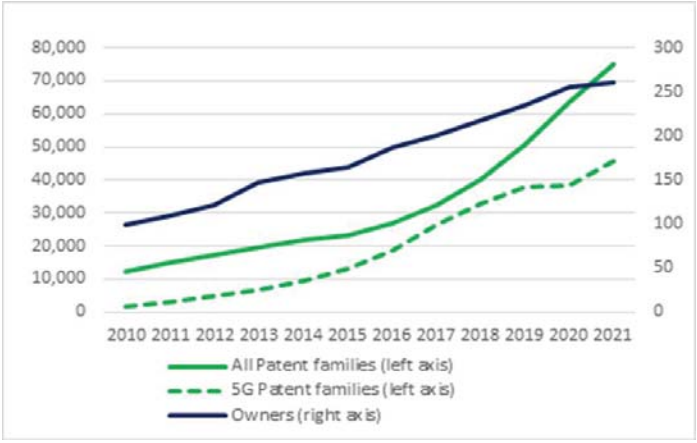
[249] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, Section II. Analysis of key issues and proposals for improvement, https://ec.europa.eu/docsroom/documents/45217.

[250] For example, the 3rd Generation Partnership Project (3GPP) was established in 1998 to offer a platform for seven telecommunications SDOs (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC) to jointly develop protocols for mobile communications. As of April 2021, 3GPP had almost 700 individual members. Each year more than 3 000 delegates meet nearly 100 times in different working group configurations and engage in standard development activities which result in the submission of more than 84 000 technical documents annually.

[251] A patent family is a set of patents obtained at different patent offices, but which cover the same invention.

(Figure above).[252] The number of SEP holders included in the ETSI IPR Database has also risen from 99 in 2010 to 261 in 2021.[253]

Figure 11: Trends in SEP landscape



Note(s): Number of owners indicate number of declaring companies (considering only the highest parent of larger corporate groups) with at least 10 declared patent families. Source: IPlytics Platform 2022

The implementation of potentially large numbers of SEP-encumbered standards in a single product is no longer limited to traditional ICT industries. The automotive industry is one of the first sectors to rely on Internet of Things (IoT) technologies, which connect devices, machines, buildings and other items with electronics, software or sensors. Interconnectivity across multiple devices and networks and interoperability of vehicle parts require the use of standards such as 4G, 5G, Wi-Fi, video compression (HEVC/VVC), Digital Video Broadcasting (DVB) and Near Field Communication (NFC), just to name a few (Figure below).

Figure 12: Connectivity standards implemented in vehicles

Source: Tim Pohlmann, Intellectual Asset Management, May/June 2017, pp. 22-27

With the introduction of the 5G standard into ICT devices and vehicles, and the expected implementation in an increasing number of product categories, the need for a more efficient SEP licensing regime has become more urgent. New issues in SEP licensing have emerged as a result of

[252] Because ETSI offers the most detail in its IPR Database, the SEPs data referenced below is limited to information gathered through that source and relates to cellular connectivity standards only. Similar analysis exists with regard to other standards but is more questionable with regard to source and accuracy.
[253] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023.

the broad applicability of the 5G standard to a wide variety of smart devices in countless industries.[254] Whereas over the last two decades most high-stakes SEP disputes have centred around mobile communication devices (i.e., smartphones), we are already witnessing more disputes in the automotive sector and expect other IoT sectors to be similarly affected.

A5.4 Transparency of FRAND rate

The FRAND commitment requires not only fair and reasonable royalties, but also non-discrimination among licensees. Non-discrimination does not mean that the exact same terms and conditions need to be offered to every single licensee but has been interpreted as treating similarly situated licensees similarly.[255] Determining whether terms and conditions are fair, reasonable and non-discriminatory such that they comply with the FRAND commitment is difficult if not impossible without certain information.

However, licensing negotiations and resulting license agreements are maintained under strict non-disclosure agreements ("NDAs"). On the one hand, SEP holders are unwilling to share detailed claim charts (documents linking the standard to claims in the patents) with implementers without an NDA for fear that those patents and claims will be examined carefully by other stakeholders with the objective to destroy either the claim of essentiality or the validity of the patents in question. SEP holders also need an NDA to share comparable agreements with implementers to justify their FRAND royalty demands. On the other hand, implementers want to sign an NDA before disclosing sensitive product information and value and volume of sales.

There is, therefore, very limited publicly available information regarding FRAND terms and conditions, mainly from the following[256]:

i. Leading SEP holders on occasion make **ex-ante announcements** with information on their intended licensing terms. These announcements aim to provide implementers with some indication of potential future licensing costs, and to contribute to more predictable and more transparent royalty rates. These announcements are rather rare, and often do not reflect the actual royalty rate the SEP holder is willing to offer (see below).
ii. Some SEP licensors offer 'Standard licensing terms', which they disclose on their websites. Again, these may not be the actual terms they ultimately sign with particular licensees.
iii. In the absence of a licensing program with informative standard licensing terms, implementers may rely on **(limited) publicly available information** as indication of (FRAND) licensing terms that they are likely to be offered. Publicly available data on licensing deals are **scarce and incomplete** due to strategic considerations.[257] Publicly available data may come from compulsory disclosures, e.g. earnings reports to the Securities Exchange Commission (SEC) and from court cases in the UK and the US.

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[254] In 2019, there existed 7.6 billion Internet of Things (IoT) connected devices worldwide. The overall number of IoT connected devices is forecast to grow from 7.6 billion in 2019 to 24.1 billion by 2030 with the share of devices connected to cellular networks gradually increasing. McKinsey estimates that by 2030 IoT could enable $5.5 trillion to $12.6 trillion in value globally, including the value captured by consumers and customers of IoT products and services.

[255] Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, Part 3.3, Section 6, https://ec.europa.eu/docsroom/documents/45217.

[256] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023.

[257] Generally, it is neither in the licensor nor the licensee's best interest to disclose information on licensing deals. Licensors may want to preserve their bargaining position and capacity to price discriminate in subsequent negotiations. Licensees may want to avoid revealing information to competitors on inputs that conform their competitive advantage.

iv. Implementers can expect to receive a licensing offer at the beginning of SEP licensing negotiations, in which SEP holders describe proposed licensing terms, and explain why these terms are FRAND. The level of information that is voluntarily disclosed through bilateral negotiations may often fall short of the level of disclosure on comparable licences that potential licensees may achieve through FRAND litigation in a judicial system with pre-trial discovery (such as the US or UK).[258]

Publicly available information is patchy, disaggregated, and of inconsistent quality. Any comparison of the available data points, let alone aggregation of such information, is challenging due to the lack of visibility to the varying terms and scope of the underlying licensing agreements.[259]

Patent pools may provide more information on FRAND royalties, if such are formed and typically after standard implementing products are sold on the markets. Whether this information would be sufficient depends on how many SEP holders participate in the pool. It also depends on whether implementers have participated in the FRAND royalty determination as pools that do not manage to offer an acceptable royalty may have difficulties to license.

There are at least two main reasons why it is important to have more information about existing FRAND terms and conditions:

- Stakeholders (both SEP holders and implementers) should be able to estimate the aggregate royalty, i.e. the sum of all FRAND royalties they would have to pay to SEP holders (individually or as one or more groups) if they were to obtain rights to all SEPs covering a particular standard. For example, if there are 10 SEP holders and each of them charges EUR 1, the aggregate royalty will be EUR 10. Even though implementers would usually not have to pay all SEP holders for a given technology[260], the total landscape of SEPs needs to be considered in determining the aggregate FRAND royalty.
- Stakeholders should be able to assess whether the offer is discriminatory or not. Without access to information on existing licences and licensees, this is difficult, if not impossible.

Table 7: Number of declared 5G patents per SEP owner, with publicly announced royalty levels

SEP holder	Declared 5G patent families (pending and granted)	Declared 5G patent families (granted in at least one office)	Price 5G Multi-mode handset	Price 5G multi-mode for 200 USD handset
Huawei Technologies	6 954	5 717	max 2.5 USD[261]	max 2.5 USD
QUALCOMM Incorporated	5 051	3 559	max 3.25%[262]	max 6.50 USD
Samsung Electronics Co. Ltd.	4 848	3 487		
LG Electronics Inc.	4 141	3 040		
ZTE Corp	3 747	1 911		

[258] As an example of the scope of comparable licenses information available during a FRAND trial in the US, the Court of Appeal of the Federal Circuit rejected the District Court's decision to unseal the financial terms of 109 licenses between Uniloc and third parties, which were disclosed to the parties during litigation opposing Uniloc and Apple.
[259] Terms that may vary from one license agreement to another, even if generally related to the same technology area, include royalty structures, the definition and scope of covered technology or technologies, the geographical scope of the license rights and the definition of licensed patents (e.g., SEPs, non-SEPs, individual patents or families, patent portfolios).
[260] Consider that the implementer may have its own relevant SEP portfolio and therefore will not have to pay itself, and there may be SEP holders that for various reasons may not seek royalties.
[261] Huawei Releases White Paper on Innovation and Intellectual Property 2020 – Huawei.
[262] qualcomm-5g-nr-royalty-terms-statement.pdf.

SEP holder	Declared 5G patent families (pending and granted)	Declared 5G patent families (granted in at least one office)	Price 5G Multi-mode handset	Price 5G multi-mode for 200 USD handset
Nokia	2 989	2 192	max 3 EUR[263]	max 3 EUR
Telefonaktiebolaget LM Ericsson	2 544	1 467	2.5 to 5 USD[264]	max 5 USD
CATT Datang Mobile	2 431	1 685		
Guangdong Oppo Mobile Telecommunications Corp.	2 245	1 591		
Vivo Mobile Communication Co. Ltd.	1 827	1 221		
Sharp Corporation	1 644	1 123		
NTT DOCOMO, Inc.	1 573	913		
Apple Inc.	1 280	598		
InterDigital	687	417	max 0.60%[265]	max 1.20 USD
NEC Corporation	484	333		
Total	42 445	29 254		max 18.20 EUR

Source: IP Lytics and public statements as per footnotes

The royalty stack of **individual ex-ante announcements** of only 5 SEP holders reported in above is maximum EUR 18.20 of the sales price of a handset costing 200 EUR, which represents ca. 9% of the value of a EUR 200 handset. Those 5 SEP holders hold 13.352 declared 5G patent families (granted in at least one patent office) which represents 46% of all patent families granted in at least one patent office for 5G Release 15. The fact that the other SEP holders listed in Table above have not made ex-ante announcements does not mean that they will not license their SEPs on FRAND terms and conditions. Even if even some of those SEP holders may not ask for royalty payments and even if the 5 SEP holders who made announcements may claim to have a larger share in the aggregate royalty than their share in the total number of SEPs, the "aggregate royalty" based on such announcements appears to be above EUR 30 for a EUR 200 handset.

This issue is exacerbated in situations where a new market using the standard is developed and there is no historical data available, and where new market entrants, especially SMEs, do not have the resources to unilaterally obtain the necessary data on FRAND terms and conditions.

The following sources provide limited guidance on the concept of FRAND:

i. General advisory documents by policy makers. Some more recent guidance documents, for example in Japan[266], provide more specific interpretations. There may be inconsistency across different sources of guidance.[267]
ii. Most SDO policy provisions on FRAND licensing commitments are very general.

[263] Nokia licensing rate expectations for 5G/NR mobile phones | Nokia.
[264] Ericsson's FRAND Licensing terms for 5G/NR in 3GPP Release 15.
[265] InterDigital – Create. Connect. Live. Inspire.
[266] In 2018, the Japanese Patent Office adopted a Guide to Licensing Negotiations Involving Standard Essential Patents, see https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/document/rev-seps-tebiki/guide-seps-en.pdf. Japan is also the only government that took a position on those issues in its Guide to Fair Value Calculation of Standard Essential Patents for Multi-Component Products. In July 2021, the Japanese Ministry of Economy, Trade and Industry (METI) formulated an interim report that indicates the results of the discussion in the Study Group on Licensing Environment of Standard Essential Patents and the direction of further consideration.
[267] Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023.

iii. A number of court decisions address FRAND licensing commitments and more generally different parties' FRAND obligations. At the EU level, the existing guidance consists of the CJEU judgment *Huawei* v *ZTE* and is focused on the seeking of injunctions and the FRAND negotiation process rather than interpreting the concept of FRAND in general. Significant heterogeneity exists in the implementation of this general framework by national courts.

iv. Although an impressive amount of scholarship has analysed or interpreted the FRAND concept, this scholarship is characterized by persistent differences of opinion on key aspects of the FRAND concept such as royalty evaluation methods and obligations to license certain parts of the relevant industry.

The two key aspects i.e., who should take a license and how FRAND royalty rates are determined – are often the subject of contentious licensing negotiations and litigation among SEP holders and potential licensees.[268] Those have not been resolved to date.

A5.5 Level of licensing

Royalty structure[269]

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

In principle, a royalty amount may be determined using a *royalty base* and a *royalty rate* applied to that base. However, in many instances, the final royalty amount is agreed upon by the parties, possibly using the "base x rate" formula as a guide or starting point.

Royalty Base

A royalty base is the unit-base to which the royalty rate applies. No single methodology is uniformly agreed upon by SEP holders and implementers. Thus, depending on the circumstances, the base could range from the value of the entire final product that includes the patented technology,[270] to the value of the smallest saleable patent practicing unit incorporating the patented technologies (the *SSPPU*), or anything in between.

Royalty

The royalty can be set as a percentage of the royalty base (*ad valorem* royalties)[271] or as a set amount per unit.[272] In practice, SEP holders and implementers may adopt hybrid royalty schemes, for example, *ad valorem* royalties subject to (*per-unit*) *royalty caps*.[273]

Licensing level

Considerable debate exists regarding the right level of the value chain at which to license SEPs, and who should pay the royalty. For example, IoT includes a vast variety of products, and each may have a different value chain structure. For the communications function, as shown below, a chip may be

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[268] See Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, Part 3.2 – Licensing in the value chain, https://ec.europa.eu/docsroom/documents/45217.

[269] Expert group report, Part 3.3, Section 3. The text contains excerpts from the expert group report.

[270] 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.

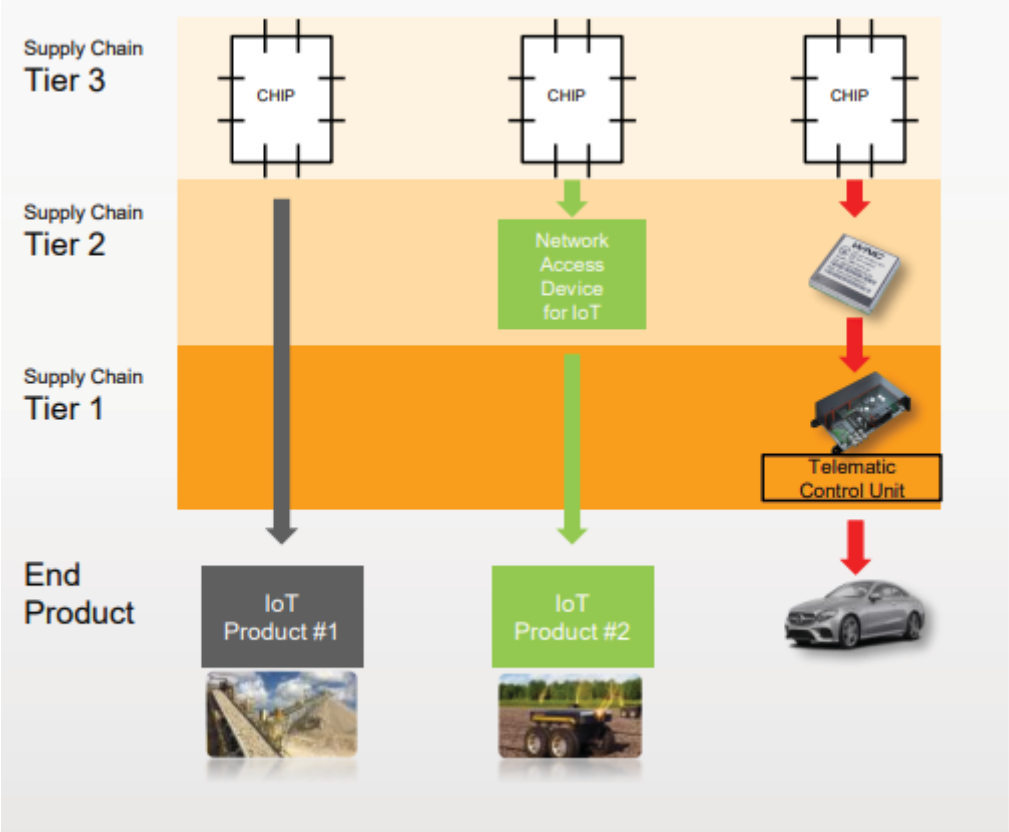
[271] For example, X% of the unit value of sales of the SSPPU or Y% of the unit value of sales of the end product.

[272] For example, €Z per SSPPU or end product unit.

[273] 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.

supplied directly to an end product manufacturer or may be included in a component that is sold by a supplier to an end product manufacturer. In the automotive sector, the value chain is even more complicated.

Figure 13: Examples of value chains



Source: Continental AG

The approach used to determine the royalty amount has a direct bearing on the volume of licensed products captured and the total royalty revenue resulting from licensing the patents. Below is an illustration of how royalties may differ depending on the level at which the license is granted and which method is applied.

Table 8: Examples of methods for setting SEP royalties at different value chain levels

Royalty base	Price in EUR[274]	Ad valorem royalty	Royalty in EUR (per unit)
Chip	20	1 %	0,20
Component	200	1 %	2.00
End-product	2 000	1 %	20.00

Royalty base	Price in EUR	Per unit royalty	Expressed as a % of price
Chip	20	10	50%
Component	200	10	5%
End-product	2 000	10	0.5%

Source: Illustrative example

It is possible to have the same royalty using different royalty bases, i.e. a higher royalty rate applicable to a larger base or a higher rate applicable to a smaller base may result in the same royalty.

[274] These are fictitious prices for the purpose of illustration and have no relation to real prices.

A5.6 SEPs and customs enforcement regulation

Regulation (EU) No 608/2013[275] concerning customs enforcement of intellectual property rights gives the right to any patent holder to request customs to detain or suspend the release of goods suspected of infringing its patents. The Regulation contains solely procedural rules for customs authorities. Accordingly, it does not set out any criteria for ascertaining the existence of an infringement of an intellectual property right. In that sense, it is different from an infringement procedure before a court and customs authorities are not in the position to ascertain whether the mandatory negotiation steps set out in the CJEU judgment in *Huawei v. ZTE* were followed in a specific case.

Where the customs authorities suspect, on the basis of reasonable indications, that goods under their supervision or under their control infringe the intellectual property right, they will suspend the release of or detain the suspected goods. Customs will request the patent holder to confirm whether in his conviction the patent has been infringed. Customs will notify the declarant or the holder of the goods of the suspension of release or detention of the goods, requesting its agreement to destruction of goods suspected of infringing the patent[276]. If the declarant or the holder of the goods oppose to the destruction or if customs do not deem it to have confirmed its agreement the patent holder has 10 working days to initiate legal infringement proceedings. Otherwise, the goods will be released or their detention will be put to an end by customs. In case court proceedings are initiated, suspected goods will remain under customs' control until their completion of the court proceeding, unless certain conditions are fulfilled. Additionally, for certain IPR cases (and patents are concerned) where the customs authorities have been notified that proceedings have been initiated to determine whether the concerned right has been infringed, the declarant may request customs to release the goods (subject to the payment of a guarantee) before the completion of the proceedings.

Customs enforcement provided for in Regulation 608/2013 already encompasses Standard Essential Patent (SEP) taking into account the broad definition of patent in Article 2(1)(e) of Regulation 608/2013: "a patent as provided for by national or Union law".

The Regulation does not make a distinction between a regular patent and a SEP. A request for a preliminary injunction was brought to a German court[277] by an importer, whose goods were seized at customs at the request of a SEP owner. The court examined whether the SEP holder abused its dominant position by using the customs enforcement regulation. It noted that such an abuse is possible, if the SEP holder used the customs enforcement regulation in order to circumvent the negotiating steps set out in the CJEU judgement *Huawei v ZTE*. That would also mean that a SEP holder should have fulfilled the *Huawei v ZTE* conditions before applying for a customs action under Regulation 608/2013.

The problem is that the customs enforcement regulation does not require such an examination. Such an obligation for customs would contradict the character and purpose of Regulation 608/2013 which establishes only procedural rules for customs authorities and not set out any criteria for ascertaining the existence of an infringement of an intellectual property right. Customs cannot distinguish between an essential and a non-essential patent and, most importantly, it is not an appropriate authority to assess if the guidelines of the CJEU have been complied with since it does not have the competence,

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[275] Regulation (EU) No. 608/2013 of the European Parliament and of the Council of 12 June 2013 concerning customs enforcement of intellectual property rights, OJ L 181, 29.6.2013, pp. 15-34, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32013R0608.

[276] Regulation 608/2013 solely contains procedural rules for customs authorities. Accordingly, this Regulation does not set out any criteria for ascertaining the existence of an infringement of an intellectual property right.

[277] Regional Court Düsseldorf, Judgment of 9 November 2017, *Samsung v 3G Licensing*, 14d O 13/17, http://www.justiz.nrw.de/nrwe/lgs/duesseldorf/lg_duesseldorf/j2017/14d_O_13_17_Urteil_20171109.html.

se resources and expertise to establish whether the negotiating steps set out on the CJEU judgement *Huawei v ZTE* were conducted.

In practice, this means that the recourse of customs detention, available to other patent holders, would be available to SEP holders only with the fulfilment of the negotiating steps set out on the CJEU judgement *Huawei v ZTE*.

ANNEX 6: ADDITIONAL INFORMATION ON OPTIONS DISCARDED AT AN EARLY STAGE

A6.1 SEP register without mandatory essentiality check (sub-option to PO1)

The EU may set up a register and build up a system of voluntary essentiality checks. It will also adopt an EU methodology for conducting essentiality checks. SEP holders will be free to register their SEPs or not and do voluntary essentiality checks using the EUIPO's administrative structure. SEP holders already have all the facilities to make registrations with their SDOs and to conduct essentiality checks. And currently, the majority are not using those possibilities as explained in the baseline scenario. There is no reason to believe that this will change, if the register and the essentiality checks are totally voluntary.

A6.2 Voluntary conciliation (sub-option to PO3)

Under a completely voluntary conciliation there will not be any possibility for any reports and recommendations without the agreement of both parties. This is currently the situation with regard to both arbitration and mediation. It is questionable to introduce yet another alternative dispute mechanism to those already existing, if it does not bring any real added-value. Such an option will also not help resolve the current difficulty in the implementation of the customs enforcement regulation. Moreover, currently existing voluntary alternative dispute settlement systems are not widely used. This is partly because parties need to agree on the procedure of the mediation or arbitration but also due to the fact that the results are not published and the arbitrators and mediators have limited powers to request documents. The confidentiality of voluntary alternative dispute settlement has been identified as particularly detrimental to providing more clarity and transparency to the FRAND concept. Finally, with regard to costs and duration of the arbitration procedure is not advantageous compared to court proceedings.

A6.3 Mandatory aggregate royalty after the adoption of a standard SEP (sub-option to PO4)

The SEP owners' ex-ante incremental contribution to the product value seems an appropriate upper bound for the FRAND royalty, for three reasons:

• First, if SEP holders obtained more than their incremental contribution in a scenario of complementary inputs, downstream innovators will receive a smaller proportion of their incremental contribution, which may unduly suppress downstream innovation.

• Second, the ex-ante incremental value is relevant, as otherwise there would be a risk that upstream innovators are over-rewarded: the ex-post incremental value may exceed the ex-ante incremental value because technologies included in the standard in practice cannot be replaced by alternative technologies any longer after standardisation. Of course, from a welfare perspective it would be unreasonable to reward upstream innovators for the loss of competition from standardisation.

• Third, if inventions can be pursued by multiple firms, granting a patent to the first successful firm, and setting the patentee's reward equal to the social contribution associated with the invention (taking competing technologies into account) results in wasteful duplication of effort, and in socially too strong incentives to innovate. The lesson from the relevant research is that the reward should be

strictly less than the social benefit of an invention in a conventional patent system in which the first firm to achieve the invention receives a reward in the form of exclusive rights.[278] This insight seems to be of particular importance for technologies integrated into standards, which are commonly protected by patents.

It should be noted that before a standard is developed there are different technologies competing on a market, while after a standard is created usually one technology dominates the market.[279]

Ex-post, all patents that are essential to the same standard are complements (at least with respect to the implementations of that standard). Knowing that their patents are now needed for the standard to be used, individual patent owners may expect higher royalties and the ex-post stack ends up being higher than the ex-ante stack as any possibility for substitution has been eliminated.[280] Aggregate royalty negotiations at this stage will be extremely difficult and therefore, they need to involve the whole industry.

Ex-post aggregate royalty determination is difficult also because the implementing products began using the standard without knowing or taking into account the need to pay FRAND royalties. This means that the FRAND royalties may have to be paid from profit expectations for those implementers that have not provided for such royalties in their product costs. Such implementers will naturally want the lowest possible FRAND royalties, whereas SEP holders (especially if not also implementers liable for paying royalties as well) will try to obtain the highest possible FRAND royalties. In this situation, it may be extremely difficult to bridge the interests and agree on an aggregate royalty. It is likely that the establishment of an arbitral panel would become the default option.

A6.4 Oblige SEP holders to license their SEPs royalty-free (Option 6)

Royalty-free patent policies at SDOs may promote and accelerate innovation and competition upstream, in technology for standards, and downstream, in products and services related to the standard.[281] Consumers would thus benefit from royalty-free standards because the prices of downstream products are lower and investment in innovation may be higher.

So why not a mandatory governmental policy for royalty free standards?

From an economic perspective whether or not a standard should be royalty-free really depends on whether or not standard contributors have an economic interest to contribute based on such IPR policy and there cannot be general rules that would determine that.

The factors that determine this decision include: (i) whether there is significant investment in R&D; (ii) whether there are a number of contributors that are not users of the standard; (iii) whether there may be potential alternatives of the standard and (iv) whether the cost of licensing (and litigation) would exceed any potential licensing revenue.

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[278] See Shapiro, C., 'Patent Reform: Aligning Reward And Contribution', *Innovation Policy and the Economy*, 2007, Vol. 8, pp. 115-116, https://www.nber.org/papers/w13141. Intuitively, the R&D effort of each innovator imposes a negative externality on competitors working on a similar innovation, which each firm individually does not take into account.

[279] Baumol, W. J. and Swanson, D. G., 'Reasonable And Nondiscriminatory (RAND) Royalties, Standards Selection, And Control Of Market Power', *Antitrust Law Journal*, 2005, Vol. 73, pp. 1-58, https://www.jstor.org/stable/40843669#references_tab_contents.

[280] CRA, Régibeau, P., De Coninck, R. and Zenger, H., *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing: A Report for the European Commission*, 2016, Section 3.2, pp. 28-30, https://ec.europa.eu/docsroom/documents/48794?locale=en.

[281] An economic analysis prepared by Charles River Associates (CRA) shows that royalty-free policies induce firms to reduce prices and sell more units of products and services that use the standard.

Examples of royalty free standards are some internet standards, e.g., TCP/IP or HTML published by IETF, W3C or some OASIS standards; and several data exchange standards such as Bluetooth[282] or USB (Intel). These standards are claimed not to be too R&D intensive. For example, USB establishes specifications for cables and protocols for connection, primarily focused on interoperability. The USB 3.2 Standard comprises nine documents of about 2 000 pages.[283]

Wireless cellular standards, in contrast, are claimed to be extremely complex and require long 10+ year cycles of R&D. Release 15 of the 5G Cellular standard, for example, comprises 1 131 separate documents totalling tens of thousands of pages and around 100 000 contributions.[284]

Table 9: SEP for free or not?

Technology	Examples	Status*
Internet	Transmission Control Protocol (TCP); W3C, Extensible Markup Language (XML); Uniform Resource Locator (URL); Java Script	Free
Data storage and exchange	CD, DVD	Royalty
	USB	Free
Cellular standards	2G, 3G, 4G, 5G	Royalty
Photo formats	JPEG	Royalty
(Short-range) wireless data exchange	WiFi, Near Field Communication (NFC)	Royalty
	Bluetooth	Free**
Video and audio compression standards	MPEG, H.264/AVC, H.265/HEVC, H.266/VVC (Versatile Video Coding)	Royalty
	VP8, VP9, VP10	Free

** Free – free of charge; Royalty – royalty bearing*
*** Bluetooth requires membership and charges a small fee for its Bluetooth qualification process*
Source: Prof. Dr. Joachim Henkel, Adrian Göttfried (TUM) presentation "Royalty-free standards", May 2022

For SDOs to have something to standardize, contributors to the standard must first develop potential contributions. The SDO technical committee would review all technical contributions and select the best quality contribution. Table below explains the process in a basic manner.

Table 10: Standard development and usage – actions by different parties involved

For 1 SEP	Before standard development	During standard development		After standard adoption	
Innovator 1	Invest in R&D	Contribution to SDO			Nothing
Innovator 2	Invest in R&D	Contribution to SDO			May ask for FRAND licence
SDO			Select contribution 2		
Implementer				Implement contribution 2	May need FRAND licence

Original source: Putnam, J. L., Economic Determinations in "FRAND rate" – Setting: A guide for the Perplexed, 2018, Fordham International Law Journal, Vol. 41, Issue 4 (modified)

The initial investment in R&D may be subject to high risk, in particular the risk that the related contributions are not selected into the standard. This is a simplification that needs to be taken in

[282] A fee is due under the Bluetooth qualification process.
[283] See https://www.usb.org/document-library/usb-32-revision-11-june-2022.
[284] https://www.3gpp.org/dynareport/SpecList.htm?release=Rel-15&tech=4&ts=1&tr=1.

perspective. For a large contributor, this risk would be somewhat offset since some of its contributions will be accepted and some others will not.

R&D Investment <= Expected ROI (Product) + Expected ROI (Licensing)

If licensing royalties are zero, then there will be no licensing revenue from contributing technology to standards. In that scenario, firms contributing to standards – typically product leaders – incur R&D costs that their competitors – product followers – avoid.

Royalty-free patent policies at SDOs would thus facilitate entry and promote competition downstream because they reduce uncertainty about royalties and other license terms for SEPs and would thus benefit SMEs with limited or no SEP licensing experience. However, the product leaders must be able to gain a sufficient first-mover or other competitive advantage to pay for the R&D associated with standardization.

Obligatory royalty-free licensing may thus not promote the participation in the standardization process of companies that do not implement the standardized technology such as research institutes.

Another consideration is whether certain product followers (implementers) of the dominant royalty-bearing incumbent standard have an interest and ability to develop an alternative cheaper or royalty free standard to avoid paying royalties (e.g., FireWire).

A decision to forego remuneration could also depend on the ability and cost related to licensing of SEPs. SEP licensing involves significant cost and successful licensing may depend on a number of factors such as ability to persuade implementers to take a licence.

A6.5 A uniform SEP royalty per standard irrespective of the use (Option 7)

In the public consultation a number of stakeholders call on the Commission to adopt an approach based on a uniform FRAND royalty for a commercial standard, irrespective of the use of the technology.[285]

Some stakeholders fear that differentiated royalties on SEPs could allow SEP holders to extract excessive royalties from certain implementers of complex products, whose value encompasses much more than just the patented technology under the threat of injunctions.

As end products are complex and include many innovative technologies, there is furthermore a concern that a differentiated royalty would become a "tax on innovations" carried out by implementers. If a technology standard constitutes an enabling technology, the value that the standard adds to different products depends i.a. on the value of the standard-compliant applications developed by implementers. Suppose that a connectivity technology is implemented by two different end product makers. One of these implementers develops innovative applications requiring the use of the connectivity technology. After these R&D expenses are sunk, the connectivity technology adds greater value to the products that include these innovative applications. Nevertheless, allowing patent holders to charge the manufacturers of these enhanced products a higher rate reduces implementers' incentives to invest in innovative implementations of a standard. If the different end product makers are competing with each other, differentiated rates may furthermore unfairly erode some of the competitive advantage created by producers' innovations.

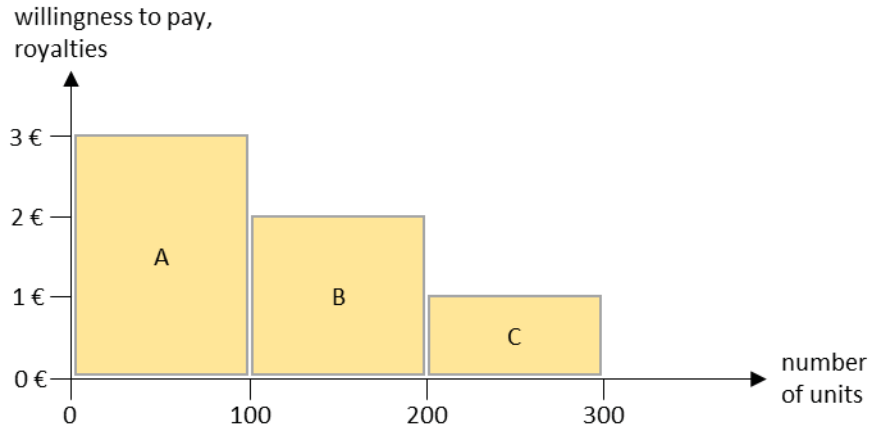
For this reason, some stakeholders consider that the same royalty should be charged for a particular standardised technology irrespective of its use.

[285] See Annex 9, Questions on FRAND.

The above are valid concerns. On the other hand, price differentiation is, however, the predominant approach in SEP licensing. Price differentiation and uniform price could be explained with the hypothetical examples below.

Different market segments have different willingness-to-pay for a SEP license. With price differentiation, each segment A, B and C (illustration below) could be charged its willingness-to-pay. The coloured area shows the revenues (600 €).

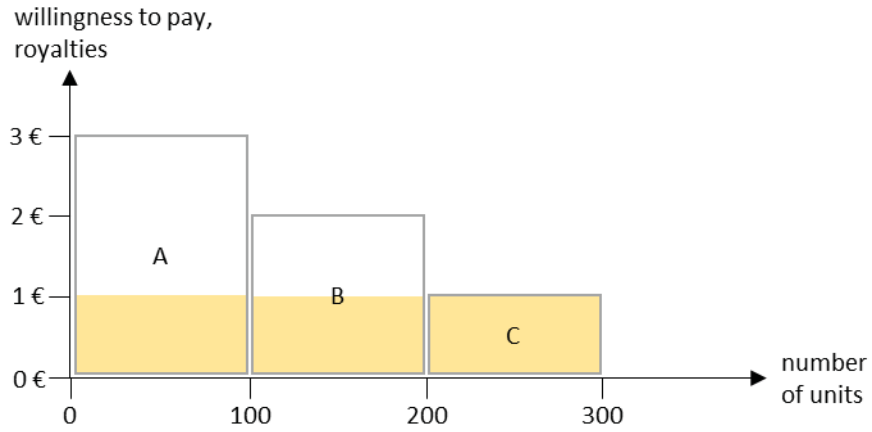
Figure 14: Example: Price differentiation



Source: Illustrative example

With a uniform price that ensures that all segments are served, revenues would be lower (300 €):

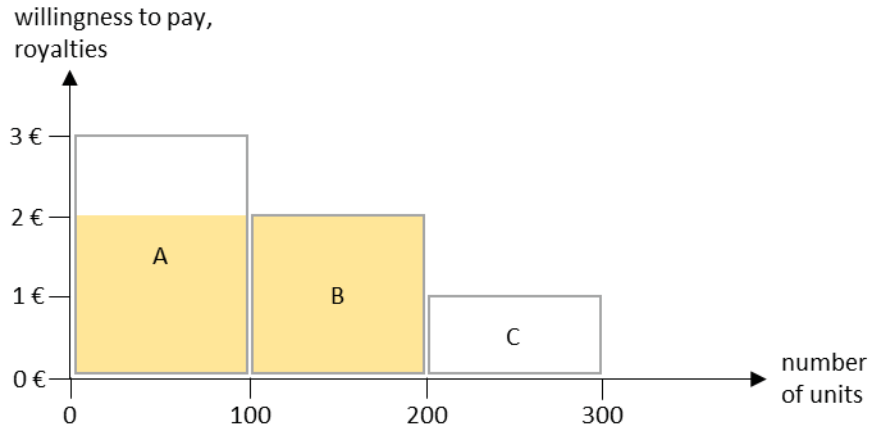
Figure 15: Example: low uniform price



Source: Illustrative example

A uniform price of 2 € maximizes revenues to 400 €, but implies that segment C is not served:

Figure 16: Example: higher uniform price



Source: Illustrative example

On the one hand, uniform pricing may thus exclude certain implementations of innovative technology standards, and/or depress SEP owners' royalty revenue such as to make the development of these standards unprofitable. On the other hand, differentiating the royalty by the value of the final product may allow SEP holders to extract the returns from investments undertaken by the upstream and downstream manufacturers, and thus undermine implementers' incentives to invest in the first place.

In its 2017 Communication, the Commission stated that FRAND terms and conditions should reflect the value that the technology brings, should not depend on the success of the product, and may be different from sector to sector. The public consultation indicated that there is a broad agreement that the FRAND royalty may depend on the functionalities of the standard that are being implemented so that a uniform price may not always be justifiable.

A uniform price for a commercial standard may thus not be the optimal option, so that certain form of price differentiation may be necessary. However, it has to be underlined that licensing on FRAND terms and conditions is not equal to maximising SEP owners' revenues. The royalty should be fair and reasonable to maintain innovation incentives for standard developing firms.

It should be noted that price differentiation increases transaction costs. In the IoT price differentiation based on licensing to device makers (of which there may be more than 10 000 for cellular standards), would lead to increased transaction costs in comparison to licensing upstream. Price differentiation may be achieved not only on the device level but also on component level. Such an approach would combine the advantages of price differentiation with lower transaction costs of upstream licensing.

A6.6 Choice of organisation to run the Competence Centre

The Competence Centre plays an important role in all the options considered. It will manage the register and pool of evaluators conducting essentiality checks (PO2), manage FRAND determination procedures and a roster of conciliators (PO3), conduct studies and SME support activities (PO1), publish aggregate royalties (PO4) and act as one stop shop in PO5. The question arises which organisation should be tasked with these activities.

Potential candidates include the European Union Intellectual Property Office (EUIPO), the European Patent Office (EPO) (both of which are specialised in granting IP rights) and Standard Developing Organisation (SDOs). When vesting an institution with the Competence Centre responsibilities a few criteria should be considered. First, the body should have the technical capacity to fulfil the role of a Competence Centre, which includes experience with managing registers and alternative dispute processes. Second, the body should be accountable to the EU public, in particular the European Parliament and should be under the jurisdiction of the CJEU. Third, the body needs to be aligned with the EU's overarching political values and current policy priorities (e.g. support for SMEs).

The EPO has extensive experience in examining patents. Some of its patent examiners are also familiar with standard documents and can conduct essentiality checks. While the EPO has the required expertise in managing registers, it currently builds up its expertise in alternative dispute resolution. The EPO thus has the technical ability to perform the functions of a Competence Centre.

However, the EPO is not an EU body, it is an international organisation which has not been entrusted by its members with any competence that would enable it to take the functions of a Competence Centre and conduct essentiality checks. Such a mandate can only be granted by amending an international agreement. The process for amendment of an international agreement under Article 218 TFEU is different from the process of adopting a Regulation under Article 114 TFEU. This would require the consent of all members of the European Patent Organisation (39 countries, including 12 non-EU countries). Being an independent international organisation, the EPO is not directly accountable to the EU Public and the European Parliament, and its decisions are not the subject of a review by the CJEU. While it is aligned with overarching political values in the EU, it determines its own policies. A majority of two thirds of respondents to the public consultation suggested that the EPO is best placed to conduct essentiality checks, because it has the technical capacity, and it is likely to produce unbiased results. The public consultation indicated, however, that the key criteria for selecting EPO were that it is a public body, and it is independent.

Table 11: Which authority/body would be best placed for doing essentiality checks?

	% replies
The EPO	63%
The national patent offices	28%
Specialised law firms	28%
Other organisation, please specify*	25%
A combination of the bodies listed above. If so, please specify which bodies and why in your view both should be responsible for this task	11%
No. of replies	57

** Other suggestions included: WIPO or creation of a board of experts" (BOE) at SDO level*
Source: Public consultations results, see Annex 9, Q33

There are many different SDOs specialising in developing standards in specific field(s), e.g. ETSI (EU) develops communication standards, IEEE (US) develops the Wi-Fi standards, ITU-T (Switzerland) develops the codecs standards. Therefore, vesting them with Competence Centre responsibilities (or some of them, e.g. register with essentiality checks) would mean multiplication of costs (many dedicated registers), risks for quality (more difficult to maintain the same level of essentiality checks) and reduced user-friendliness (differently designed databases, implementers of different standards would have to check several SDOs). The main task of SDOs is standard development and not SEP licensing. Such organisations have no experience in essentiality checks

and alternative dispute resolution. They do not have experience in supporting SMEs with trainings nor negotiations. Except for ETSI, CEN and CENELEC, all other relevant standard development organisations such as the ITU, ISO or IEEE, are located outside of the European Union. The European Union does therefore not have jurisdiction over all relevant SDOs and consequently cannot impose obligations of Competence Centre on them (adoption of such obligation would be a voluntary choice of non-EU SDO). This means that regulation would not be able to cover all relevant standards. Finally, decisions of the SDOs are not subject to the review of the CJEU, nor to the scrutiny of the European Parliament.

When looking at experience in administering IP rights, the EUIPO would be well equipped to take up the role of the Competence Centre. EUIPO is already responsible, inter alia, for the single filing, examination, grant and registration of the EU trademark and the registered Community design, two unitary intellectual property rights valid across the 27 Member States of the EU. It also offers alternative dispute resolution services such as mediation, conciliation, assisted negotiation and expert determination.[286] Finally, EUIPO has already in place funding mechanisms to support SMEs, such as for instance the SME fund. The concerns regarding accountability and courts do not affect EU agencies such as EUIPO.

Table 12: Merits of potential candidates for the Competence Centre

	EUIPO	**EPO**	**SDOs**
EU body?	Yes	No	No
Legal basis	Art. 114	Article 218 TFEU	No legal basis
Supervision by the European Parliament?	(+) Yes	(-) No	(-) No
Accountability to the EU public	(++) Full, EU agency	(0/+) Some, indirectly, as EU MS have 70% of the votes	(0/+) Limited for CEN, CENELEC and ETSI, (European Commission cannot vote)
Alignment with the EU policies	(++) Implements EU policy/legislation (e.g. EU Trademarks or Designs)	(0/+) Policy reflects views of all 39 member states; changes require the majority of them to agree	(0/+) CEN, CENELEC and ETSI develop European standards, others not
Technical expertise	(++) experience with registers and ADR	(+) expertise in European patents and registers, does not conduct essentiality checks right now.	(+) Expertise in technology and registers, currently do not conduct essentiality checks nor ADR
Decisions subject to review of the CJEU?	(+) Yes	(-) No (EPO´s Board of Appeal, instead)	(-) No
Other considerations	x	(+) 63% support in public consultation	(-) functions of the Competence Centre spread among many organisations

The table above compares merits of different choices for the central authority. Against such a multi-dimensional backdrop it seems that the best result in terms of the three criteria identified at the beginning of this section could be achieved by the EUIPO. The EUIPO is a trusted body with a lot of experience in managing registers and alternative dispute resolutions. It is an EU body able to build up a system for essentiality checks that would guarantee lack of bias. It also has experience in supporting SMEs in managing their intellectual property.

[286] https://euipo.europa.eu/ohimportal/en/adr-service.

ANNEX 7: ADDITIONAL INFORMATION IN SUPPORT OF IMPACT ANALYSIS

A7.1 Cost-benefit analysis

As indicated in the problem definition chapter data on SEP licensing are scarce and rarely observable (available in public domain) as negotiated license agreements are sensitive corporate information. Hence, the below cost and benefits analysis is based on available literature, analysis of public information, interviews, consultations and SEP experts judgements but it also required a large number of assumptions. To our knowledge such estimates (e.g. as regards affected population size in the EU) are not available in the literature. The analysis is based on estimated averages which strive to capture the situation of both large multinational players and small companies, thus standard deviation from these averages is expected to be large. Providing more granular information would require even more assumptions, however whenever possible we try to show impact on SMEs. Taking all the above into account the numbers presented below should be treated with caution. The purpose of these calculations is to allow for comparison of different policy options rather than precise estimation of impacts on each company affected.

All assumptions are presented below (more in Annex A5.1 Market descriptions). Presented figures refer to annual cost and benefits. Setup and running cost of the Competence Centre are based on EUIPO best possible estimations at this moment in time. EUIPO has vast experience with management of applications, payments and registers (e.g. for EU Trademark or Registered Community Designs), studies (European Observatory on Infringements of Intellectual Property Rights), ADR and support to SMEs (SME Fund). Setup cost is depreciated over ten years period and proportionally added to the annual running cost.

It is important to note that the regulatory proposal will not set any of the fees. Instead, they will be established subsequently by an implementing act which will take into account not only calculations presented in this impact assessment but also political considerations. The fees presented in the IA are just an indication of the fees that would cover the costs of the Competence Centre (based on an initial cost prognosis by the EUIPO). SME SEP holders and SEP implementers will both receive a reduction in administrative fees.

The benefits are calculated as a value of service or information provided to stakeholders (using average values, e.g. an average negotiation cost). Consequently, they do not necessarily represent actual cost savings (e.g. in case a company will not engage in negotiations).

It is important to note that not all cost/benefits can be quantified due to uncertainties of outcomes. For instance, impact on licensing revenue of SEP holders depends on whether this initiative will trigger/contribute to changes in the level of aggregate royalties for standards and in number of implementers taking a license. Nevertheless, discussion of potential implications on revenues of SEP holders and final price for customers is also presented below.

Since options build on each other (each option contains all the elements of an earlier option) the analysis below looks both at additional and cumulative costs and benefits of each option. Figures are rounded whenever this does not distort calculated totals.

PO1: Voluntary guidance

Costs:

EUIPO estimates that setup cost of the Competence Centre would include defining scope and procedures for new activities, including among others preparation of SEP related information and training materials, design of courses, identification of experts / setting up a framework for launching studies, screening and gathering existing public terms and conditions, licence agreements and case law summaries. IT costs would include creation of a database for studies, case law as well as Competence Centre's webpage where all the information could be accessed.

The initial cost is estimated at around EUR 760 000 and IT setup at EUR 50 000.

Annual running cost of the Centre is estimated at EUR 430 000 with IT maintenance cost of EUR 10 000 and annual depreciation of the one-off costs of EUR 81 000. Cost of three studies per year is estimated at around EUR 30 000 each. Total annual cost amounts to around EUR 611 000.

Since services of the Competence Centre will be free of charge, in case this option is the only preferred choice a source for financing of setup and running expenses should be secured.

Benefits:

Based on estimated number of potential licensees per year, we expect that from 40 to 80 SMEs will seek advice, participate in trainings and use dedicated resources. Additionally, up to 230 EU based implementers and up to 190 non-EU based firms with subsidiaries in the EU, their legal counsels (380), judges or conciliators (around 35) and both parties to each trial (2x35) involved in SEP court cases, around 261 SEP holders as well as an unknown number of researchers, academia and other interested parties might use Centre's resources. This adds up to an audience of around 1 200 per year.

Value of a SEP licensing/negotiations training can be estimated at around EUR 1 500.[287] Value of access to around three new studies per year, a database of license agreements and case-law summaries could be comparable to access cost to lower range commercial patent databases, around EUR 5 000.[288] Thus, the annual benefits to users would amount to around EUR 5.9 million per year.

Table 13: Average incremental annual costs and benefits of PO1

	no. affected	**benefit**	**cost**	**Total (+ saving, - cost)**
PO1 (guidelines and Centre)				
SME trainings	80	1 500	0	120 000
Implementers EU	230	5 000	0	1 150 000
Non EU implementers with EU subsidiaries	190	5 000	0	950 000
SEP owners	261	5 000	0	1 305 000
judges/legal counsels/other	480	5 000	0	2 400 000
Competence Centre costs	1		- 611 000	- 611 000
Total				5 314 000

Source: Own assessment based on studies and assumptions

Table 14: Average total annual costs and benefits of option PO1 by main categories of affected parties and their origin

		EU	**non-EU**	*Total*
SEP implementers	Costs			
	Benefits	1 870 000	1 550 000	3 420 000
	Net	1 870 000	1 550 000	3 420 000
SEP owners	Costs			
	Benefits	375 750	2 129 250	2 505 000

[287] For instance cost of "Patent Licensing: Strategy and negotiation" delivered by French European Institute for Enterprise and Intellectual Property (IEEPI) costs around EUR 1300, while course on "Valuation and exploitation of intangible assets" costs EUR 2400. See: https://www.ieepi.org/en/formations/.

[288] Baron et al. report cost of access to commercial patent databases of between EUR 5 000 and 25 000, see Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, 2023, p. 32.

	Net	375 750	2 129 250	2 505 000
Subtotal (net effect for implementers and owners)		2 245 750	3 679 250	5 925 000
Competence Centre		- 611 000		- 611 000
	Total net benefit	1 634 750	3 679 250	5 314 000

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

PO2: SEP register with essentiality checks

Costs:

Competence Centre's initial costs would include the following tasks: creation and validation of a pool of SEP evaluators (including tasks such as drafting a call for interest, select candidates, creating a process for updating the pool of experts, create a process to regularly communicate with the experts…); setting up a case management/distribution system, management of conflicts of interest; creating work instructions, templates and check lists; defining and implement quality controls (formal checks); setting up performance management system (define indicators, define measuring system and implement automatic measuring); trainings for evaluators (including materials); setting up SEP examination outcome review mechanism (substantive quality controls); setting up examiners/experts payment system. IT cost would include a database with interface, e-application and fee payment, connection to patent databases (e.g. of EPO).

Recurring costs would include: admissibility check/formal checks of patents before registration; fees management, maintaining a pool/network of active SEP examiners; case management/distribution to examiners; conflicts of interest check; quality controls; performance management; trainings of SEP checkers; SEP experts payment; register users management.

Assumptions:

Both setup and running cost of this option will depend on the number of patent families registered[289] and checked for essentiality. In case the register would be only used by SEP holders to prove their right to enforce SEPs against EU implementers the expected number of registered patents is rather low and limited to patents most susceptible of being used in licensing negotiations (so called proud list of patents owned by a SEP holder). In such scenario the number of patents registered is estimated at 3 550 initially and 10% of it each year after. In case at least some SEP holders will use the register as an indication of their portfolio strength, while others will not; and neither courts nor other third parties will compel unwilling SEP holders to use the register to document their portfolio strength (e.g. as evidence in infringement cases) – the number of patents registered initially is estimated at up to 30 000 and 10% of that in subsequent years. Finally, in case the register becomes widely used by all parties in SEP negotiations, including for approximation on royalties allocation by SEP holders based on patent count, it is expected that nearly all patent families including European potential SEPs are registered (around 60 000) and companies will further add up to 20% patents in an attempt to improve their share of patents essential to a standard, resulting in approximately 72 000 patents registered initially and 10% of that number in subsequent years. [290]. Especially in case this option is selected in combination with options that follows, there's higher likelihood that the register will be

[289] Even if European patent family consist of patents in several Contracting States, all European patents gives its owner the same rights as a national patent in each country for which it is granted. A SEP holder can register only one patent per family and tag the remaining European family members using EPO patent database Espacenet (https://worldwide.espacenet.com).
[290] Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023. The study noted that the practice of numerical proportionality for allocating royalty payments in SEP pools resulted in an increase in number of patents related to the underlying standard.

used to approximate stake of SEP holder in a standard during license negotiations and infringement cases, e.g. by conciliators or facilitators (in PO3, PO4 and PO5) and judges. Thus, for the analysis below we assume the maximum scenario of 72 000 patents registered. In case a lower number of patent families is registered, the EUIPO back office costs would remain roughly the same while costs of essentiality checks would be proportionally lower.

Essentiality check by an expert is estimated to take around 10 hours, and the wage of expert is approximately EUR 500 per hour, making the total cost of assessment EUR 5 000.[291]

It is expected that claim charts for patents most susceptible of being used in negotiations are already available (so called business as usual cost).[292] For the remaining patents we assume that SEP holders will perform a limited screening of their patents before registration but generally will tend to register all (potential) SEP they have. Claim charts may (but do not have to) be provided by SEP holder for the patents selected for essentiality check. Costs of producing a claim chart are assumed to be equivalent to the costs of the essentiality check itself. We also assume that for roughly half of the patents selected for essentiality checks SEP holders will decide to produce or update a claim chart.

Other costs of SEP holder including gathering all the information necessary for registration and cost of filling in the registration form are estimated at EUR 200 per patent. Some information necessary for registration should be already available to the SEP holders. For instance, some SDOs also require owners of potential SEPs to identify the patent numbers of potential SEPs and the number of the specifications to which these patents relate. Some information would also be repeated and some would be identical for many different patents (e.g. name of the standard or nature of the licensing FRAND commitment).

Sub-option i) Essentiality checks for all SEPs in the register

One-off costs of the Competence Centre to implement this option are estimated at around EUR 840 000 with associated IT costs of EUR 700 000, bringing total cost to around EUR 1.54 million.

The annual internal cost of the Competence Centre in an initial year(s) is expected to be higher due to high number of patents that will go through the system. It is estimated at around EUR 5.2 million (including IT maintenance of EUR 140 000 and depreciation of one-off cost of EUR 154 000).

We estimate that initially 72 000 patents will have to be checked for essentiality and that SEP holders following negative essentiality outcome will demand recheck of up to 27 500 patents. Altogether around 99 500 patents will have to be checked, requiring engagement of around 565 assessors. Given the estimated number of experts in the field in the EU of 1 500 this should be feasible even in one

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[291] There are different estimates of the essentiality assessment costs. Bekkers et al. report that the typical fee charged by patent pools for essentiality assessments of a European patent is EUR 5 000-10 000, see Bekkers, R., Tur, E. M., Henkel, J., et al., *Overcoming inefficiencies of patent licensing: A method to assess a patent's essentiality for technical standards*, 2021, https://pure.tue.nl/ws/portalfiles/portal/194804728/BEKKERS_et_al_2021_essentiality_assessments.pdf. CRA estimated the cost of a "medium assessment" to be EUR 4 500, and the cost of a "full assessment" to be EUR 9 000, see CRA, Régibeau, P., De Coninck, R. and Zenger, H., *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing: A Report for the European Commission*, 2016, https://ec.europa.eu/docsroom/documents/48794?locale=en. According to survey by Baron, the average cost of such an assessment for the remuneration of the expert alone is EUR 4 159. Taking into account mass scale of assessment and resulting specialisation we have proposed a cost figure at the lower end of the estimates proposed, that is at EUR 5 000. see - Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023. Additionally we estimate the number of working hours per year at 1760. Meaning that one assessor could check 176 patents per year.

[292] Many or most existing claim charts may relate to foreign, in particular US members of global potential SEP families, and may have to be adapted to European patents. Source: Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023.

year, but it might take longer as well.[293] The expert remuneration for assessing this amount of patents is estimated at EUR 498 million.

In the subsequent years as the number of patents subject to checking is expected at 10% of the initial volume, the costs will also be lower. Centre's total costs are estimated at EUR 1.5 million (including IT maintenance and depreciation as above) and remuneration of examiners at EUR 49.8 million.

Consequently, over the course of ten years (initial year plus nine subsequent years) the average annual cost of this sub-option is estimated at EUR 96.4 million.

An average registration fee for this option that should cover the cost of the Centre is estimated at EUR 140 per patent. Additionally, SEP holders will have to pay the cost of essentiality checks of EUR 5 000 per patent (only one per patent family).

Internal costs of SEP holders connected to preparation of information necessary for registration and filling of forms for all 72 000 patent families is estimated at EUR 2.7 million annually on average during a decade. Additionally, SEP holders may want to submit claim charts for patents selected for essentiality check. This cost is estimated at around EUR 34.2 million annually on average over the course of 10 years.

Sub-option ii) Essentiality checks for up to a fixed number (e.g. 50-100) of patents selected by SEP holder and a representative random sample of all SEPs.

One-off costs of the Competence Centre to implement this option are estimated at around EUR 710 000 with associated IT costs of EUR 700 000, bringing total cost to around EUR 1.41 million. Costs are lower than in sub-option i) due to lower number of expected essentiality checks and associated reduced workload (e.g. selecting/training examiners).

The annual cost of the Centre in an initial year(s) is expected to be higher due to high number of patents that will go through the system. It is estimated at around EUR 3.7 million (including IT maintenance of EUR 140 000 and depreciation of one-off cost of EUR 141 000).

We estimate that initially around 13 550 patents will have to be checked for essentiality (3 550 patents selected by owners and additional 10 000 patents in order to estimate essentiality shares of patent portfolios per standard and per owner). SEP holders following negative essentiality outcome will demand recheck of up to 885 patents from the self-selected group (patents selected for random check will not be rechecked in order to assure reliability of the sample).[294] Altogether in the first year(s) around 14 500 patents will have to be checked, requiring engagement of around 80 assessors. The cost of assessing this amount of patents is estimated at EUR 72 million.

In the subsequent years as the number of patents subject to checking is expected at 10% of the initial volume, the costs will also be lower. Centre's internal costs are estimated at EUR 1.1 million (including IT maintenance and depreciation as above) and remuneration of examiners at EUR 7.2 million.

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[293] Experts assess that in the EU the number of experts qualified in doing such an assessments stands at around 650 patent attorneys and 800 patent examiners. Based on EPO register of patent attorneys, number of EPO patent examiners and estimation on the number of examiners in the national patent office weighted by the share of EPO patent application in the technical field of telecommunication (IPC H04).

[294] Allowing for appeals to the assessments of randomly sampled patents produces few benefits, and significant costs – appeals are likely to correct a significant share of random assessment error, which is a relatively benign and inconsequential error for purposes of assessing firms' relative portfolio size (false positive and false negative random errors tend to cancel each other out). Appeals are however likely to exacerbate, rather than correct over-confirmation bias, as negative assessments are significantly more likely to be appealed. By reducing random error and increasing bias, appeals make the assessments of firms' relative portfolio sizes less reliable. Source: Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023.

Consequently, over the course of ten years (initial year plus nine subsequent years) the average annual cost of this sub-option is estimated at EUR 15.1 million.

An average registration fee for this sub-option that should cover the costs of the Centre is estimated at EUR 100 per patent. Additionally, SEP holders will have to pay the cost of essentiality checks of EUR 5 000 per patent.

Internal costs of SEP holders connected to preparation of information necessary for registration and filling of forms for all 72 000 patent families is estimated at EUR 2.7 million annually on average during a decade. Additionally, SEP holders may want to submit claim charts for patents selected for essentiality check. This cost is estimated at around EUR 6.4 million annually on average over the course of 10 years.

Costs for users of the register

The option assumes free access to the basic information in the register such as names of SEP holders and their contact details for licensing, the number of SEPs they have registered and the essentiality rate of all registered SEPs. There will be a fee however, for access to information on essentiality of concrete patents or portfolios. The fees for accessing the register should at least cover the costs of the Centre associated with its activities described under PO1 (which is also included in this option). Fees could for instance take form of an annual subscription. In such case we assume that all implementers that are likely to take a license will buy access. As described in Annex 5.1 these are expected to be around 150 large and 40 EU based SMEs, and 190 non-EU firms with subsidiaries in the EU annually. At this level of demand the minimum prices to cover PO1 costs are estimated at EUR 1 700 for large firms and EUR 850 for SMEs and total access for all firms per year at EUR 0.61 million.

Benefits:

Implementers taking a license will benefit from information if patents that are presented to them during negotiations can be more safely assumed to be actually essential. In the same vain, SEP holders would find it easier to prove essentiality to their negotiating partners (also during the cross-licensing negotiations).[295] We estimate that essentiality checks may constitute up to 10% of an average negotiation cost of EUR 108 000.[296]Consequently the average benefits (e.g. cost saved or value of information provided) amounts to up to EUR 10 800 (due to lower value of licenses entered by SME implementers we estimated their benefit at half of this value). With implementers and SEP holders entering an estimated 575 new SEP licenses in the EU per year, respectively, the cumulative value amounts to a maximum of around EUR 6.2 million per year for implementers and the same amount for SEP holders (this includes only licensing agreements concluded in the EU). It assumes that essentiality checks are conducted for every new SEP license that is signed, or that implementers that thus far were not conducting essentiality checks will use (benefit from having) such information during their licensing negotiations. Moreover, free access to the database will be given to judges, with around 35 cases per year concerning SEP licensing in the EU, the savings on expertise on essentiality can amount to EUR 0.4 million.

SEP holders can eliminate identified non-essential patents from their portfolio and avoid payment of patent renewal fees. Some patents would also be lost to validity challenges (as can happen to any other patent). On the other hand, use of patent count for determination of aggregate royalty division

[295] Non-monetary benefits of cross-licensing amount to EUR 4 billion per year, on top of monetary royalty income on cellular standards of EUR 18 billion per year. See Market description.

[296] Average negotiation cost for all SEP licenses granted per year (including both bilateral negotiations where costs can reach millions of EUR and licensing through patent pools where it is close to zero). Own calculations based on Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, pp. 138-139, Table 16.

is expected to incentivise patenting and increase patent fees.[297] In case of sub-option i) the net effect is reduction in the number of patents by around 300[298] a year producing over a decade an average annual savings on patent fees of EUR 11.6 million (which are a loss of revenue to the EU patent offices). In case of sub-option ii) as only a sample of approximately 14% of patents will be checked, the number of patents eliminated is lower than the new patents put into the register. Approximately 1 900[299] new patents will be added to register a year producing over a decade an average annual fee cost of EUR 29 million (which will become a new revenue to the EU patent offices: covering patent examination cost, and net profit of patent offices).[300] As explained in chapter 6, the materialisation of these costs/benefits is however, uncertain.

Finally, it should be noted that only around 15% of the SEP holder costs presented above will apply to firms with headquarters in the EU (based on share of declared SEPs).

Taking cost and benefits together sub-option i) is expected to deliver net costs at around EUR 121 million per year over a decade, while sub-option ii) net cost of EUR 12.3 million. As benefits of both options (excluding the uncertain impact on the number of patents) are the same, option ii) is selected. See tables below for details. The first table shows costs and benefits in the initial year, the subsequent years and a ten-year annual average. The ten-year-average is used in the following tables as well as throughout this document to describe impact of PO2. This is to facilitate reading and ensure comparability with the impacts of other options (which are the same for an initial and subsequent years).

Table 15: Total average incremental annual costs and benefits of PO2 in the initial year and in subsequent years as well as a ten-year-average (PO1 not included)

PO2 (common)	**no. licensing negotiations**	**Initial year**	**Subsequent years**	**10 years average**
Implementers large EU	230	2 484 000	2 484 000	2 484 000
Implementers SME EU	55	297 000	297 000	297 000
Non EU implementers with EU subsidiaries	290	3 132 000	3 132 000	3 132 000
SEP owners	575	6 210 000	6 210 000	6 210 000
	No. of entities			
Access fee large implementers (EU and non-EU with subsidiaries in the EU)	340	- 578 000	- 578 000	- 578 000
Access fee SME implementers	40	- 34 000	- 34 000	- 34 000
judges	35	378 000	378 000	378 000
i) PO2 (all checked)	**patents**			
SEP holder (registration fee)		-5 244 000	-1 494 000	-1 869 000

[297] It should be noted that increase in patenting is not necessary connected with new innovation, but rather with the number of patents that cover an invention.

[298] Discontinuation of around 2 600 patents after approximately five years of maintaining them and registration of approximately 2 300 new patents with intention to keep for 20 years (SEPs are kept longer than other patents due to their value).

[299] Discontinuation of around 400 patents after approximately five years of maintaining them and registration of approximately 2 300 new patents with intention to keep for 20 years.

[300] Based on EPO website: https://www.epo.org/applying/european/unitary/unitary-patent/cost.html and own calculations. We estimate that an average annual fee for obtaining a patent in four EU Member States and maintaining it for 20 years is around EUR 2 000. An average annual saving for discontinuing a patent after five years is around EUR 2 400. In order to assure comparability with other figures in this annex we present average savings over a decade. This means that e.g. annual cost of a new patent acquired in the initial year applies for ten years, while annual cost of a patent acquired in the fifth year applies just for half of that period – calculation not presented.

PO2 (common)	no. licensing negotiations	Initial year	Subsequent years	10 years average
SEP holder (essentiality checks)	72 000 patent families registered and checked initially (+27 500 rechecked), 10% of that in subsequent years	-497 500 000	-49 750 000	-94 525 000
SEP holder, savings on patents maintenance cost		11 600 000	11 600 000	11 600 000
SEP holder claim charts update/preparation	50% of patents updated	-180 000 000	-18 000 000	-34 200 000
SEP holder form filling	72 000 in 1st year, 10% thereafter	-14 400 000	-1 440 000	-2 736 000
EPO and NPO change in patent revenue		-11 600 000	-11 600 000	-11 600 000
total i)		-685 255 000	-58 795 000	-121 441 000
ii) PO2 (50-100+sample)	**patents**			
SEP holder (registration fee)	72 000 patent families registered initially, 10% of that in subsequent years	-3 681 000	-1 091 000	-1 350 000
SEP holder (essentiality checks)	13 550 checked initially (+885 rechecked), 10% in subsequent years	-72 175 000	-7 217 500	-13 713 250
SEP holder, cost of patents registration and maintenance		-29 000 000	-29 000 000	-29 000 000
SEP holder claim charts update/preparation	50% of patents updated	-33 875 000	-3 387 500	-6 436 250
SEP holder form filling	72 000 in 1st year, 10% thereafter	-14 400 000	-1 440 000	-2 736 000
EPO and NPO change in patent revenue		29 000 000	29 000 000	29 000 000
Total ii)		-112 242 000	-1 247 000	-12 346 500

Source: Own assessment based on studies and assumptions

Table 16: Ten-year-average incremental annual costs and benefits of PO2 (PO1 not included)

PO2 (common)	no. licensing negotiations	benefit	cost	Total (+ saving, - cost)
Implementers large EU	230	10 800		2 484 000
Implementers SME EU	55	5 400		297 000
Non EU implementers with EU subsidiaries	290	10 800		3 132 000
SEP owners	575	10 800		6 210 000
	No. of entities			
Access fee large implementers (EU and non-EU with subsidiaries in the EU)	340		1 700	- 578 000
Access fee SME implementers	40		1 500	- 60 000
judges	35	10 800	0	378 000
i) PO2 (all checked)	**patents**			
SEP holder (registration fee)	72 000 patent families registered and checked initially (+27 500 rechecked), 10% of that in subsequent years			-1 869 000
SEP holder (essentiality checks)				-94 525 000

PO2 (common)	no. licensing negotiations	benefit	cost	Total (+ saving, - cost)
SEP holder, savings on patents maintenance cost				11 600 000
SEP holder claim charts update/preparation	50% of patents updated		5 000	-34 200 000
SEP holder form filling	72 000 in 1st year, 10% thereafter			-2 736 000
EPO and NPO change in patent revenue				-11 600 000
total i)				-121 441 000
ii) PO2 (50-100+sample)	**patents**			
SEP holder (registration fee)	72 000 patent families registered initially, 10% of that in subsequent years			-1 350 000
SEP holder (essentiality checks)	13 550 checked initially (+885 rechecked), 10% in subsequent years			-13 713 250
SEP holder, cost of patents registration and maintenance				-29 000 000
SEP holder claim charts update/preparation	50% of patents updated		5 000	-6 436 250
SEP holder form filling	72 000 in 1st year, 10% thereafter		200	-2 736 000
EPO and NPO change in patent revenue				29 000 000
Total ii)				-12 346 500

Source: Own assessment based on studies and assumptions

Table 17: Summary of ten-year-average incremental annual costs and benefits of PO2 (PO1 not included): A – sub-option i); B – sub-option ii)

A – sub-option i)		**EU**	**non-EU**	Total
SEP implementers	Costs	- 306 000	- 306 000	- 612 000
	Benefits	2 875 500	3 226 500	6 102 000
	Net	2 569 500	2 920 500	5 490 000
SEP owners	Costs	-19 999 500	-113 330 500	-133 330 000
	Benefits	2 699 850	15 299 150	17 999 000
	Net	-17 299 650	-98 031 350	-115 331 000
Subtotal (net effect for implementers and owners)		-14 730 150	-95 110 850	-109 841 000
EPO/NPO benefit		-11 600 000		-11 600 000
Total net benefit		-26 330 150	-95 110 850	-121 441 000

B – sub-option ii)		**EU**	**non-EU**	Total
SEP implementers	Costs	- 306 000	- 306 000	- 612 000
	Benefits	2 875 500	3 226 500	6 102 000
	Net	2 569 500	2 920 500	5 490 000
SEP owners	Costs	-7 985 325	-45 250 175	-53 235 500
	Benefits	959 850	5 439 150	6 399 000
	Net	-7 025 475	-39 811 025	-46 836 500
Subtotal (net effect for implementers and owners)		-4 455 975	-36 890 525	-41 346 500
EPO/NPO benefit		29 000 000		29 000 000
Total net benefit		24 544 025	-36 890 525	-12 346 500

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

Table 18: Ten-year-average total annual costs and benefits of option PO2 (sub-option ii) by main categories of affected parties and their origin (including PO1)

		EU	**non-EU**	Total
SEP implementers	Costs	- 306 000	- 306 000	- 612 000
	Benefits	4 745 500	4 776 500	9 522 000
	Net	4 439 500	4 470 500	8 910 000
SEP owners	Costs	-7 985 325	-45 250 175	-53 235 500
	Benefits	1 335 600	7 568 400	8 904 000
	Net	-6 649 725	-37 681 775	-44 331 500
Subtotal (net effect for implementers and owners)		-2 210 225	-33 211 275	-35 421 500
EPO/NPO benefit		29 000 000		29 000 000
Total net benefit		26 789 775	-33 211 275	-6 421 500

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

PO3: SEP register with essentiality checks and conciliations

Costs:

Competence Centre's initial cost would include creation of a "roster" of conciliators. IT cost would include creating a secured channel for communication/exchange of documents between conciliators and parties, creation of an internal secured register of conciliation reports, as well as payment system. These costs are expected at around EUR 130 000 and EUR 40 000 respectively.

Recurring costs would include management of the choice of conciliators, payment processing and providing other back-office support to conciliators. Additionally, there would be IT maintenance and depreciation of one-off costs. These costs are estimated at EUR 30 000 (for around 70 conciliations per year), EUR 8 000 and EUR 17 000 respectively, bringing the total of EUR 55 000 per year.

On average a conciliation is expected to take 40 hours of conciliator's time, at hourly wage of EUR 500. The average cost of engaging a conciliator is estimated at EUR 20 000.

We expect around 35 conciliation per year (based on court litigation information) and another 35 conciliations to help in FRAND determination. At such demand, the average cost of conciliation to cover all cost of the Centre and conciliator is estimated at EUR 20 800.

Benefits:

Based on WIPO experience alternative dispute resolution mechanism can reduce need for court proceeding by up to 70%. This would mean that around 24 conciliations would result in agreement, and court costs (first instance, estimated average at around EUR 170 000 in the EU)[301] would be avoided. While for 30% or 11 cases the matter would still end in court, albeit with additional evidence from the conciliator's report. In case of the remaining 35 conciliations the value of assistance in reaching FRAND terms and conditions is estimated at around EUR 97 000 (accounting for approximately 90% of an average negotiation cost of EUR 108 000).[302] Taking also costs into account the benefits delivered by this option are estimated at EUR 6 million per year. See table below for a summary.

Table 19: Average incremental annual costs and benefits of PO3 (PO1 and PO2 not included)

[301] There are strong variations around this average, court costs could be much higher.
[302] Average negotiation cost for all SEP licenses granted per year (including both bilateral negotiations where costs can reach millions of EUR and licensing through patent pools where it is close to zero). Own calculations based on Baron, J., Arque-Castells, P., Leonard, A., et al., *Empirical Assessment of Potential Challenges in SEP Licensing*, European Commission, DG GROW, pp. 138-139, Table 16.

PO3	no. affected	benefit	cost	Total (+ saving, - cost)
Cases (that will not go to court)	24	170 000		4 080 000
Help in FRAND determination	35	97 200		3 402 000
Fees	70		20 800	-1 456 000
total				6 026 000

Source: Own assessment based on studies and assumptions

Table 20: Summary of average incremental annual costs and benefits of PO3 (PO1 and PO2 not included)

		EU	non-EU	Total
SEP implementers	Costs	- 364 000	- 364 000	- 728 000
	Benefits	1 870 500	1 870 500	3 741 000
	Net	1 506 500	1 506 500	3 013 000
SEP owners	Costs	- 109 200	- 618 800	- 728 000
	Benefits	561 150	3 179 850	3 741 000
	Net	451 950	2 561 050	3 013 000
Total net benefit		1 958 450	4 067 550	6 026 000

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

Table 21: Average total annual costs and benefits of option PO3 by main categories of affected parties and their origin (including PO1 and PO2 sub-option ii)

		EU	non-EU	Total
SEP implementers	Costs	- 670 000	- 670 000	-1 340 000
	Benefits	6 616 000	6 647 000	13 263 000
	Net	5 946 000	5 977 000	11 923 000
SEP owners	Costs	-8 094 525	-45 868 975	-53 963 500
	Benefits	1 896 750	10 748 250	12 645 000
	Net	-6 197 775	-35 120 725	-41 318 500
Subtotal (net effect for implementers and owners)		- 251 775	-29 143 725	-29 395 500
EPO/NPO benefit		29 000 000		29 000 000
Total net benefit		28 748 225	-29 143 725	- 395 500

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

PO4: Aggregate royalty for SEP

Costs:

Competence Centre's initial costs would be entirely covered by PO3 as conciliators for the aggregate royalty expert assessment panel would come from the roster created in PO3. IT cost would include changes to the register web interface to publish aggregate royalties and are estimated at EUR 25 000.

Recurring costs would include back-office support for expert assessment, including publication of call for interest, reception of position papers, preparation of meetings and management of payments, all estimated at around EUR 40 000 for three expert determinations per year. Additionally, there would be IT maintenance and depreciation of one-off costs of EUR 5 000 and EUR 2 500 respectively. Together the average costs are estimated at EUR 47 500 per year.

With expected up to 3 expert assessments per year,[303] the cost per assessment is estimated at EUR 135 800. It consists primarily of remuneration for an estimated 240 hours of work of conciliators (hourly wage EUR 500) on each case, as well as a proportion of cost of the Competence Centre.

Benefits:

Publication of an aggregate royalty is expected to facilitate negotiations for all implementers who currently take license in the EU and pay license fee. As estimated in Annex A5.1 these concern around 575 new SEP licenses involving EU stakeholders signed per year. The value of information on aggregate royalty is estimated to save around EUR 22 000 in negotiation costs (accounting for approximately 20% of an average negotiation cost of EUR 108 000).[304]

Taking also costs into account the net benefits delivered by this option are estimated at EUR 25 million per year. See table below for a summary.

Table 22: Average incremental annual costs and benefits of PO4 (PO1, PO2 and PO3 not included)

PO4	**no. affected**	**benefit**	**cost**	**Total (+ saving, - cost)**
Negotiation savings implementer EU	285	22 000		6 270 000
Negotiation savings implementer non-EU with subsidiaries in the EU	290	22 000		6 380 000
SEP holders	575	22 000		12 650 000
Imp and SEP hold - Expert panel	3		135 800	- 407 400
total				24 892 600

Source: Own assessment based on studies and assumptions

Table 23: Summary of average incremental annual costs and benefits of PO4 (PO1, PO2 and PO3 not included)

		EU	**non-EU**	Total
SEP implementers	Costs	- 101 850	- 101 850	- 203 700
	Benefits	6 270 000	6 380 000	12 650 000
	Net	6 168 150	6 278 150	12 446 300
SEP owners	Costs	- 30 555	- 173 145	- 203 700
	Benefits	1 897 500	10 752 500	12 650 000
	Net	1 866 945	10 579 355	12 446 300
Total net benefit		8 035 095	16 857 505	24 892 600

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

Table 24: Average total annual costs and benefits of option PO4 by main categories of affected parties and their origin (including PO1, PO2 sub-option ii) and PO3)

		EU	**non-EU**	*Total*
SEP implementers	Costs	- 771 850	- 771 850	-1 543 700
	Benefits	12 886 000	13 027 000	25 913 000
	Net	12 114 150	12 255 150	24 369 300

[303] It should be noted that it is expected that SEP holders will provide ex-ante aggregate royalty themselves in most cases, and expert panel will be used only in case they did not or when there is a major disagreement on the level announced.
[304] Cost savings may result from the fact that the Competence Centre's guidance on an aggregate royalty reduces the need for parties to carry out their own assessments of such an aggregate royalty, or from the fact that the availability of objective benchmarks for a FRAND rate reduces the need for other expenses related to the conduct of SEP licensing negotiations.

		EU	non-EU	*Total*
SEP owners	Costs	-8 125 080	-46 042 120	-54 167 200
	Benefits	3 794 250	21 500 750	25 295 000
	Net	-4 330 830	-24 541 370	-28 872 200
Subtotal (net effect for implementers and owners)		7 783 320	-12 286 220	-4 502 900
EPO/NPO benefit		*29 000 000*		*29 000 000*
	Total net benefit	36 783 320	-12 286 220	24 497 100

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

PO5: SEP clearing house

Costs:

Competence Centre's initial costs would include set up of clearing house's process, criteria, accounts, payments system and verification system. IT cost would be also connected to the payment and royalties' distribution system. These are estimated at EUR 260 000 and EUR 40 000 respectively.

Running costs of the clearing house would include managing all the payments and license agreements including handling incoming payments from implementers, transferring proportionate amounts to SEP holders, handling updates to information (e.g. on expected sales), control and verification of payments. They are estimated at EUR 220 000 per year. Additionally, there would be IT maintenance and depreciation of one-off costs of EUR 8 000 and EUR 30 000 respectively. Together the average costs are estimated at EUR 258 000 per year.

In case SEP holders cannot reach an agreement over allocation of aggregate royalty among them, they can request assistance of the Centre's facilitator. Such request is expected to occur on average 1.5 times per year over a decade. Cost of conciliation is borne by SEP holders and amounts to EUR 120 000 (one conciliation, equivalent to remuneration for an average 240 hours of conciliator's work at EUR 500 per hour).

With expected average annual number of payments at around 3 000 during a decade,[305] the transaction processing cost to be borne by the implementer per payment is estimated at around EUR 95.

Benefits:

Clearing house can strongly reduce the need for SEP license negotiations. On top of negotiation savings/benefits delivered by PO2 and PO4 it is expected to help to reduce the remaining 70% of an average negotiation cost of 108 000 EUR. While the demand for use of clearing house services will depend on the implementer's assessment of its ability to get a better deal in bilateral negotiations, we estimate that the majority of implementers will want to use the clearing house for at least some of the standards they have. The reduction in number of licensing negotiations is thus estimated at 250 for EU based firms and 250 for non-EU based firms with subsidiaries in the EU.

Taking also costs into account the net benefits/savings delivered by this option are estimated at EUR 76 million per year. See table below for a summary.

[305] Assuming one payment per year, and that nearly all implementers that is around 300 EU-based and around 250 non-EU based (with EU subsidiaries) will use this facility for at least some of their license agreements. Note that the number of payments cumulate as in subsequent years not only new licenses are added but also payments for the existing ones have to be made.

Table 25: Average incremental annual costs and benefits of PO5 (PO1, PO2, PO3 and PO4 not included)

PO5	**no. licensing negotiations**	**benefit**	**cost**	**Total (+ saving, - cost)**
Negotiation savings for EU implementers	250	75 600		18 900 000
Negotiation savings for non-EU implementers with subsidiaries in the EU	250	75 600		18 900 000
SEP holders savings	500	75 600		37 800 000
Conciliators assistance in SEP holders' negotiations on division of aggregate royalty (not obligatory, on demand only)	1.5		120 000	- 180 000
Payment fees per year	2 750		94	- 258 000
total				75 162 000

Source: Own assessment based on studies and assumptions

Table 26: Summary of average incremental annual costs and benefits of PO5 (PO1, PO2, PO3 and PO4 not included)

		EU	**non-EU**	Total
SEP implementers	Costs	- 129 000	- 129 000	- 258 000
	Benefits	18 900 000	18 900 000	37 800 000
	Net	18 771 000	18 771 000	37 542 000
SEP owners	Costs	- 27 000	- 153 000	- 180 000
	Benefits	5 670 000	32 130 000	37 800 000
	Net	5 643 000	31 977 000	37 620 000
Total net benefit		24 414 000	50 748 000	75 162 000

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

Table 27: Average total annual costs and benefits of option PO5 by main categories of affected parties and their origin (including PO1, PO2 sub-option ii), PO3 and PO4)

		EU	**non-EU**	Total
SEP implementers	Costs	- 900 850	- 900 850	-1 801 700
	Benefits	31 786 000	31 927 000	63 713 000
	Net	30 885 150	31 026 150	61 911 300
SEP owners	Costs	-8 152 080	-46 195 120	-54 347 200
	Benefits	9 464 250	53 630 750	63 095 000
	Net	1 312 170	7 435 630	8 747 800
Subtotal (net effect for implementers and owners)		32 197 320	38 461 780	70 659 100
EPO/NPO benefit		29 000 000		29 000 000
Total net benefit		61 197 320	38 461 780	99 659 100

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

Competence Centre – summary of costs and fees

Anticipated costs of the Competence Centre were enumerated above for each option, this section summarises these costs. It also summaries fees that are expected to cover the Centre's costs.

Table 28: One-off and recurrent costs of the Competence Centre per option and approximation of fees to break even.

	PO1	PO2 (sub-option ii)			PO3	PO4	PO5	Preferred option PO1 to PO4
One-off costs (EUR thousands)								
One off	760	710			130	0	260	1 600
One off IT	50	700			40	25	40	815
Total One off	810	1 410			170	25	300	2 415
	PO1	**PO2 (sub-option ii)**			**PO3**	**PO4**	**PO5**	**Preferred option** PO1 to PO4**
		Year 1	Year 2 to 10	10-year-avg.				
Recurrent costs (EUR thousands)								
running costs	430	3 400	810	1 069	30	40	220	1 569
IT maintenance	10	140	140	140	8	5	8	163
depreciation of One-off*	81	141	141	141	17	2.5	30	241.5
total	521	3 681	1 091	1 350	55	47.5	258	1 973.5
Fee calculations (EUR) - to cover Centre's costs (without external experts costs)								
Action		Patent registrations:			Conciliations	Expert opinion	Payments	
Quantity per year		72 000	7 200	13 680	70	3	2 750	
Fee per case*** (EUR, rounded)	Free ****	50	150	100	800	15 800	95	

** One-off cost depreciated over 10 years; ** PO2 using 10-year-average; *** total recurrent cost divided by quantity per year**** cost of PO1 (including additional external cost of EUR 90 000 for studies) will be covered by fees to access the PO2 register: estimated at EUR 1 700 for large and EUR 850 for SMEs.*
Source: Own assessment based on EUIPO input

Summary of estimated average remunerations of external experts:

- PO1: studies: avg. EUR 30 000 per study
- PO2: essentiality checks: EUR 5 000 per check
- PO3: conciliation: EUR 20 000 per average conciliation
- PO4: expert opinion: EUR 120 000 per average opinion
- PO5: conciliator to recommend aggregate royalty allocation method: EUR 120 000 per average recommendation

Impacts difficult to assess – impact on royalties income of SEP holders and on price of SEP embedding products for EU customers

There are impacts which are difficult to assess, such as whether or not this initiative will have impact on the average royalties firms will have to pay for implementing standards, the number of SEP holders actively licensing their SEPs, or the number of implementers paying royalties. Furthermore, other market developments not related to this initiative (e.g. rise of IoT, new patent pools/patent pools policies) may influence both royalties and number of implementers. These impacts may further determine indirect effects, such as effects on firms' incentives to contribute their innovative

technologies to standards development, or implement standards potentially subject to SEPs and innovate at the product level.

Worldwide royalty income on cellular standards is estimated at USD 18 billion in 2015[306] and if the share of EU licensees in that royalty burden is proportional to the EU GDP in the world (approximately 1/6) then EU firms pay approximately USD 3 billion (around EUR 3 billion assuming currency parity) on SEP royalties each year.

In case global royalty levels (income) would go down by just 1% (or number of paying implementers globally would go down by 1%), the savings for the EU implementers are estimated at EUR 30 million and almost equivalent or slightly lower figure represents losses of the EU SEP holders.[307] In case royalty levels increase, the impacts will be reversed. Thus, the impacts of changes to global SEP royalty rates (or change in number of implementers paying current levels of royalties) on EU based SEP holders and implementers largely cancel each other out. A different redistribution of economic surplus may, however, affect innovation and standard implementation incentives in ways that are difficult to predict.

In case change of royalty levels (or change in number of implementers) is limited only to the EU based firms, the difference between impacts on the EU based implementers and SEP holder may be more pronounced. For instance, if the share of SEPs held by EU based SEP holders continues to go down and/or share of EU licensed implementers will increase, a cumulative negative impact on all EU implementers will be more significant than the cumulative positive impact on the EU based SEP holders (especially if the changes are significant, e.g. resulting in double digit change of royalty income).

Impact on customers

Many implementers currently use standards without having a license. Thus, effect on availability of SEP embedding products is unknow. We expect that lower transaction costs will promote license-based applications and more implementers will take a license. It may be just a shift from unlicensed products to licensed products, or real increase in technology take-up resulting in more SEP embedding products on the market. Independently of the effects of this proposal, rise of the Internet of Things (IoT) applications is expected to increase the number of SEP embedding products on the market.

Impact on SEP price (royalties paid by implementers) is unknow as described above. Announcements of aggregate royalties and FRAND determination process may (but do not have to) contribute to lowering the royalties paid by implementers.

Consequently, we have two effects working in different directions: i) potentially more firms taking a license (increasing implementers costs) and ii) potentially lower royalties paid (decreasing implementers cost). Finally, the impact on prices for final customers will depend on the competition on a given product market: any change in royalties paid by producers may be internalised by a firm or passed on to final customers.

Impacts of the preferred option

The below table presents a summary of quantifiable costs and benefits brought by the preferred option. The option is expected to produce annual savings of around EUR 24.5 million per year during a decade.

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[306] CRA, Régibeau, P., De Coninck, R. and Zenger, H., *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing: A Report for the European Commission*, 2016, p. 57, https://ec.europa.eu/docsroom/documents/48794?locale=en.

[307] Since we estimate revenue of the EU based SEP holder using an approximate share of their SEPs in the total number of declared SEPs (15%) which is similar to the EU GDP share in global economy used to calculate implementers' savings.

Table 29: Ten-year-average annual costs and benefits of the preferred option PO4 (consisting of incremental costs and savings of each option it consists of)

	no. affected	**benefit**	**cost**	**Total (+ saving, - cost)**
PO1 (guidelines and Centre)				
SME trainings	80	1 500	0	120 000
Implementers EU	230	5 000	0	1 150 000
Non EU implementers with EU subsidiaries	190	5 000	0	950 000
SEP owners	261	5 000	0	1 305 000
judges/legal counsels/other	480	5 000	0	2 400 000
subtotal PO1				*5 925 000*
PO2 (register, 50-100+sample)	**no. licensing negotiations**			
Implementers large EU	230	10 800		2 484 000
Implementers SME EU	55	5 400		297 000
Non EU implementers with EU subsidiaries	290	10 800		3 132 000
SEP owners	575	10 800		6 210 000
	No. of entities			
Access fee large implementers (EU and non-EU with subsidiaries in the EU)	340		1 700	- 578 000
Access fee SME implementers	40		1 500	- 60 000
judges	35	10 800	0	378 000
	patents			
SEP holder (registration fee)	72 000 patent families registered initially, 10% of that in subsequent years			-1 350 000
SEP holder (essentiality checks)	13 550 checked initially (+885 rechecked), 10% in subsequent years			-13 713 250
SEP holder, cost of patents registration and maintenance				-29 000 000
SEP holder claim charts update/preparation	50% of patents updated		5 000	-6 436 250
SEP holder form filling	72 000 in 1st year, 10% thereafter		200	-2 736 000
EPO and NPO change in patent revenue				29 000 000
subtotal: additions of PO2				*-12 346 500*
PO3 (conciliation)	**no. affected**			
Cases (that will not go to court)	24	170 000		4 080 000
Help in FRAND determination	35	97 200		3 402 000
Fees	70		20 800	-1 456 000
subtotal: additions of PO3				*6 026 000*
PO4 (aggregate royalty)	**no. licensing negotiations**			
Negotiation savings implementer EU	285	22 000		6 270 000
Negotiation savings implementer non-EU with subsidiaries in the EU	290	22 000		6 380 000
SEP holders	575	22 000		12 650 000
Imp and SEP hold - Expert panel	3		135 800	- 407 400

	no. affected	benefit	cost	Total (+ saving, - cost)
subtotal: additions of PO4				*24 892 600*
Benefits/Savings of the preferred option PO4				**24 497 100**

Source: Own assessment based on studies and assumptions

The majority of quantifiable benefits will accrue to standards implementers, while SEP holders are expected to face additional costs (mainly due to PO2). The European patent office/national patent offices are also expected to benefit from new patent revenue. The tables below summarise the effects of the preferred option i) in the initial year (when there will be significantly more patents registrations and essentiality checks); ii) in the subsequent years (when the number of patent registrations and essentiality checks will account for approximately 10% of the initial numbers) and iii) as a ten-year-average annual costs and benefits – which is used throughout the document.

Table 30: Average annual costs and benefits of the preferred option PO4 in the initial year by main categories of affected parties and their origin

		EU	non-EU	*Total*
SEP implementers	Costs	- 771 850	- 771 850	-1 543 700
	Benefits	12 886 000	13 027 000	25 913 000
	Net	12 114 150	12 255 150*	24 369 300
SEP owners	Costs	-23 109 405	-130 953 295	-154 062 700
	Benefits	3 794 250	21 500 750	25 295 000
	Net	-19 315 155	-109 452 545	-128 767 700
Subtotal (net effect for implementers and owners)		-7 201 005	-97 197 395	-104 398 400
EPO/NPO benefit		29 000 000		29 000 000
	Total net benefit	21 798 995	-97 197 395	-75 398 400

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

Table 31: Average annual costs and benefits of the preferred option PO4 in subsequent years by main categories of affected parties and their origin

		EU	non-EU	*Total*
SEP implementers	Costs	- 771 850	- 771 850	-1 543 700
	Benefits	12 886 000	13 027 000	25 913 000
	Net	12 114 150	12 255 150*	24 369 300
SEP owners	Costs	-6 460 155	-36 607 545	-43 067 700
	Benefits	3 794 250	21 500 750	25 295 000
	Net	-2 665 905	-15 106 795	-17 772 700
Subtotal (net effect for implementers and owners)		9 448 245	-2 851 645	6 596 600
EPO/NPO benefit		29 000 000		29 000 000
	Total net benefit	38 448 245	-2 851 645	35 596 600

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

Table 32: Ten-year-average annual costs and benefits of the preferred option PO4 by main categories of affected parties and their origin

		EU	non-EU	*Total*
SEP implementers	Costs	- 771 850	- 771 850	-1 543 700
	Benefits	12 886 000	13 027 000	25 913 000
	Net	12 114 150	12 255 150*	24 369 300

		EU	non-EU	*Total*
SEP owners	Costs	-8 125 080	-46 042 120	-54 167 200
	Benefits	3 794 250	21 500 750	25 295 000
	Net	-4 330 830	-24 541 370	-28 872 200
Subtotal (net effect for implementers and owners)		7 783 320	-12 286 220	-4 502 900
EPO/NPO benefit		29 000 000		29 000 000
	Total net benefit	36 783 320	-12 286 220	24 497 100

** concerns non-EU implementers with subsidiaries in the EU*
Source: Own assessment based on studies and assumptions

Analysing geographical distribution of quantifiable impacts of the preferred option in the EU, the benefits should outweigh the cost in case of companies from all but three (FI, SE and LU) EU Member States.

Table 33: Ten-year-average annual impact on costs and benefits of the preferred option PO4 by main categories of affected parties and per EU Member States.

Member State	**SEP Owners**	**SEP Implementers**	**Net impacts**
DE	- 363 162	3 274 007	2 910 844
IT	- 6 682	1 625 624	1 618 942
FR	- 73 497	1 316 755	1 243 258
ES		933 108	933 108
NL	- 259 402	916 852	657 450
PL		562 466	562 466
CZ		399 904	399 904
BE		256 849	256 849
HU		253 597	253 597
AT		211 331	211 331
IE	- 7 075	201 577	194 503
EL		188 572	188 572
RO		182 070	182 070
SK		169 065	169 065
PT		165 814	165 814
BG		133 301	133 301
HR		94 286	94 286
DK		61 774	61 774
SI		58 522	58 522
LT		52 020	52 020
MT		42 266	42 266
EE		26 010	26 010
LV		13 005	13 005
CY		6 502	6 502
LU	- 53 846	16 256	- 37 589
SE	-1 413 739	487 687	- 926 052
FI	-2 153 427	464 928	-1 688 499
Total	**-4 330 830**	**12 114 150**	**7 783 320**

Assumptions: Distribution of cost per SEP holder according to estimated share of declared SEPs, distribution of benefits among implementers according to estimated number of companies affected per country (see Annex A5.1)
Source: Own assessment based on studies and assumptions

The following table summarises the fees and other costs of the preferred option on market participants.

Table 34: Summary of fees and other cost of the preferred option

Action:	**Approx. cost**	**Total avg. annual cost (€ million)**
Costs introduced by regulation		
Patent registration	€100 per patent	1.4
Essentiality checks	€ 5 000 per check	13.7

Action:	Approx. cost	Total avg. annual cost (€ million)
Conciliation fees and conciliator remuneration	€800 fee of EUIPO, avg. €20 000 fee of conciliator	1.5
Aggregate royalty determination process	€15 800 fee of EUIPO, avg. €120 000 fee of conciliators panel	0.4
Register access fee (basic access for free)	€1700 large firms, €850 SMEs	0.6
Total fees and expert remuneration:		*17.6*
Firms' internal costs to comply		
Filling forms (OIOO eligible cost)	€200 per patent	2.7
Update claim charts	€2 500 per patent	6.4
Total internal costs:		*9.1*

Source: Own assessment based on studies and assumptions

Are these costs significant for SEP holders?

Looking at the cost of the preferred option especially on SEP owners, one should put these numbers into perspective. For instance, analysing just the cost applicable to the EU based SEP owners, which amounts to around EUR 8.1 million per year (see *Table 32*), the share applicable to the SE and FI SEP holders amounts to around EUR 6.7 million (as they own approximately 80% of EU SEPs). This cost will fall on two EU firms, Nokia and Ericsson. As discussed in Annex A5.1 the combined annual revenue of these firms amounts to EUR 45 billion, and R&D expenditures to EUR 8 billion. The additional costs due to the preferred option will constitute respectively around 0.015% of the revenue and 0.084% of R&D budget. Thus, it seems affordable to these firms.[308]

As regards other SEP holders also from outside of the EU, the cost of essentiality check amounts to approximately 11% of the fees that should be paid for maintaining a European Patent for 20 years in four Member States; 0.4% of the value of an essential patent if its use is limited only to the territory of the EU and 0.06% when it is used globally.

Table 35: Cost of essentiality check in perspective of other costs or incomes on SEP

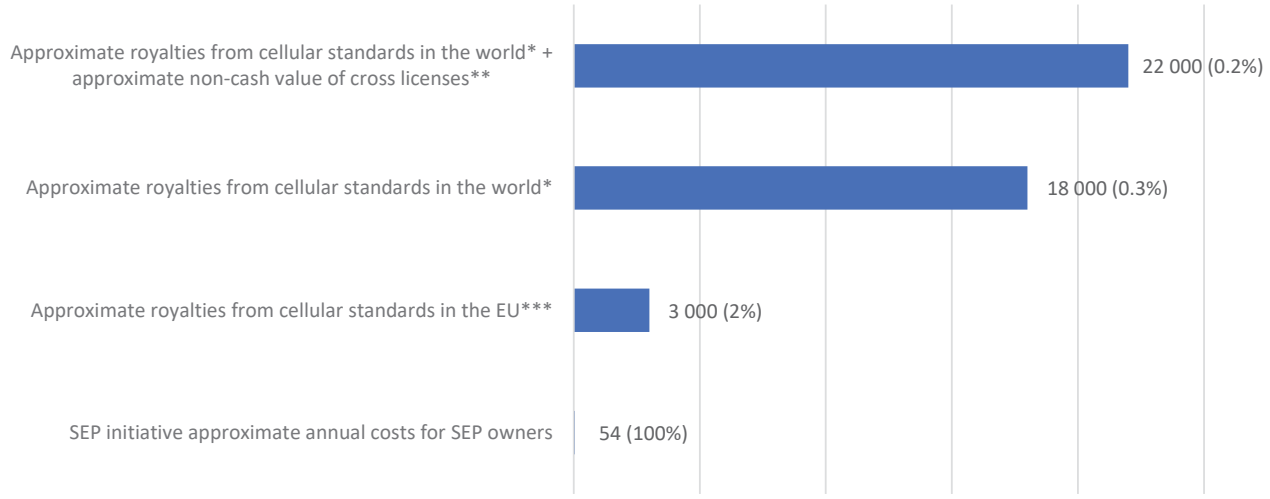
	EUR	*% of cost of an essentiality check*
Essentiality check per patent	5 000	100.0%
Cost of maintaining a European Patent for 20 years in four Member States	44 420	11.3%
Value of an essential patent to SEP holder (net present value for 10 years of collecting royalties)	Avg. 8 000 000 (EUR 6 to 10 million)	0.06%
Value of an essential patent to SEP holder (limited to EU only) (net present value for 10 years of collecting royalties)	Avg. 1 350 000 (EUR 1 to 1.7 million)	0.4%

Source: EPO for European patent: https://www.epo.org/applying/european/unitary/unitary-patent/cost.html; Baron, J., Essentiality Checks for Potential SEPs – Framework for Assessing the Impact of Different Policy Options, European Commission, DG GROW, 2023, p.45 on the value of an essential patent

The next figure compares the total average annual cost of the new SEP system (excluding benefits) for SEP holders to the total annual estimated revenues on cellular standards.

[308] Additionally, these two firms incur large expenditures on SEP related litigations. Thus, they could benefit more than average firm from lowering of litigation costs brought by the preferred option.

Figure 17: Total average annual costs (for SEP owners) of the new system in comparison to estimated annual revenues from cellular standards (EUR million + in brackets: cost of SEP initiative as % of a value of a given line)



** CRA(2016), ** Sidak (2016), *** using EU GDP as a proxy (approx. 1/6 of 18 billion)*
Note: USD values converted to EUR at 1:1.
Source: Own calculation based on studies

A7.2 Aggregate royalty

Results of Literature Analysis

An aggregate royalty for a standard is the royalty due for all SEPs on the standard. It is the starting point in a top-down determination of the royalty to be paid for a given portfolio. Such an approach was taken in the landmark decision by the U.S. District Court for the Central District of California in the litigation between TCL Communications and Ericsson, which "offers a strong endorsement of 'top down' methodologies for the calculation of SEP royalties" (Contreras, 2017a).[309] As Contreras (2017b, p. 690)[310] notes, "[t]op-down approaches avoid many drawbacks associated with bottom-up approaches in which royalties for individual SEPs are assessed, often in an inconsistent and piecemeal manner, without regard for the other SEPs that cover the standard."

Economically, an aggregate royalty makes sense because implementers value the standard as a whole, not a collection of inventions represented by some incomplete portfolio of SEPs. It may also help to overcome problems of royalty stacking, a modern version of Cournot's (1838)[311] well-known problem that the independent pricing of complementary goods – here: licenses to different SEP portfolios on the same standard – leads to excessive prices, above those that a single party offering all those goods jointly would charge. Geradin et al. (2008)[312], in "assess[ing] the case for royalty stacking within standards […] find the evidentiary support weak at best." In contrast, Lemley and Shapiro (2007)[313] "using third-generation cellular telephones and Wi-Fi as leading examples, […] illustrate that royalty stacking can become a very serious problem, especially in the standard-setting context where hundreds or even thousands of patents can read on a single product standard." A clear illustration of the problem of royalty stacking is provided by the decision of the U.S. District Court of the Western District of Washington at Seattle in Microsoft Corp. v. Motorola, Inc. in 2013. Commenting on Motorola's royalty demands for its SEPs on the Wi-Fi (802.11) standard, the court noted: "If each of these 92 entities [owners of Wi-Fi SEPs] sought royalties similar to Motorola's request of 1.15 % to 1.73% of the end-product price, the aggregate royalty to implement the 802.11 Standard, which is only one feature of the Xbox product, would exceed the total product price. The court concludes that a royalty rate that implicates such clear stacking concerns cannot be a RAND royalty rate."[314] Contreras (2015)[315] makes an observation that might reconcile the contradictory pieces of evidence above: "A relevant factor in determining the incremental value of a particular patented technology must be the number of additional patented technologies included in the same product. […] What is less relevant is whether the accused infringer is then paying royalties to other patent holders, and in what amounts." This logic is plausible since, if some SEP holders do not

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[309] Contreras, J. L., 'TCL v. Ericsson: The First Major US Top-Down FRAND Royalty Decision. Ericsson: The First Major US Top-Down FRAND Royalty Decision. Patently-O, December 2017, https://dc.law.utah.edu/cgi/viewcontent.cgi?article=1083&context=scholarship.

[310] Contreras, J. L., 'Aggregated royalties for top-down FRAND determinations: revisiting "joint negotiation"', *The Antitrust Bulletin*, 2017, Vol. 62, Issue 4, pp. 690-709, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3051502.

[311] Cournot, A. A., *Recherches sur les principes mathématiques de la théorie des richesses*, L. Hachette, 1838, https://gallica.bnf.fr/ark:/12148/bpt6k6117257c.texteImage.

[312] Geradin, D., Layne-Farrar, A., and Padilla, A. J., 'The complements problem within standard setting: Assessing the evidence on royalty stacking', *Boston University Journal of Science & Technology Law*, January 2008, Vol. 14, Issue 2, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=949599. The authors acknowledge financial support from Qualcomm.

[313] Lemley, M. A., and Shapiro, C., 'Patent holdup and royalty stacking', *Texas Law Review*, 2007, Vol. 85, pp. 1991-2049, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=923468.

[314] Microsoft Corp. v. Motorola, Inc., Findings of Fact and Conclusions of Law, 2013 U.S. Dist. W.D. Wash., Apr. 25, 2013, at 456.

[315] Contreras, J. L., 'Standards, royalty stacking and collective action', *CPI Antitrust Chronicle*, March 2015, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2587954.

demand royalties, there is no reason why those should be collected by other SEP holders that do enforce their patents; rather, consumers should benefit through lower prices that will likely result from a reduced SEP royalty burden. In any case, no matter if the problem of royalty stacking is weak or serious, an explicit aggregate royalty should help to mitigate it.

Ex-ante aggregate royalty

As aggregate royalty would be determined before the development of the standard starts potential contributors could decide whether they would like to contribute their technologies to the standardisation process knowing the extent to which they may be rewarded if their contribution is accepted into the standard. Further, having more certainty with such ex-ante aggregate royalty can help address the issue of royalty stacking[316] and possibly resolve any risks of hold-up, to some extent.

The ex-ante aggregate royalty does not create price competition between technologies competing for inclusion into the standard (this is an aggregate royalty). Technical contributions will be selected based on technical merit. There is, thus, less pressure on the individual potential royalties. The likelihood that individual contributors will be dissuaded from contributing is lower.

"… coordinated pricing of strict complements may allow limiting potentially excessive royalty requests on the part of individual licensors, thereby leading to lower final consumer prices and hence more successful commercialization of end products. This mutual benefit is broadly recognised by all parties."[317]

Defining an aggregate royalty before a standard comes to the market benefits both standard contributors and standard implementers as it increases business certainty in terms of cost planning and potential benefits. It is, however, very difficult to establish a fair value for a standard before it is even developed, and to predict the success, nature and scope of implementations. There may also be a lack of visibility to future products that may use the standard, as is the case with emerging IoT segments and their use of connectivity standards, for example. As a result, the ex-ante aggregate royalty may either overestimate the significance of the technology (in which case the standard will not be used, unless the aggregate royalty is reviewed and adapted) or underestimate (in which case, the standards will lose potentially superior technologies which were not contributed because of the low incentives to do so). A mechanism should therefore exist to adjust such ex-ante aggregate royalty once the standard is actually being implemented.

[316] In the literature on vertically related markets the royalty stacking problem is known as the double marginalization problem: the pub would mark up on the price at which it buys the beer from brewer without taking into consideration that this reduces the sales for the brewers. Consequently, beer prices to pub customers should go up when brewers are forced to divest pubs.

[317] For detailed explanation please see CRA, Régibeau, P., De Coninck, R. and Zenger, H., *Transparency, Predictability, and Efficiency of SSO-based Standardization and SEP Licensing: A Report for the European Commission*, 2016, Section 5.1.2, pp. 43-45, https://ec.europa.eu/docsroom/documents/48794?locale=en.

A7.3 WTO/TRIPS compatibility

To ensure effective IPR protection on an international level, the Agreement on trade related aspects of intellectual property (TRIPS) is an essential part of the WTO agreement. The specifics of the rights of the patent holder are outlined in Articles 27, 28, 41 and 44 of the TRIPS agreement. Article 28(1) TRIPS establishes the basic rights of the patent holder, which is to preclude others without consent from the acts of making, using, selling, offering for sale or importing the patented product, or using the patented process (including importing products made with the process).

The imposition of an obligation to condition SEP enforcement upon registration in the SEP register and to participate in a FRAND determination procedure before court litigation commences (conciliation) could be seen as limiting the right of SEP holders to prevent the use of the SEP owner's patents without their consent.

However, the exclusive rights of the patent owner are not absolute rights, just like other property rights. According to Article 30 TRIPS, limited exceptions to the exclusive rights conferred by a patent in Article 28(1) TRIPS may be instituted by WTO Members. An exception to the exclusive rights conferred by a patent is provided for in Article 30 TRIPS and should comply with three conditions: (a) it has to be "limited", (2) it should not "unreasonably conflict with a normal exploitation of the patent", and (3) it should not "unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties". Additionally, TRIPS includes objectives to promote technological innovation and the dissemination of technology to the mutual advantage of the patent (SEP) holder and the user of the technology (Article 7) and principles of preventing the abuse of intellectual property rights and adopting measures for public interest reasons (Article 8).

Interpretations of Article 30 TRIPS exceptions

The scope of permitted exceptions under Article 30 is the subject of some controversy and has been interpreted only in one WTO dispute. The Panel in *Canada - Patents*[318] acknowledged the object and purpose of the TRIPS in Articles 7 and 8, but it did not apply them to interpret Article 30. The Panel's assessment focused on whether the exceptions were 'limited'. The Panel concluded that the term 'limited exception' enabled only a 'narrow curtailment of the legal rights' of a patent holder. It is argued that the Panel's interpretation of the term 'limited' of Article 30 being a quantitative assessment, devoid of normative considerations (including reasons justifying the exception) artificially constrained the scope of Article 30[319]. But, the Panel noted also that "the exact scope of Article 30's authority will depend on the specific meaning given to its limiting conditions." To this end, the goals enumerated in Articles 7 and 8.1 are relevant when doing so.

It should be noted that the *Australia - Tobacco Plain Packaging* decisions (Australia-TPP)[320], where Articles 7 and 8 TRIPS were relied upon to interpret the term 'unjustifiably' in the special measures provisions on trademarks under Article 20 *TRIPS*. The Panel found that public interest objectives stated in Article 8(1), including public health, are legitimate objectives permitting encumbrance on trade mark use.[321] Since the Australia-TPP Panel referred to the report in *Canada - Patents* regarding

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[318] Panel Report, *Canada-Patent Protection of Pharmaceutical Products*, WTO WT/DS114/R of 17 March 2000.
[319] Geiger, C., and Desaunettes-Barbero, L., 'The Revitalisation of the Object and Purpose of the TRIPS Agreement: The Plain Packaging Reports and the Awakening of the TRIPS Flexibility Clauses', *Centre for International Intellectual Property Studies*, 2020, Research Paper No. 2020-01, p. 36, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3556585.
[320] Panel Report in *Australia–Certain Measures Concerning Trademarks, Geographical Indications and other Plain Packaging Requirements Applicable to Tobacco Products and Packaging*, cases WT/DS435/R, WT/DS441/R, WT/DS458/R, WT/DS467/R of 28 June 2018; Appellate Body Report, case WT/DS435/R, WT/DS441/R of 9 June 2020.
[321] Tesoriero, A.,'Using the flexibilities of Article 30 TRIPS to implement patent exceptions in pursuit of Sustainable Development Goal 3', *The Journal of World Intellectual Property*, 2022, Vol. 25, Issue 2, pp. 516-535, https://onlinelibrary.wiley.com/doi/full/10.1111/jwip.12239#jwip12239-note-0018.

the interpretation of the terms of Article 30 of the TRIPS Agreement in light of its object and purposes of Articles 7 and 8, its findings may provide useful context regarding the interpretation of Article 30 TRIPS. The plain packaging measure restricted the use of the trademark, the TRIPS Agreement does not grant a right to use the trademark. The Panel concluded that the right of the trademark owner to prevent third parties not having its consent from using the trade mark, which is the right granted by Article 16 of the TRIPS Agreement, was not limited. This was an important element to consider whether the measure was TRIPS compliant.

The current initiative restricts the right of the patent owner to prevent use without consent but does so only for a limited period of time.

In the SEP context

Certain proposed limitations on the rights of a SEP owner, including requirements to (i) register its patents in a designated register prior to enforcement, and (ii) engage in a specified FRAND determination process before enforcing its rights, would be consistent with the objectives of the TRIPs agreement to promote technological innovation and the dissemination of technology to the mutual advantage of the SEP holder and the user of the technology (Article 7). It would also be consistent with its principles of preventing the abuse of intellectual property rights and adopting measures for public interest reasons (Article 8):

- Standardisation is necessary to ensure interoperability and to promote the uptake of modern technologies. Standards promote technological development which is in the public interest (as acknowledged by Article 8 TRIPs).

- Standards, including those that include patented technology, promote the dissemination of that technology (as formulated in Article 7 TRIPS).

Therefore, it seems to be justified to interpret the findings of the Panel in *Canada - Patents* bearing in mind the goals and limitations of Articles 7 and 8 and in light of the specific context of SEPs.

An interpretation of Article 30 informed by Articles 7 and 8 would make strike an appropriate balance between the legitimate interests of patent owners and the right of WTO Members to adopt measures to promote their public interests in sectors of vital importance to their socioeconomic and technological development.

The introduction of an enhanced legal approach for assessing FRAND terms and conditions in a particular context – one which results in more certainty and predictability for the SEP holder and the user of the standard – is a reasonable element in the effective exploitation of the patent rights of the SEP owner. Such an exception arguably would not unreasonably conflict with the traditional means of exploitation of the patent and does not unreasonably prejudice the legitimate interests of the patent owner. On the other hand, the exception reduces the possibility of a SEP holder abusing its IP rights in an anti-competitive fashion and results in a more balanced outcome by taking account of the legitimate interests of the users of the technology and consumers as a whole.

The following factors are relevant to this analysis:

- Patent owners benefit from the adoption of the standard and therefore tolerate the infringement of their patents to ensure the standard is widely used in products (especially if they also contributed technology to the standard during development);

- When the SEP holder commits to license its patents under FRAND terms and conditions in order to promote adoption of the standard, its objective is not to stop the sale of infringing products but to collect royalties from such sales (although some SEP holders may choose not to actively monetize or assert their SEPs);

- The normal exploitation of the patent in the context of standard-compliant products is to be able to collect FRAND royalties; due to the unique nature of SEPs (i.e., patents cannot be designed around because the technology is essential for implementing the standard in products), exploitation rights are more strictly defined or limited because of concerns regarding potential restrictions to fair competition and discrimination – i.e. behaviour that is harmful to competition;
- Demands for royalties that are unreasonable undermine the objectives of standardisation, lead to unnecessary litigation and slow down the process whereby patent owners can receive adequate remuneration for the use of their patents.

Furthermore, pursuant to Article 40 TRIPs, Members may adopt, consistently with the other provisions of TRIPS, appropriate measures to prevent some licensing practices or conditions pertaining to intellectual property rights which restrain competition that may impede the transfer and dissemination of technology. In this instance, the proposed FRAND determination process is intended to address, among other issues, concerns about whether the demanded royalty is truly FRAND, which may have potential anti-competitive effects. Such anti-competitive effects may impede the adoption of the standardized technology mainly by new entrants and SMEs that lack the resources to deal with such demands or pay potentially non-FRAND royalties. Any potentially abusive practices in the licensing of IP rights may result in harm to the consumer and public interest.

Taking the above factors into account, it is important that processes be implemented that allow stakeholders (SEP holders and implementers alike) to establish FRAND terms and conditions in a reasonable and efficient manner, and to ensure that SEP holders are not abusing their IP rights by demanding higher-than-FRAND royalties. Further clarity on FRAND also allows assessment of the multiple demands and offers that may be made during a SEP licensing negotiation by all parties involved, and to reach a balanced result that promotes continued contribution to and use of the standard for the benefit of the consumer and in the public interest.

ANNEX 8: SMES AND SEPS

A8.1 Results of Literature Analysis

Regarding potential problems for SMEs in the licensing of SEPs, a distinction is in place between SMEs as licensors and as licensees. Their role as licensors is less complex and will be addressed first.

Out-licensing patents is not uncommon for SMEs. In fact, de Rassenfosse (2012, p. 437)[322] finds based on a survey of SMEs conducted by the European Patent Office that SMEs "exhibit a much stronger reliance on 'monetary patents' than large companies and nearly half of the SMEs in the sample patent for monetary reasons." Yet, in the context of SEP licensing a number of challenges arise from SMEs' resource constraints. Their managerial capacity may be too limited to engage in licensing negotiations with several implementers, in particular if those negotiations are lengthy. Taking legal action may furthermore be difficult or even impossible due to the potentially high cost this entails. If, as is likely, an SME licensor's SEP portfolio is small, then potential licensees might – with some justification – doubt if the portfolio contains even a single patent that is actually essential, infringed by the respective party (which does not necessarily follow from essentiality), and valid (i.e., legally robust). Demonstrating that this is indeed the case may require recourse to the courts, which – as said above – may not be an option for the SME. As to the technical and patent-related competence required to out-license SEPs, one may assume that an SME capable of developing SEPs and having the patented inventions accepted into a standard should have a reasonable good understanding of the essentiality of its patents. It may lack, however, an overview of the entire standard, and also of the number of actual SEPs on the standard and of the level of the aggregate FRAND royalty. This might make it hard for the SME to come up with an appropriate royalty demand for its portfolio (similar to the problems that SMEs as SEP licensees face in this regard, see below). An option for an SME SEP licensor to address these issues might be to join a patent pool, provided a suitable pool for the standard at hand exists.

The role of SMEs as licensees is more complex. The challenges of in-licensing SEPs have been addressed by various authors (Geradin, 2020, p. 17; Schneider, 2020; Borghetti et al., 2021, p. 4; SEPs Expert Group, 2021, pp. 42, 158; Henkel, 2022).[323] For SMEs, the in-licensing of SEPs is particularly problematic, for several reasons. Consider the situation that an SME uses a certain standard in its product, and that a patent owner offers the SME a portfolio of allegedly standard-essential patents for licensing – or that, in turn, the SME seeks a license from a firm that claims to have SEPs on a standard of interest to the SME. In order to negotiate on eye level with the patent holder, the SME would need to evaluate the licensing offer. It would have to: (a) understand what share of the portfolio patents are actually essential for the standard; (b) what share of all actual SEPs on the standard the portfolio covers; (c) what a FRAND aggregate royalty for the standard is; and (d)

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[322] De Rassenfosse, G., 'How SMEs exploit their intellectual property assets: evidence from survey data', *Small Business Economics*, September 2012, Vol. 39, Issue 2, pp. 437-452, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1726208.

[323] Borghetti, J.-S., Nikolic, I., and Petit, N., 'FRAND licensing levels under EU law', *European Competition Journal*, 2021, pp. 205-268, https://www.tandfonline.com/doi/full/10.1080/17441056.2020.1862542. The authors acknowledge financial support from 4iP Council. Geradin, D., 'SEP licensing after two decades of legal wrangling: Some issues solved, many still to address', *TILEC Discussion Paper No. DP2020-040*, 2020, https://ssrn.com/abstract=3547891. Henkel, J., 'Licensing standard-essential patents in the IoT – A value chain perspective on the markets for technology', *Research Policy*, December 2022, Vol. 51, Issue 10, 104600, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4050472. Schneider, M., 'SEP licensing for the Internet of Things – Challenges for patent owners and implementers', *CPI Antitrust Chronicle*, March 2020, https://www.competitionpolicyinternational.com/sep-licensing-for-the-internet-of-things-challenges-for-patent-owners-and-implementers/. Baron, J., Geradin, D., Granata, S., et. al., *Group of Experts on Licensing and Valuation of Standard Essential Patents 'SEPs Expert Group' (E03600): Contribution to the Debate on SEPs*, 2021, https://ec.europa.eu/docsroom/documents/45217.

what the process and rules of FRAND-licensing are. Furthermore, (e) the ownership of SEPs is for many standards fragmented, and so the SME would potentially have to deal with a large and unknown number of licensors. Fragmentation of the licensee industry – which is likely high if SMEs are important – means that, on the level of the economy under consideration (here, the EU), the dyad-level transaction costs of licensing need to be multiplied not only by the number of licensors, but also by a large number of licensees. These points are problematic for SMEs for reasons that partly related to characteristics of SMEs, partly to those of standards and SEPs, as will be explained in the following.

Regarding (a), Geradin (2020, p. 17)[324] notes in referring to implementers in general that "while manufacturers of mobile communication devices have significant knowledge of mobile communication technologies, it is not the case with respect to manufacturers of other connected products […]". This is problematic due to the ever increasing use of ITC standards, and mobile communication specifically, in such "other connected products", e.g. in the IoT context. Specific to SMEs, the SEPs Expert Group (2021, p. 42) [325] notes regarding the use of ICT standards in the IoT context that "[t]he 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." In general, SMEs are characterized by a limited diversity of competences, and it is highly likely that a given SME lacks the technical as well as the patent-related competence needed to evaluate, even cursory, standard essentiality of a given portfolio. As Schneider (2020) [326] notes, "many of these SMEs will not have the technical expertise required to evaluate the viability of a technology owner's license offer or the quality of value of the IP offered in the license." Similarly Bekkers et al. (2022)[327]: "Implementers […] are confronted with dozens of SEP holders with thousands of patents, and typically have limited or no knowledge about the details of individual patents claiming to be SEPs." SMEs as potential SEP licensees will in general also be ignorant regarding the fact that, for cellular standards (and most likely for other standards as well), the share of declared SEPs that are actually essential is on average considerably below 50 percent, and that this share varies strongly between SEP holders (e.g., Bekkers et al., 2022, Section 3.1[328]). While large potential licensees that are not active in the standard's technology field (e.g., device makers in the IoT space) face the same problems, they can more easily afford to procure the required expertise externally and can usually find at least some of the needed resources in-house (e.g., legal expertise); SMEs cannot.

As to (b), also the understanding of what share of all SEPs on the standard the focal portfolio covers, and how many other licensors there might be, requires competences that an SME typically lacks – and, in fact, any implementer not active in the standard's technology field. Commercial studies may give indications as to the share a certain patent owner has in the standard's overall SEP stack. However, these studies tend to be highly priced, are not available for all standards, and may not accurately capture the current SEP position of a given licensor. Related, "[m]any of these [non-ICT] manufacturers and potential licensees […] may not be aware of the need to take licenses to specific SEP portfolios" (Schneider, 2020)[329] since they do not know the full list of SEP holders – a specific

[324] See footnote 323.
[325] See footnote 323.
[326] See footnote 323.
[327] Bekkers, R., Tur, E. M., Henkel, J., et. al., 'Overcoming inefficiencies in patent licensing: A method to assess patent essentiality for technical standards', *Research Policy*, 2022, Vol. 51, Issue 10, 104590, https://research.tue.nl/en/publications/overcoming-inefficiencies-in-patent-licensing-a-method-to-assess-.
[328] See footnote 327.
[329] See footnote 323.

instance of the more general problem of finding transaction partners for IP licensing (Arora and Gambardella, 2010).[330] Again, this will particularly be relevant for SMEs.

Regarding (c), even industry insiders and specialized courts find it typically hard to pin down a standard's aggregate FRAND royalty. It is harder still for SMEs that are implementers of a standard – again for the reasons listed under the preceding points, i.e., limited competences and resource constraints.

Point (d) is about the competence regarding patent licensing and the dos and don'ts of license contracts, a subject that most SMEs will have little or no experience with. They will know even less about the specificities of SEP licensing, which is governed among other things by the FRAND requirement and, in the EU, the Huawei-ZTE rules. As Schneider (2020)[331] puts it, "[m]any of these manufacturers and potential licensees […] will be small and medium-sized enterprises ('SMEs') without any licensing experience and perhaps no in-house legal expertise at all […]". Henkel (2022, Section 4.1.2)[332] cites an interviewee from an IoT start up, stating "[…] how do you work with licensing stuff, I don't even know. We have never done that, we just buy [a module] and create a system […]."

The final point (e) implies that the problems listed above may recur repeatedly for each SME licensee, for an unknown and potentially large number of SEP owners. This creates not only cost and time demands for an SME, but also uncertainty regarding cost and legal aspects. For instance, the SME's profit margin may be jeopardized by unexpected license demands (Henkel, 2022, Section 4.1.2).[333] Also, customers may demand product delivery free of third-party rights and then turn to the SME in case a SEP holder accuses them of infringement (Henkel, 2022, Section 4.4).[334] Large implementers will face similar issues but are better positioned to deal with them. SMEs lack the required financial buffers and in-house legal competence.

The above implies that the playing field between a prospective licensor and an SME as licensee is rather unbalanced. While information asymmetry in favour of the technology seller is a general issue (Akerlof, 1970; Zeckhauser, 1996)[335], in the context of SEP licensing to SMEs those information asymmetries are particularly strong and compounded by resource constraints. In turn, a potential problem for a licensor is that an SME may simply refuse to take a license, and that – given the relatively small licensing income that can be expected from an SME – it is not worthwhile to take legal action. One should note, though, that aggressive licensors may well sue a certain number of SMEs to create a precedent and build a reputation for "toughness" (e.g., Agarwal et al., 2009)[336] that subsequently makes other SMEs willing to take a license.

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[330] Arora, A., and Gambardella, A., 'The market for technology', *Handbook of the Economics of Innovation*, 2010, Vol. 1, pp. 641-678, https://www.sciencedirect.com/science/article/pii/S0169721810010154.
[331] See footnote 323.
[332] See footnote 323.
[333] See footnote 323.
[334] See footnote 323.
[335] Akerlof, G. A., 'The market for 'Lemons': Quality uncertainty and the market mechanism', *Quarterly Journal of Economics*, August 1970, Vol. 84, Issue 3, 488-500, https://www.sciencedirect.com/science/article/pii/B978012214850750022X; Zeckhauser, R., 'The challenge of contracting for technological information', *Proceedings of the National Academy of Sciences of the United States of America*, November 1996, Vol. 93, Issue 23, pp. 12743-12748, https://scholar.harvard.edu/rzeckhauser/publications/challenge-contracting-technological-information.
[336] Agarwal, R., Ganco, M., and Ziedonis, R. H., 'Reputations for toughness in patent enforcement: Implications for knowledge spillovers via inventor mobility', *Strategic Management Journal*, 2009, Vol. 30, Issue 13, pp. 1349-1374, https://deepblue.lib.umich.edu/bitstream/handle/2027.42/64300/792_ftp.pdf;sequence=1.

The above problems are not just a theoretical possibility, but they matter in practice. In a study involving 12 European IoT SMEs, mostly start-ups, Henkel (2022)[337] found that four of them had been approached by one or more SEP holders to take a license. Among the prospective licensors were patent assertion entities and patent pools, but also a large, producing SEP holder. Thus, some SEP holders do – or at least did in the recent past – approach IoT SMEs for SEP royalties. Some SEP holders state that they would not seek to license SMEs – possibly, they realized that this approach is not workable after failed attempts to license IoT SMEs (only one of the four SMEs mentioned above took a license in the end, see Henkel 2022[338]). However, in order to be helpful for SMEs a commitment not to demand royalties from them would have to be public, legally binding, clearly defined, and given by all SEP holders. None of these requirements is currently fulfilled. SME would need legal certainty that they will not be approached by any SME holder up to, e.g., a certain threshold of revenues or units sold per year. An alternative – in fact preferred by the participants in the SME survey and also by those studied by Henkel (2022) – would be upstream licensing, which would give SMEs (which most likely will be on the device, hence downstream level) the option to procure fully licensed modules incorporating the respective standard. As Kühnen (2019, Section II)[339] explains, such upstream licensing would create legal certainty not only for the SME implementers on the device level, but also for the upstream firms that supply the standard-practicing modules.

[337] See footnote 323.
[338] See footnote 323.
[339] Kühnen, T., 'FRAND licensing and implementation chains', *Journal of Intellectual Property Law & Practice*, December 2019, Vol. 14, Issue 12, pp. 964-975, https://academic.oup.com/jiplp/article/14/12/964/5625119.

A8.2 SME Test

Step 1/4: Identification of affected businesses

The scope of the initiative comprises firms of all sizes, including SMEs. The initiative does not target SMEs specifically, but its (positive) impact on SMEs may be more substantial than that on larger firms. The initiative affects both owners (hence, potential licensors) and implementers (hence, potential licensees) of SEPs.

As the initiative concerns all SEPs, rather than a specific sector, only qualitative assessment supplemented by indicative statistics about the distribution of firms by size among the affected companies (both, for SEP holders and implementers) can be made:

- Due to the technical and procedural complexities of standard development, **SMEs are relatively few among the SEP owners/licensors**. Out of 31 identified EU based SEP holders with 10 or more patents families (so those most likely to license SEP), information on size was available for 16 firms, out of which 3 were SMEs.
- Depending on the standard under consideration and the level of the value chain, **the number of SMEs that are implementers of a standard can be very large**. This is the case, e.g., for cellular standards on the device level of the value chain, where in the IoT context large numbers of SMEs create a multitude of different applications. Among 3 800 potential SEP implementers in the EU, 84% were SMEs.[340]

The impacts on both categories will be described below (under step 3).

Key question: **To what extent is the initiative relevant for SMEs?**

This initiative is considered relevant for SMEs and has been included by the SME envoys in the SME filter. [341]

While not being targeted at SMEs specifically, it solves several of the problems that the licensing of standardized technologies (essentially, their SEPs) creates in particular for SMEs.

SME SEP holders do not currently have the resources to license their SEPs efficiently. The register will give visibility of and a positive "stamp" on their SEP portfolio, the aggregate royalty would help justify their royalty demands and the FRAND determination (conciliation) procedure will offer them an opportunity to seek licensing without entering into expensive litigation (see explanation under step 3). SME SEP holders will also benefit from reduced fees.

Innovative SMEs have already been creating multiple applications using standards such as cellular, Wi-Fi, and NFC. Therefore, question of how to license those technologies is relevant for such SMEs. While the initiative falls short of guaranteeing "one-stop licensing" for downstream implementers (be it through a comprehensive patent pool or, even simpler, through upstream licensing[342]), it does address important problems, such as size of SEP portfolios, aggregate royalty, and FRAND

[340] See Annex A5.1 Market description.

[341] The network of SME envoys was set up in 2011 as part of the review of the small business act. Each EU country has nominated a national SME envoy to complement the role of the EU SME envoy who chairs the network. The group of SME envoys makes up an SME policy advisory group that promotes SME friendly regulation and policymaking in all EU countries. The network of SME envoys filters EU initiatives (SME filter) and signals those that merit attention from an SME perspective to the Commission. Initiatives that are listed in the SME filter will have to be accompanied by a proportionate SME test.

[342] If a licence to all relevant SEPs is taken by an upstream supplier, the SEPs are "exhausted" at that level and the SME implementers do not longer need to license SEPs.

determination. Additionally, the initiative will offer to SME implementers reduced fees for the use of the services of the Competence Centre and free training and advice on SEPs.

Step 2/4: Consultation of SME Stakeholders

The public consultation (14 February 2022 and 09 May 2022) identified 26 respondents as SMEs out of 72 respondents who identified themselves. The 26 respondents include nine companies, seven business associations and five research institutions. The public consultation contained questions specifically addressed to SMEs. For instance, on the question about the impact of SEP licensing costs on SMEs and start-ups implementers, many answered that they would settle SEP dispute as quickly as possible to avoid litigation cost, choose alternative technology, or even go out of business.[343] SMEs also stated they would not use a standard, if there was an alternative (cheaper) technology, if negotiation and litigation were too expensive or if the requested royalty was too high. SMEs valued more transparency about the FRAND royalties over transparency about the SEP essentiality and ownership.[344] Finally, the majority of SMEs agreed that efficient SEP licensing would foster innovation by implementers.[345]

To gain further insight into views of SMEs the Commission held interviews with several implementers (including SMEs and mid-caps). Examples of their anonymised accounts on SEP licensing experiences are reported in Annex 2. In addition, the Commission conducted a targeted SME survey run between October and December 2022. It was broadly distributed, among others by the European Commission and EU agencies, the European Digital SME Alliance, various industry associations, SME associations, and associations of SEP implementers. The survey yielded 39 responses. While it is not representative, it gives an impression of how SMEs perceive their situation with respect to SEP licensing. It thus allows to infer how the initiative would affect this perception.

Fifteen of the respondents reported to have participated in standard setting, though mostly not for complex ICT standards. Two reported to own SEPs. Motives to contribute to standard development comprise improving the standard, influencing its development, promoting the firm's own technology, learning, and networking. Reasons not to contribute comprise a lack of resources and expertise, and the domination of SDOs by large firms. The initiative will likely not affect this situation, neither positively nor negatively.

Regarding their role as SEP licensees (i.e. implementers), respondents perceive various problems: Notably, (a) a lack of knowledge what would be a fair (FRAND) royalty, (b) a lack of resources to negotiate licenses, (c) uncertainty about infringement, and (d) fragmentation of SEP ownership. Respondents considered device-level licensing acceptable only if it was (e) efficient (ideally one-stop), at (f) publicly known royalties, and (g) consistently done across all implementers. Most respondents expressed (h) a clear preference for upstream licensing, so that they could procure components with all IP rights fully licensed. For details see Annex A8.3 SME survey.

Of these problems and preferences, the initiative will address (a) and (f) (due to the aggregate royalty and possibly information about what share of a standard's SEP a given portfolio corresponds to); (b) indirectly, since license negotiations should become simpler (e.g. due to obligatory pre-trial FRAND determination (conciliation) or assistance and training to SMEs provided by the Competence Centre); (c), due to the register of checked SEPs. The initiative will not affect the problem of fragmented SEP ownership (d).

[343] See Annex 9, Q12.
[344] See Annex 9, Q20.
[345] See Annex 9, Q64.

The initiative will not affect the points (d) and (e) on licensor fragmentation. It might gradually improve the consistency of licensing (g), due to the fact that it will simplify licensing in general. It will not address the preference of most respondents for upstream licensing (h). A guidance will be given, however, that traditional level of licensing should be considered when deciding on SEP licensing options.

Step 3/4: Assessment of the impact on SMEs

Impact on SMEs as **owners** of SEPs:

- Due to the technical and procedural complexities of standard development, SMEs are relatively few among the SEP owners/licensors. Hence, considering only the number of firms affected, the impact of the initiative on SMEs as owners of SEPs will be limited.
- Those SMEs that do own SEPs will typically have small portfolios. Licensing out a small portfolio of presumed SEPs can be challenging because the potential licensee may doubt, with some justification, that any of the patents in the portfolio are actually essential, legally robust (i.e., would withstand a validity challenge), and indeed infringed by the potential licensee. Also, for statistical reasons the share of patents that are actually essential, legally robust, and indeed infringed will vary more strongly the smaller a portfolio is. Thus, **owners of small portfolios of presumed SEPs should be positively affected** by the "stamp of approval" that the **essentiality check** provides to patents that are found to be actually essential (PO2). This positive effect should be stronger than for owners of large portfolios, since for those there will typically be little doubt that they own at least some SEPs on the respective standard, and hence that the potential licensee is indeed obliged to take a license.
- **Another positive effect** should be that the anchor of the announced **aggregate royalty** (PO4) should make it easier for small licensors to explain the royalty demanded to potential licensees, something that without reference to this anchor should be relatively more difficult for small than for large licensors.
- **Pre-trial conciliation** (PO3) should **help SME licensors** in particular, since due to budget restrictions litigation is often not an option for them.
- A **negative effect for SMEs** is that the upfront **costs of registration and essentiality check** (PO2) will be relatively more important for SMEs than for larger firms, both due to budget constraints and because for small portfolios the share of patents that will be assessed will likely be higher than for large portfolios. However, the **investment into the essentiality check should pay off through the simplification of licensing**.

Impact on SMEs as **implementers** of SEPs:

- Considering the likely number of firms affected, the **impact of the initiative on SMEs as implementers of SEPs will be substantial**.
- **For all implementer SMEs**, irrespective of their position in the value chain, all aspects of the preferred option should have a **positive impact**. The **register** for SEPs **with essentiality checks** (PO2) helps them to assess if a prospective licensor has legitimate demands for royalties. The **aggregate royalty** (PO4) helps to understand and take into account early on the total cost of licensing the SEPs. In case the essentiality checks are done in such a way that they indicate each licensor's share in the overall SEP stack of the standard, then they may also facilitate determining the share of the aggregate royalty that a licensor can demand. **Mandatory pre-trial conciliation** (PO3), finally, helps to avoid litigation, which would typically be difficult and costly for SMEs.

While most of the benefits accrue also to larger firms, those are usually in a better position to solve the respective problems themselves (e.g., by hiring expert lawyers or technicians).

- A distinction applies regarding the **SMEs' position in the value chain**. **Downstream firms (device makers)** will typically have no in-depth knowledge of the internal functioning of the standardized technology, nor of the patents that might be essential to the standard. Thus, information on which patents are actually essential on a standard and transparency with regard to FRAND royalties, in particular, should be relevant for them in their negotiations. **Upstream firms** are "closer" to the standardized technology (the most upstream implementer turns the standard specification into technology, e.g. by designing a 5G baseband processor), and thus understand the technology and its SEPs better. Furthermore, the **number of SMEs that are downstream implementers will typically be (much) larger than the number of SMEs that are upstream implementers.** For example, most or all makers of cellular baseband chips are large firms (due to the high fixed cost involved in the business). Thus, **the biggest impact of the initiative on SMEs will be on downstream implementers**.
- A **potential negative effect** of the initiative is that the simplification of licensing that it entails **may encourage more SEP holders to approach downstream SME implementers for royalties**. For those, dealing with several or even many licensors of a technology that they do not understand is difficult, even if the initiative simplifies the process to some extent. However, this effect depends on SEP owners' strategies and its potential magnitude cannot be estimated.

Step 4/4: Minimising negative impacts on SMEs

The initiative will have its **biggest impact on SMEs on the implementer side**, more specifically on downstream implementers (device makers). For those firms, the **impact should largely be positive**. The **potential negative effect** mentioned in Step 3 (i.e., that the simplification of licensing that the initiative entails may encourage more SEP holders to approach downstream SME implementers for royalties) **could be mitigated** by encouraging SEP holders to exempt SMEs from paying royalties or provide discounts to a certain annual production volume (PO1). Additionally, SMEs will benefit from reduced fees for services provided by the Competence Centre and free training and advice from the Competence Centre.

Reduced fees for services provided by the Competence Centre for SME SEP holders should lower their burden as regards PO2.

Detailed overview of measures to help SMEs

The following measures and support will be available to SMEs:

General:

- SMEs will receive discounts for all administrative fees related to registration, essentiality checks and conciliation.
- A general recommendation that special discounts for SMEs are considered during essentiality evaluations and conciliations on a case by case basis.
- A general recommendation to SEP holders to provide to SMEs royalty-free licences or discounts for small volume production (following existing practices of SEP pools).

Services offered <u>free of charge</u> by the Competence Centre to all companies:

- Access to basic information from the SEP register (name and contact details of SEP holders, number of patents each SEP holder registered and the essentiality rate of all registered SEP per standard).
- Studies concerning SEP-related issues (e.g. best valuation practices or best practices to handle indemnification clauses) with which SMEs have most problems (based on information from SMEs provided to the Competence Centre).
- Database with SEP-related policy information from key jurisdictions globally as well as case-law summaries (including arbitrations) related to FRAND issues, also from foreign jurisdictions.

Services offered free of charge by the Competence Centre to SMEs only:

- Advice on SEP licensing, negotiations, and conciliation process (both for SME SEP holders and SME implementers).
- Training on SEP licensing/FRAND negotiations and how an SME can best represent itself during negotiations/conciliations.

Services for a fee:

NOTE: the regulatory proposal will not set any of the fees. Instead, they will be established subsequently by an implementing act which will take into account not only calculations presented in this IA but also political considerations. The fees presented in the IA are just an indication of the fees that would cover the costs of the Competence Centre (based on initial cost prognosis of the EUIPO). SME SEP holders and SEP implementers will both receive a reduction in administrative fees.

- Implementers: access to detailed information on essentiality of concrete patents or portfolios of concrete SEP holders at a reduced SME fee of EUR 850 (as opposed to EUR 1 700 for large firms).
  The relatively modest discount is to avoid circumvention of the standard fee by larger companies through creation of an SME just to access the register.
- SEP owners: SEP registration costs for SME SEP holders will be also limited by the fact that SMEs have a lower number of SEP to register.[346]
- Implementers and SEP owners: SEP conciliation cost will depend on the complexity of a case. This impact assessment presents an average cost. It is likely that conciliations for SMEs will be less demanding and thus the cost will be lower. In any case the final conciliation cost and how it is shared between parties will be decided on a case-by-case basis with the help of the conciliator. There will be a recommendation that SMEs receive a discount.

[346] The three SME SEP holders with ten of more SEPs, have respectively 10, 11 and 18 SEPs. The initial registration costs (both fees and internal costs) for these three firms will be no more than 1% of their annual turnover (turnover for 2021 from ORBIS database). Costs in the subsequent years (should they create new SEPs) will be just a fraction of the initial figure.

A8.3 SME survey[347]

About the survey and the analysis

The survey was distributed by the European Commission, directly and through various other channels (number of respondents in brackets): European Digital SME Alliance (8); industry associations (8); European Commission (6); SME associations (5); EU Agencies (4); Associations of SEP implementers (2); other (6).

The survey was active from 25/10/2022 until 27/12/2022.

It obtained 39 responses in total. It is not representative but gives an impression of the issues start-ups and SMEs face in the context of SEP licensing.

In the analysis, most responses are reported in detail. Questions with five or fewer responses are omitted. In two cases, clearly inconsistent responses were corrected. Open comments are reported verbatim, except for anonymization of company names and careful editing of obvious typos. Open comments unrelated to the question at hand are omitted.

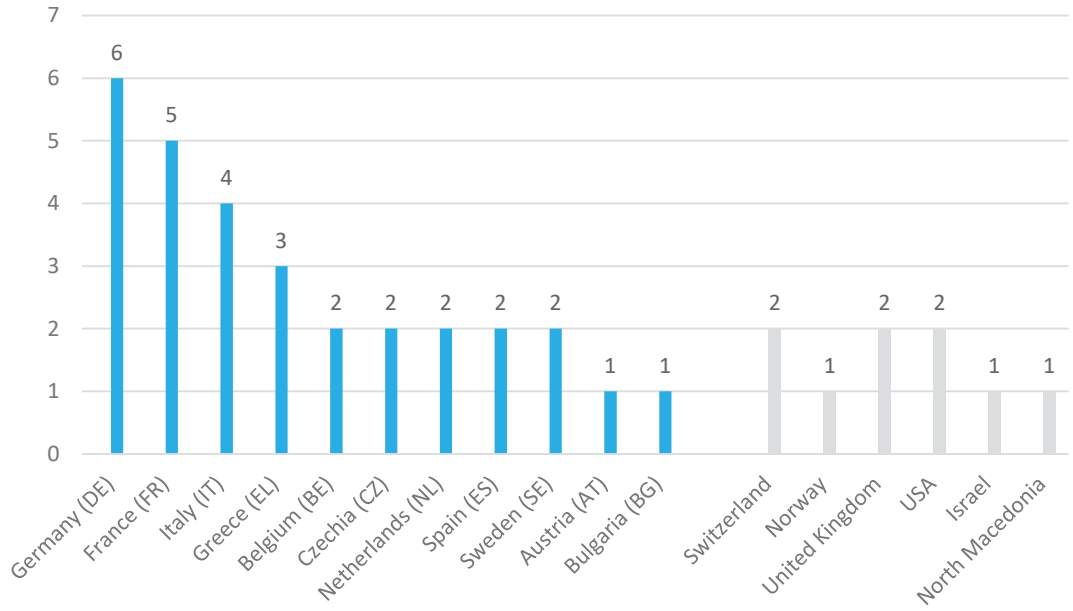
Demographics of participating firms

Question on Size

	Answers	%
Micro (1 to 9 employees)	13	33%
Small (10 to 49 employees)	15	38%
Medium (50 to 249 employees)	9	26%
Large (250 or more employees)	2	3%

- Country

Figure 18: Number of responses per country



Source: Own analysis

[347] Prepared based on contract by Prof. Dr. Joachim Henkel, Technical University of Munich.

Q. Subsidiary/branch of a larger company?

	Answers	%
Not a subsidiary/branch	35	90%
Yes, a subsidiary/branch	4	10%

Q. Respondent

	Answers	%
General manager (e.g. CEO)	24	62%
Manager dealing with technology/innovation	6	15%
Company lawyer	4	10%
Other	5	13%

Q. Sector of activity: IoT, other

	Answers	%
ICT (Information and communication technologies)	24	62%
Connected machines within a factory	10	26%
Smart meters	9	23%
Fleet management, tracking of containers, etc.	8	21%
Banking	6	15%
Medical devices	6	15%
Smart home	6	15%
Automotive	5	13%
Other IoT	9	23%
Not active in IoT, but in other sector(s)	4	10%

Note: Multiple choices possible

Q. In-house specialists for patents, patent licensing

	Answers	%
Yes	8	21%
No, we used external specialist	26	67%
No, we do not have in-house, nor use external specialists	5	13%

Use of ICT communication standards

Q1. Standards that the firm develops, uses or innovates on

	Answers	%
2G, 3G, 4G, 5G	23	59%
Wi-Fi	21	54%
LPWAN networks (LoRaWAN, Sigfox, NB-IoT, LTE-M)	15	38%
NFC	12	31%
Video and audio codecs	10	26%
Wireless charging	6	15%
Other	13	33%
Not developing, using nor innovating on any standard	3	8%
No. of answers	39	

Note: Multiple choices possible

Q2. Role of those standards in the firm's business proposition

	Answers	%

Our firm buys ready-made components to integrate into our products that use those standards	22	56%
Our firm has own unique innovation (IP) on top of the standard	16	41%
Our firm produces components that use those standards	16	41%
Our firm implements the standards by itself	12	31%
Our firm participates in standard setting	12	31%
Our firm buys a ready-made device to use in our product(s) that uses those standards	11	28%
Our firm contributes technology (patents) to standards	9	23%
Our firm exports components or devices that use those standards	7	18%
Our firm imports components or devices that use those standards	7	18%
Other (please specify)	2	5%
Standards do not play any role in my business	2	5%
No. of answers	39	

Note: Multiple choices possible

Q3. Importance of the standardized technology to the firm's services / products

Open question. 30 out of 39 respondents provided an answer.

Most answers (80%: 24 out of 30) stated the technologies were very important to the firm (e.g., "very important", "critical importance", "vital", "key", "essential", "indispensable").

Some answers provided more specific information, highlighting the advantages of fully licensed chipsets, SMEs' lack of power to influence standards embedded on chipsets, a lack of standardisation for edge computing, and the threat of an unknown number of SEP holders approaching implementers:

- "Bluetooth is a preferred option due to its availability fully SEP licensed in chipsets by the implementer."
- "We use Android as an operating system. We have zero say in what standards, or audio or video codecs, are incorporated in the chipsets or the operating system. We do not have the power as an SME to change the specifications of off the shelf developed chipset products. Our in-house technology is valuable to us as our USP."
- "Currently there is no standardisation for edge data centers that support the requirements of the edge. Legacy data center technology, OCP is not suited for the edge. Europe can play in important role for setting the standard for edge datacenters 1) since it can be based on embedded technology 2) it can achieve much higher density and energy efficiencies than current datacenter technology, 3) it can drive the technology innovation for Europe much faster than technology set by USA and Chinese large companies. 4) it allows for a fast integration with distributed intelligent infrastructures (electricity grid, water, transport, etc.) it allows for a better controlled digital sovereignty and implementing GDPR, explainable AI in the tactile internet."
- "We need our smart EV chargers to communicate with cars, phones and electricity networks. We do not have to use wireless or cellular, but we think the system will be better for the consumer if we do, and there will be energy savings. Threats from [Name of SEP owner] are causing concern to [firm] that there may be other claims from the hundreds of other SEP owners, and we are therefore considering whether to even include cellular functionality in future accessories or products, and what that might mean. That is delaying adoption and hindering innovation (and costing development resource) in the EV sector – that is the last thing that the EU needs as it targets Net Zero."

The firm's role as a patent licensee

Preferences regarding licensing of patents implemented in components

Q4. When buying components / importing devices incorporating such technologies do you…

	in most cases	sometimes	never	no opinion	no answer
prefer products/tech with all IP rights in the product fully licensed?	25	8	0	1	5
prefer to deal myself with clearing IP rights?	5	6	16	3	9
not worry about IP rights?	4	5	14	6	10

	in most cases	sometimes	never	No. of answers
prefer products/tech with all IP rights in the product fully licensed?	76%	24%	0%	33
prefer to deal myself with clearing IP rights?	19%	22%	59%	27
not worry about IP rights?	17%	22%	61%	23

Note: "No opinion" and "No answer" not taken into account for calculation of percentages

Checking the licensing status of purchased components

Q5. If you prefer products/tech with IP rights licensed how do you check that?

	oftentimes	sometimes	never	no opinion	no answer
I assume that since product is put on the market all rights are cleared	14	7	5	1	12
Seller gives me a guarantee that all rights are cleared	10	11	6	1	11
Seller offers to give me an IP licence as well	3	13	7	2	14
Seller informs me that (some) rights are not cleared and I have to do it myself	2	9	12	2	14
I do my own inquiries	8	10	6	1	14

	oftentimes	sometimes	never	No. of answers
I assume that since product is put on the market all rights are cleared	54%	27%	19%	26
Seller gives me a guarantee that all rights are cleared	37%	41%	22%	27
Seller offers to give me an IP licence as well	13%	57%	30%	23
Seller informs me that (some) rights are not cleared and I have to do it myself	9%	39%	52%	23
I do my own inquiries	33%	42%	25%	24

Note: "No opinion" and "No answer" not taken into account for calculation of percentages

Awareness of potential need of SEP license

Q6. Are you aware that you may need a licence for standard essential patents for the use of such technologies/standards?

	Answers	%
Yes	28	80%
No	7	20%
No answer	4	

Note: "No answer" not taken into account for calculation of percentages.

Has firm taken any SEP license

Q7. Have you obtained any licences for standard essential patents?

	Answers	%
Yes	7	21%
No	21	62%
Other	6	18%
No answer	5	

Note: "No answer" not taken into account for calculation of percentages

Those seven firms who answered "yes" named the following technologies:

	Answers
2G, 3G, 4G, 5G	6
Video and audio codecs	5
Wi-Fi	5
LPWAN networks	4
NFC	3
Wireless charging	2

Note: Multiple choices possible

Reasons not to take a licence for (potential) SEPs

Q8. In case you have not obtained a licence for any (potential) standard essential patents, what are the reasons for this?

	Answers	%
My firm assumes that it does not need to take a license because we purchase components / device free of any rights of third parties (i.e., seller guaranteed me that all rights are cleared)	15	58%
Difficulties to find out who owns the technology	10	38%
Too much effort to enter license agreements with all SEP owners	9	35%
To remain competitive (not increase price)	7	27%
A SEP holder approached me for a licence, but we cannot agree on the FRAND terms and conditions.	3	12%
My firm asked for a licence but cannot afford to pay the requested royalty	2	8%
My firm is waiting to be approached by a SEP holder to take a licence	2	8%
My firm asked for a licence, but it was refused	1	4%
Other	5	19%
No. of answers	26	

Note: Multiple choices possible

Reasons to take a licence for (potential) SEPs

Q9. In case you have obtained a licence for standard essential patent, what was the reason?

	Answers	%
My firm wants to sell SEP cleared products	4	67%
My clients will buy from me if my product is SEP cleared	3	50%
My firm was afraid it would be sued for patent infringement later	3	50%
My firm was approached by a SEP holder and saw a risk of not being able to sell my products	2	33%
It will differentiate our products from competitors	1	17%
Other	1	17%
No. of answers	6	

Note: Multiple choices possible

One respondent added: "We have had multiple SEP licensing requests. One license was obtained by misrepresentation. Some have litigated (one litigation costing tens of thousands of Euros was for a

few thousand Euros of value). We have taken several licenses but we know we have unfairly paid much more than others."

Licensor – Pool or individual SEP owner

Q10. In case you have obtained a licence for standard essential patent, did you obtain the license(s) through a SEP pool or through bi-lateral licensing negotiation(s) or through a combination of both approaches?

	pool	bilateral negotiations	combination of both approaches
2G, 3G, 4G, 5G	1	1	2
Wi-Fi	1	0	2
Video and audio codecs	1	0	3
Wireless charging	0	1	0
NFC	1	0	0
LPWAN networks	0	0	1

Q11. Experience with SEP licensing negotiations

Seven firms responded:

- "My firm negotiated what it felt was a fair license with the SEP owner" (3 answers)
    - One firm commented: "We did already sign a number of license agreements. Sometimes the license rates were published then we had the feeling the agreement fulfils FRAND but often the license rates are not published then it is very difficult to judge whether the agreements fulfil the FRAND requirements. We are not able to analyse large portfolios which are usually negotiated."
- "My firm accepted the price and conditions without negotiations" (2 answers)
    - One firm commented: "As we are a small company we often do not even have the option to negotiate."
- Other: "NFC licence is part of the membership to the NFC association in which we contribute to share experiences (not to set the standard)" (1 answer)
- Other: "We have had multiple SEP licensing requests. One license was obtained by misrepresentation/fraud. Some have litigated (one litigation costing tens of thousands of Euros was for a few thousand Euros of value). We have taken several SEP licenses but we know we have unfairly paid much more than others. We are discriminated against as an SME." (1 answer)

Problems in negotiating with SEP owners

Q12. Was any of the below problems relevant to you when negotiating with SEP owner?

	very important	rather important	neutral	rather not important	not important at all	no opinion	no answer
I did not know what would be a fair price for the SEPs (FRAND)	15	3	2	0	0	10	9

I did not have resources to negotiate with SEP holder / engage in court proceedings	14	4	2	1	1	8	9
I could not clarify whether my product was actually using the invention underlying the patent	13	5	2	0	1	9	9
I am not aware of any strategies how to defend myself against SEP owners	13	3	1	1	1	10	10
I saw a threat to my production and sales	12	5	1	1	0	10	10
I did not know who owns SEPs relevant to my implementation of the standard	12	4	3	0	1	10	9
I did not know if all the patents SEP holder presented to me were essential to the standard	10	9	1	0	1	9	9
I did not understand the technology (e.g. of component I use) to engage in meaningful negotiations	8	2	3	1	4	10	11
Other	3	0	0	0	0	8	28

	Important	Neutral	Not important	No. of answers
I did not know what would be a fair price for the SEPs (FRAND)	90%	10%	0%	20
I did not have resources to negotiate with SEP holder / engage in court proceedings	82%	9%	9%	22
I could not clarify whether my product was actually using the invention underlying the patent	86%	10%	5%	21
I am not aware of any strategies how to defend myself against SEP owners	84%	5%	11%	19
I saw a threat to my production and sales	89%	5%	5%	19
I did not know who owns SEPs relevant to my implementation of the standard	80%	15%	5%	20
I did not know if all the patents SEP holder presented to me were essential to the standard	90%	5%	5%	21
I did not understand the technology (e.g. of component I use) to engage in meaningful negotiations	56%	17%	28%	18
Other	100%	0%	0%	3

Note: "Important" consist of answers: "very important" and "rather important", "Not important" consist of "rather not important" and "Not important at all"; "No opinion" and "No answer" not taken into account for calculation of percentages.

Cost of negotiating an SEP license

Q13. In case you have obtained a licence for standard essential patent, how much did you spend on negotiating the licence (excluding the royalties), for example spent internal and external resources, legal advice, as well as other expenses such as access to third party databases?

- "full time as legal counsel"
- "NFC license was part of the membership [firm] entered in anyhow due to the core technology of the firm"
- "The costs vary but perhaps GBP 20 000 to GBP 40 000. Sometimes the work crosses over between portfolios and claims (e.g. where the SEP has broken up the portfolio). Much depends on whether there was litigation."
- "We are permanently negotiating. I assume the negotiation costs are about between EUR 20 000 to EUR 40 000 per year. The negotiations are often very different."

Impact of SEP license

Q14. In cases you obtained a SEP licence: What was the impact on…

	negative	neutral / no impact	positive
… profit margin of your products if sold within in the EU?	3	2	2
… profit margin of your products if sold outside of the EU?	3	2	2
… your innovation?	2	4	1
… legal certainty (e.g. planning your product pricing strategy)?	2	1	4

	negative	neutral / no impact	positive	No. of answers
… profit margin of your products if sold within in the EU?	43%	29%	29%	7
… profit margin of your products if sold outside of the EU?	43%	29%	29%	7
… your innovation?	29%	57%	14%	7
… legal certainty (e.g. planning your product pricing strategy)?	29%	14%	57%	7

Impact of not obtaining an SEP license

Q15. In cases you did not obtain a SEP licence: What was the impact on…

	negative	neutral / no impact	positive	no opinion
… profit margin of your products if sold within in the EU?	5	5	4	6
… profit margin of your products if sold outside of the EU?	4	8	2	5
… your innovation?	7	5	5	5
… legal certainty (e.g. planning your product pricing strategy)?	7	4	4	5

	negative	neutral / no impact	positive	No. of answers
… profit margin of your products if sold within in the EU?	36%	36%	29%	14
… profit margin of your products if sold outside of the EU?	29%	57%	14%	14
… your innovation?	41%	29%	29%	17
… legal certainty (e.g. planning your product pricing strategy)?	47%	27%	27%	15

Note: "No opinion" and "No answer" not taken into account for calculation of percentages

Open comments (answers to "Other, please explain"):

- Positive effect: "Multisite certification is very necessary for the new production model based on the collaborative economy for 'projects of general interest' that wish to remotely tele-manufacture."
- Negative effect: "It adds to uncertainty both for us and for our customers. If we make provision for estimated royalties and our competitors do not, we are at a disadvantage. Our module customers generally do not understand the technology and want a solution with SEP indemnification as they feel unable to navigate the licensing process. If we do not offer such indemnification and our competitors do, we are at a disadvantage."

Impact of uncertainty about SEP licensing

Q16. How does uncertainty about SEP licensing affect your business?

	agree	neutral	disagree	no opinion	no answer
Any royalty payments will affect my competitive position on the market.	18	9	1	3	8
Potential future SEP payments may make me unable to compete.	13	11	3	3	9
If my competitors also pay the same royalties, licensing will not affect my business significantly.	13	8	6	3	9
I try to use alternatives available on the market in order not to pay for SEP (e.g. older technology, or free technology).	12	4	9	4	10
It is unlikely that SEP holders will be interested to license me.	8	9	8	4	10
My prices include a certain amount of estimated royalties.	7	5	13	4	10
I try to develop in-house alternatives in order not to pay for SEP.	5	8	13	4	9
There is no SEP uncertainty.	5	4	17	4	9

	agree	neutral	disagree	No. of answers
Any royalty payments will affect my competitive position on the market.	64%	32%	4%	28
Potential future SEP payments may make me unable to compete.	48%	41%	11%	27
If my competitors also pay the same royalties, licensing will not affect my business significantly.	48%	30%	22%	27
I try to use alternatives available on the market in order not to pay for SEP (e.g. older technology, or free technology).	48%	16%	36%	25
It is unlikely that SEP holders will be interested to license me.	32%	36%	32%	25
My prices include a certain amount of estimated royalties.	28%	20%	52%	25
I try to develop in-house alternatives in order not to pay for SEP.	19%	31%	50%	26
There is no SEP uncertainty.	19%	15%	65%	26

Note: "No opinion" and "No answer" not taken into account for calculation of percentages.

Q17. Experience with SEP licensing – open comments

Twelve respondents provided open comments about their experiences with SEP licensing.

- "No experience with direct SEP licensing, only discussions with technology suppliers. These have made us aware of the potential issues / licensing threats.

  We have followed recent court cases and announcements from patent pool holders with interest (and fear)."
- "[Firm] has no personal resources to manage SEP licensing, in particular to investigate potential SEPs and related licensors to ask for a license and to evaluate of the ready implemented communication cores freely sourced in from suppliers make use of SEP.

  [Firm] has no chance of handling SEP licensing and estimating the potential costs with reasonable costs. SEP management would have to be handled by outside attorneys and would result in costs that are expected to far exceed the royalties to be paid in view of the sales numbers."
- "[Firm's] executive and senior management together have decades long experience in SEP licensing, from all sides of the SEP licensing equation. This expertise combined with the company's independence, allows [Firm] to be a true intermediary able to find licensing

solutions that can be accepted by the market, SEP holders and implementers alike, no matter if it concerns a comprehensive solution such as Avanci or a custom arrangement facilitated via Innovius.

Avanci is an aggregate patent licensing solution that currently licenses the SEP portfolios on cellular technology (2G, 3G, 4G, and soon 5G) of 52 patent owners to more than 80 auto brands worldwide. Avanci was created as a solution for the IoT industry and as this sector continues to develop, Avanci will successively add more licensing programs to its offering as the IoT industry continues to develop and new, innovative products reach the market. Aggregate patent licensing solutions are particularly attractive to start-ups and SMEs. SMEs that are SEP implementers can be assured that their license contains the same terms and conditions as a license with a much larger company. SMEs that are SEP holders may not have the capacity to pursue licensing themselves and licensing platforms offer a simple and efficient solution to generate a return on their investments and enable SME SEP holders to continue to participate in the standardization process. Avanci thus contributes to creating a global level playing field and its license provides predictability and certainty.
Having efficient licensing solutions available to SEP holders and implementers can be a factor in promoting the uptake of standardized technology; vice-versa, inefficient or dysfunctional licensing eco-systems can inhibit the uptake of standardized technologies and thus inhibit the integration of, for example, faster and more energy efficient technologies."

- "For an SME it is difficult to estimate whether the offered terms are FRAND, particularly if the terms are not published. We try to urge the licensors by means of German case law to provide us some information about already signed agreements. This we could do sometimes by a third independent attorney who is bound to confidentially and to whom the information was handed out so that he/she was able to judge whether the offer is FRAND. But this procedure is not always accepted by the licensors."

- "We have experienced a lot. Examples include but are not limited to:
    - being lied to by an SEP holder who said 'everyone paid the same royalties'. This was untrue, as we later found out in public court case decisions;
    - refusals to negotiate licenses;
    - lies by SEP holders in negotiations;
    - injunction threats when we pointed out we did not even use certain alleged SEP features in a products;
    - our distributors being refused SEP licenses when requesting them;
    - unlawful seizure of products sold to our distributors at Customs based on a patent later found to be not infringed by a Court, costing millions of Euros in damages and lost sales (with criminal proceedings against the General Manager personally);
    - being sued in America on alleged SEPs where the amounts claimed were a few thousand dollars;
    - pool administrators telling us that they advise other pools on pricing;
    - outlandish claims being made as part of an SEP audit – even one where we were offered a million dollar reduction if we changed lawyers;
    - multiple NPE licensing requests arising from portfolio fragmentation (splitting up of portfolios);
    - NPE litigation in America."

- "The issue is completely out of scope. We have been advised by our legal / IP advisor, that this might become an issue, but we do not really know how to deal with it.
- "Most of the small companies my company helps are leveraging patents so it is at the core of their activities.

  The companies I advise that only implement standards to build on top to create their own services and added value solutions factor in the licensing fees into their pricing."
- "[Firm's] position is simple. [Name of SEP owner] (and other SEP holders in the future) should not be harassing SME's or others for this type of issue, which are not matters within [Firm's] expertise. [Firm] believes that [Name of SEP owner] (and other SEP owners) should be required to grant SEP licenses to module suppliers that want a license like [Name of supplier] (or their suppliers), so that [Name of supplier] and its distributors can give normal and standard warranties of non-infringement for their cellular products. [Name of SEP owner] has, or had, a practice of licensing modules for 2G and 3G and so there is no reason to change that for 4G. [Name of SEP owner] also has, or had, a practice of licensing at chipset level. The entire supply chain can be licensed at chipset level, which is where the economic value of the patents can be realised, so [Name of SEP owner] should take this up with [Name of supplier] and their suppliers. Licensing at the chipset level will also mean that all of [Firm's] competitors (across the globe, not just in the EU) will be paying the same for SEP licenses, so that there is a level playing field for [Firm's] market. If [Firm] took a license to [Name of SEP owner] patents, how would it know whether its competitors were licensed and whether everyone, including large multinational companies, were paying the same. In Unwired Planet vs Huawei, Mr Justice Birss made clear that there should be no material difference in the pricing of SEPs. Asian companies should pay the same as everyone, and that can be achieved by selling with licenses paid at chipset level.

  I have heard it said by various SEP holders and commentators that large SEP holders 'do not chase SME's', and that is clearly inaccurate. [Firm] has no idea how many similar licensing requests have been sent out by [Name of SEP owner], and other SEP owners. Even if some SEP holders did have a practice of leaving SME's alone, it is unreasonable and unfair for SME's such as [Firm] to have the fear of waiting for a 'tap on the shoulder' by an SEP owner. Indeed, if SEP holders did 'leave SME's alone', there would remain a fear that SEP holders would appear at a later date (perhaps when the SME was a larger company) and then make a claim for past royalties going back 6 years. It is unfair and unreasonable to put that financial uncertainty onto SME's like [Firm]. The UKIPO might consider it appropriate to ask some of the assertive SEP holders for details of the type of companies they have sent licensing requests to, and how many have been sent out.
  [Firm] takes the view that the solution is for the Commission to take active steps to ensure that chipset and module suppliers can get SEP licenses, so they can pass the IP rights along the supply chain to the SME customers."
- "For a small company this type of extras, where patent holders are tying avoid terms with module manufacturer and come after the end product companies are very bad for small business:
  - The amount of productive efforts in negotiations where the patent holder try to get as much as possible of value, creates a very unpleasant environment, as you don't have a choice.
  - Big companies will gain as they have legal departments that can help out.

- European companies are at a disadvantage compared to foreign producers that might fly under the radar.
- It is ridiculous that patent pools should come after each company doing some modern radio technology, rather than settle cost per module with manufacturer."

- "Standards should not be a shop-front for royalty payments to others. SEP are a huge break on innovation and deployment of genuine standards in given areas."
- "The IoT market is very fragmented. By 2025, the market is expected to represent 100s of millions of units, but in our experience, a very large project is only a million units a year and most projects we see directly are 100-200k units per year. So you can imagine that there are thousands of projects and IoT companies with end solutions in this eco system.

  i. Even large cellular technology vendors cannot address this number of customers directly, and we are a small company with a small sales force, so we are partnering with module vendors, technology partners and distributors to increase our market reach.
  ii. Increasingly we expect sales to go through partner channels, many of which also sell primarily through distributors, meaning that we will not know who the end customer is nor what their application is. Even today, we are not aware of all the end uses of the customers of our module vendor partners.
  iii. The end customers that we DO know generally have no idea how to evaluate patents related to 4G/5G technology and have no idea how to go about licensing the related SEPs.

  In summary, the value chain has a small number of vendors of the cellular technology solution, whether at the chipset or module level, and a very large number of companies looking to provide IoT solutions that include cellular connectivity. The efficient solution would be to license at the module level as the module contains all the technology in the standard.
  It is hard to imagine how we can have licensing rates differentiated based on end use – there are too many end uses now and there will be new uses invented. And how will the SEP holders try to capture the thousands of companies using SEP technology? Only the lawyers really profit from all this."
- "SEP holders should not be able to select the level in the value chain for licensing. This way they can distort the competition among manufacturers of the same product by selectively enforcing the patent on the basis of commercial considerations. If only one manufacturer will pay royalties, this will produce distortion effect: either because it will remain the only lawful competitor or because the others will have a competitive advantage at price level. In our view a balanced licensing system should include an obligation for the SEP holder to license any undertaking which requests it, independently from the level of the value chain they are in.

  The appropriate level of licensing should therefore be at the component supplier level. The component suppliers are able to pass the cost down the value chain, and in this way a level playing field among manufacturers is preserved. Further, the component suppliers know best which technology is incorporated and can assess relevant SEPs, thus being in the best position to negotiate the royalties.
  This market distortion is particularly problematic in a market such as technologies for smart grids, where sales happen through public tendering procedure and where specific technologic requirements are requested by EU law at reasonable economic costs (e.g. interoperability of devices). If the SEP holder is allowed to claim royalties from manufacturers of smart energy devices, it will be even more difficult to pass the cost down to the public undertaking. Therefore, the royalty payment will cut margins and disincentivise innovation in this strategic

market for the EU. Additionally, in order to preserve the level playing field, if the product is sold through public tendering, royalty value should be the same for each manufacturer and shall be disclosed with no confidentiality commitment."

The firm's role as a standard contributor and SEP holder

Most questions in this category received less than five answers; they are hence omitted in the analysis.

Participation in standard setting

Q18. Have you participated in standard setting?

	Answers	%
Yes	15	38%
No	23	59%
Other	1	3%

Ownership of SEPs

Q19. Do you own any standard essential patents?

	Answers	%
Yes	2	14%
No	8	57%
Other	4	29%

Note: No respondent explained the choice of "Other"

Motivation to contribute to standards

Q20. What were your motivations to make a technical contribution to protocols and technologies in standards? Or for not doing so?
(Note: The answers were grouped according to themes that emerged from the responses.)

- Improving technology:
  - "Agroblockchain Technology."
  - "Improve the Standard."
  - "To improve the standard for the good of all, and to ensure that everyone can implement it without hindrance – to give confidence to all users of the standard that this is genuinely open to all."
  - "Part of our role in the EU projects. It also strengthens the industry. Standards help and give direction to innovation."
- Facilitating adoption of own technology:
  - "Since day 1 [Firm] has seen the standard as the only way to reach a massive market as IoT. We believe that in the coming."
  - "Interest in have wide adoption of technology to create larger market for products."
  - "Most companies I advise want to contribute their technologies to standards if the IPR policy of the SDOs is FRAND based. They want to be able to leverage their

technologies in future cross licensing negotiations and/or monetise their potential standards essential patents."

- "Influencing the standards according to our technical choices or strategic choices or IP choices."

- Learning about technology and market:
  - "Awareness of ongoing activities to proper align internal product development."
  - "We want to be abreast of the latest evolutions of the standard so that we can include this in our product roadmap so we are members of ETSI and are active participants in the meetings."
  - "Technology watch
    - on future RFC and state of the art.
    - understanding the strategy of the competitors / leading vendors, and especially trying to understand their underlying strategy on IP / patents.
    - understanding security agencies' positions (US mostly)."

- Networking:
  - "Create credibility for us and being well identified in the eco-system.
  - "Participating to SDOs also allow the participants to create their network and have direct access to the other representatives. This is really useful for SMEs."

Considerations to contribute to standard development

Q21. If you have not yet contributed to standardisation, have you considered contributing to standardisation? (e.g. by developing patents and declaring them as standard-essential; or participating in Standard Development Organisation(s) committees and developing a standard?)

	Answers	%
Yes	7	32%
No	14	64%
Depends	1	5%

Comments:

- Firms answering "yes":
  - "If we can contribute, we are very much willing to do so!"
  - "We made some requests of modification of the USD[348] standard but are too small to contribute ourselves."
  - "But as a SME it's hard to get in!"

- Firms answering "no":
  (Note: The answers were grouped according to themes that emerged from the responses.)
  - Lack of resources / expertise:

[348] USD is a standard for interoperability between 3D software solutions.

        - "No personnel and financial resources."
        - "We are too small."
        - "Too expensive and standardisation is not our expertise. Our expertise is in ruggedisation, and we work to ruggedisation standards (e.g. military grade standards)."
        - "No, we don't have the resources."
    - Other reasons:
        - "We are too small to garner the votes necessary for our patents to be adopted by the standard setting bodies, which are dominated by the largest companies."
        - "In previous companies I have contributed to IETF standard protocols – I have noted the IETF has a different approach to SEPs than (for example) ITU/ETSI."
        - "We are not communication components developers. We contribute in standard setting bodies as for mechanical gas products and metering systems and as for other technical subjects in which we have specific expertise."
        - "There are hundreds of standards in EV charging from safety to durability to automotive. The only standards we are having problems with is cellular."

Potential reasons to contribute to standardization

Q22. Why would you think it may be useful for you to contribute to standardisation?
(Note: The answers were grouped according to themes that emerged from the responses.)

- Benefits of standards:
    - "Standards are essential to enable innovation, as they create a larger market e.g. when a standard infrastructure is available more devices can be brought to market. Generally this benefits everyone, including those who have invested in the research to drive the standard, as they are best placed to take advantage for their own products."
    - "It is necessary for a sector as AgroTech and sensoric, drone technology for standards."
    - "The standard around Wi-Fi reconfigurability and radio reconfigurability in general, as well as entrenched cybersecurity aspects, could have the potential to destroy or foster the transition from a vertically integrated networking market to a horizontal market. It's critical that the standard is done keeping this in mind. As most contributors to the involved standards seem influenced by large global hardware companies, which are not necessarily interested to foster the transition to a horizontal market (which should be considered positive for consumers, for the environment, for SMEs, for European's sovereignty), [Firm], a European Digital SME, feels obligated to contribute."
    - "Standards are necessary to create an ecosystem and finally a choice for the users."
    - "Certify the implementation of the standards generates user confidence and helps the European market surveillance observatory. […]"
    - "I feel that there is a big gap between what is expected from SME's and especially Start-ups and that the Start-up community is not at all aware of the issue."

- "Part of our role in the EU projects. It also strengthens the industry. Standards help and give direction to innovation."
- "Participate to the creation of global standards to enable interoperability."

- Improve technology:
  - "To get the best technological solution."
  - "Because we invent a lot of new applications. We build enormous amounts of knowledge in special areas. We are very creative in solving difficult problems in the field."
  - "Contribute my best technologies to the standards."
  - "Improve the Standard."
  - "It gives clarity to the market and designs clear responsibilities at any level of the value chain. It helps ensuring safety and quality."
- Influence technology development:
  - "Set directions in the market."
  - "Generate competitive advantage to our company and limit disadvantages form unfavourable directions."
  - "We are developing a new technology and it can be very useful for us if it becomes a standard patent. We believe that what we are doing will change the world."
  - "The USD[349] has become essential in our market and it is important to develop it to meet our needs."
- Learn about technology developments:
  - "Awareness of ongoing activities to proper align internal product development."
  - "Create a strong network, learn from the other contributors."
  - "New experience for our company and new potential market."
  - "To know in advance the technology in details."

Obstacles to contributing to standardisation

Q23. What are the obstacles for you to contribute to standardisation?
(Note: The answers were grouped according to themes that emerged from the responses.)

- Resource constraints (time, cost, people):
  - "Effort and resources."
  - "Ability to dedicate time and resources."
  - "No personal and financial resources."

[349] USD is a standard for interoperability between 3D software solutions.

- "Contributing is a very slow, time-consuming, and complex process. It spans over multiple years of activity and its results are not tangible in the typical lifetime of a digital company/startup."
- "We are too small."
- "Time and resources... we are a small startup and we invest much more time on the subject compared to our size and other EU groups. (Microsoft has a team of 400 people dedicated to this topic...)"
- "Money, resource, time."
- "Internal capacity to dedicate to such topics."
- "Efforts needed."
- "Costs related to travels. Face to face meetings are required to allow efficient negotiations and cannot be replaced by virtual meetings."
- "Resources – just don't have enough time or people."
- "Time consuming and bureaucracy."
- "Knowledge and experience."
- "Cost"
- "Resources and focus."
- "Financial and human resources; not big enough versus Qualcomm, Nokia, etc."

- Standard-setting dominated by big players:
  - "Closed standards groups (ETSI)."
  - "Interest for Actors, Knowledge, Time to Participation of Process. Professional Secrets and Industrial Secrets."
  - "Standard owners/developers who want to charge royalty fees do not want others to participate. Standard developers are often not interested in developing open standards and open-source their work."
  - "Overwhelming number of patents in existence makes it challenging to standardize."
  - "All USD[350] contributors are large international companies. We are too small to be listened to on our own proposals for changing the standard."
  - "How to get in against the big ones."
- Complexity:
  - "For us it is still very new, so we are learning by doing. Sometimes it gets a bit difficult to understand how all the process work and what are the first steps to do and in which timings."
  - "Don't know where to start, need guidance to get an overview."

[350] USD is a standard for interoperability between 3D software solutions.

ANNEX 9: PUBLIC CONSULTATION – DETAILED SUMMARY

This document should be regarded solely as a summary of the contributions made by stakeholders to public consultation on the Standard Essential Patents. It cannot in any circumstances be regarded as the official position of the Commission or its services. Responses to the consultation activities cannot be considered as a representative sample of the views of the EU population.

This annex provides a detailed summary of the responses to the public consultations and call for evidence on potential future European Commission initiative on the Standard Essential Patents (SEP).

Call for Evidence

The consultation took place between 14 February 2022 and 09 May 2022. During that period 97 replies and 49 position papers were submitted.

All position papers are published[351] and they are not susceptible to summary. Among the responses with important additional elements are the contributions by Apple, Avvika AB, Boehmert & Boehmert, DVB, InnovUp, Internet Society, National Standards Authority of Ireland (NSAI), Nokia, Ordine dei Consulenti in Proprietà Industriale and PROSA.

Summary of replies to the Open Public Consultations

The consultation took place between 14 February 2022 and 09 May 2022. During that period 74 replies to the questionnaire arrived. Respondents were asked to provide basic information about themselves such as country of origin, area of activity, registration in transparency register. Subsequently they could reply on the following blocks of questions: general questions, questions on the licensing process and related problems, questions on transparency of SEP licensing, on essentiality of SEPs, on Fair, reasonable and non-discriminatory (FRAND) licensing terms and finally questions on SEP enforcement.

Respondents' characteristics

Two thirds of replies came from the European Union. The highest number of EU replies came from Germany. The remaining one third of replies came from countries outside the EU, with the highest number coming from the USA. The graph below (Fig.1) presents responses per country of origin.

Almost 60% of the 74 replies came from companies (39 replies) or business associations (7). Followed by seven replies from academia, two from public authorities, one from non-governmental organisation (NGO) and one from trade union. Six replies came from EU and non-EU citizens (see Fig. 2).

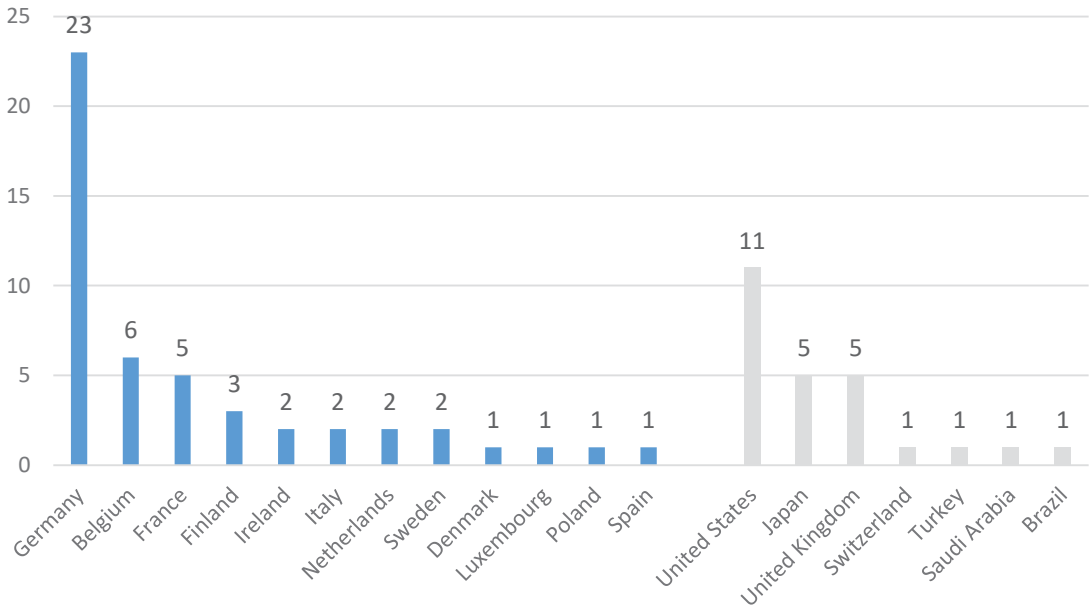
Among 39 companies, 77% were large entities and 23% were small and medium-sized entities (SMEs).

[351] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents/feedback_en?p_id=28414115

30% of respondents identified themselves as both SEP holders and implementers, 13% as only SEP implementers and 4% as only SEP holders. Around 50% identified themselves as "other" (which consists of for instance attorneys, advisers, academia…).

Around half of respondents (35) are registered in the transparency register.[352] The Transparency Register is a tool to allow European citizens to see what interests and on whose behalf the respondent represents.

Figure 19: Distribution of responses per country of origin of respondent

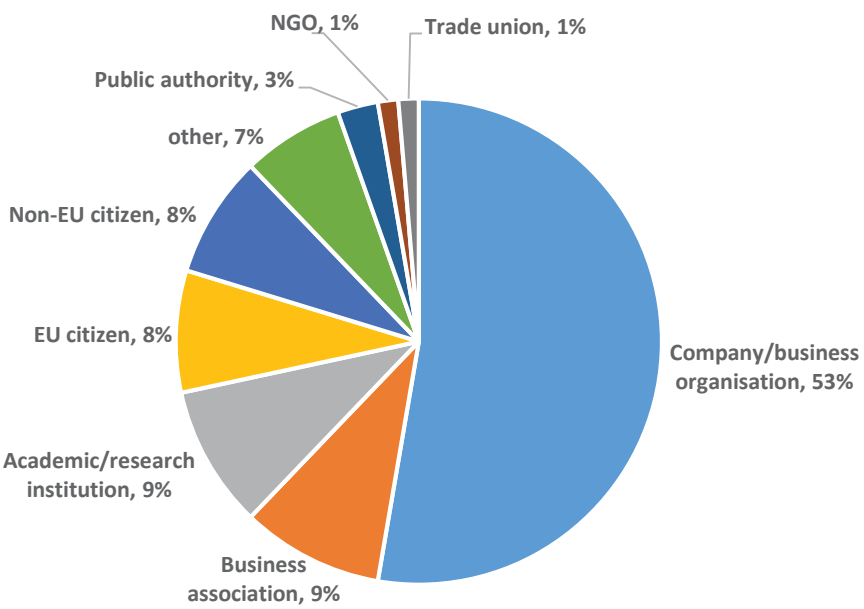


Source: Commission own analysis

[352] https://ec.europa.eu/transparencyregister/public/homePage.do.

Figure 19: Distribution of responses per country of origin of respondent

Figure 20: Distribution of responses by type of respondent



Source: Commission own analysis

Methodology

For the purpose of quantitative analysis, responses of stakeholders were grouped into broader categories (using self-declarations of the respondents):

- replies of all respondents (table abbreviation: "All"),
- replies of respondents who identified themselves as "company/business organisation" (abbreviation: "Companies"),
- replies of "business associations" together with "trade unions" (abbreviation: "Associations/trade union"),
- replies of "public authorities", "non-governmental organisations (NGO)", "academic/research institutions" and of "others" (abbreviation: "Academia/Authorities/NGO/other")
- replies of EU and non-EU citizens (abbreviation: "Citizens")

To simplify presentation, in case of questions with more granular scale of possible answers (Likert scale), answers pointing to the same sentiment were grouped together (e.g. "Fully agree" and "Somewhat agree").

Additionally, we wanted to present a summary of the views of SEP holders in comparison to those of implementers. However, there is no clear delineation (based on the self-identification) between those that are SEP holders and those that are implementers – i.e., in a large number of instances the

submitter identifies as a SEP holder and an implementer[353]. We have, therefore, compiled the views into two groups based on replies to question two (Q2) and three (Q3) as proxies for Group A and Group B responses[354]. Using these proxies, we had 29 Group A respondents and 18 Group B respondents. Group A are responses we perceive as promoting more of an implementer's views, and Group B are those that we believe promote primarily the views of a SEP holder. Note that in many instances, companies may fall into Group A or Group B depending on their response to a particular question.

For simplicity, we present their replies for each question in tables below under captions "Implementers" and "SEP Holders" respectively.

Since there was a significant number of replies from outside of the EU, we present tables with replies of EU and non-EU respondents. Self-declaration of the country of origin was checked and corrected based on the headquarters localisation of the respondent.[355] Replies of EU and non-EU citizens were not taken into account in these tables. As the result of these corrections there were 40 respondents from the EU and 22 from outside of the EU.

Finally in case of questions of special relevance to SMEs, replies of all those who identified themselves as SMEs are presented.

Replies to general questions

Quantitative summary

Around 60% of respondents considered that the current legal framework sufficiently protects against implementers "hold-out" (e.g. unreasonably delaying the conclusion of a licence by an implementer). Around 30% had opposing views. The responses showed similar pattern across different stakeholders' groups (companies, associations, academia, respondents from the EU and non-EU countries).

Respondents were divided on the issue whether the current legal framework provides sufficient protection against SEP holders "hold-up" (e.g. using the threat of injunction to extract excessive rents) with 48% agreeing and 43% disagreeing. Companies, citizens and non-EU respondents mainly disagreed. While academia/authorities/NGOs/others, and EU based respondents tended to agree with that the current legal framework provides sufficient protection against SEP holders "hold-up".

The final question in this section asked about impact of the current SEP licensing framework on SMEs and start-ups. Around half of all respondents assessed the impact as negative, a third thought there is no impact, and around 5% deemed it positive. Responses showed similar pattern for all analysed groups, except for associations, implementers and SEP holders. Around half of associations and SEP holders considered that there was no impact, while around 80% of implementers thought that impact is negative.

Tables with replies per question

[353] Based on self-identification, there were only nine implementers (13% of replies) and three SEP holders (4% of replies), while the remaining respondents identified themselves either as "both implementer and holder" (30% of replies) or as "other" (52% of replies).

[354] Those who agreed with Q2 (that current legal framework provides sufficient protection against implementers hold-out) and disagreed, were neutral or had no opinion on Q3 (that current legal framework provides sufficient protection against SEP holders hold-up) were included in Group A. Those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3 where included in Group B.

[355] There were four corrections from EU to non-EU and one from non-EU to EU.

Q2. Do you consider that the current legal framework for SEPs[356] provides sufficient legal protection against "hold-out" (broadly opportunistic behaviour by SEP implementers such as delaying the conclusion of a licence for as long as possible)?

	All	Companies	Associations/ trade union	Academia/Autho-rities/NGO/other	Citizens
Agree	59%	56%	63%	57%	70%
Neutral	12%	11%	0%	29%	0%
Disagree	29%	33%	38%	14%	30%
No. of replies	68	36	8	14	10

Note: Agree composes of "Fully agree" and "Somewhat agree"; Disagree composes of "Rather disagree" and "Fully disagree"; "No opinion / cannot answer" answers not taken into account.

	Implementers	**SEP Holders**
Agree	100%	0%
Neutral	0%	22%
Disagree	0%	78%
No. of replies	29	18

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	**non-EU**
Agree	58%	55%
Neutral	16%	10%
Disagree	26%	35%
No. of replies	38	20

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

There are concerns regarding "hold-out", some claiming it is a systemic issue and already sufficiently addressed by the current framework, and others claiming there is no empirical evidence and that it is an unproven theory that there is hold-out on the market.

Proponents of the current legal framework being sufficient legal protection:

[356] Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee on Setting out the EU approach to Standard Essential Patents, COM(2017)712 final, 29.11.2017, https://ec.europa.eu/docsroom/documents/26583, endorsed by Council Conclusions on the enforcement of Intellectual Property Rights, 6681/18, 1.3.2018, http://data.consilium.europa.eu/doc/document/ST-6681-2018-INIT/en/pdf; Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights ("IPRED"), OJ L 157, 30.4.2004, pp. 45-86, http://data.europa.eu/eli/dir/2004/48/oj; Regulation (EU) No. 608/2013 of the European Parliament and of the Council of 12 June 2013 concerning customs enforcement of intellectual property rights and repealing Council Regulation (EC) No 1383/2003 ("Regulation concerning customs enforcement of IPRs"), OJ L 181, 29.6.2013, pp. 15-34, http://data.europa.eu/eli/reg/2013/608/oj; Regulation (EU) No. 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation ("Regulation on European standardisation"), OJ L 316, 14.11.2012, pp. 12-33, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R1025&qid=1676580774315; 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 (notably chapter 7) ("Horizontal Co-operation Guidelines"), OJ C 11, 14.1.2011, pp. 1-72, CELEX: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011XC0114(04); Communication from the Commission – Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements, OJ C 89, 28.3.2014, p. 3-50 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2014.089.01.0003.01.ENG; Judgment of the Court of Justice of the European Union ("CJEU") of 16 July 2015, *Huawei Technologies Co. Ltd v ZTE Corp. and ZTE Deutschland GmbH*, C-170/13, ECLI:EU:C:2015:477, https://e-justice.europa.eu/ecli/ECLI:EU:C:2015:477; national patent laws and judgments of national courts.

Proponents of the current legal framework urge the EC to reject claims that seek to position appropriate negotiations by a potential licensee when approached by a SEP holder as 'hold-out'.

According to those opinions, the current FRAND framework for the most part does not support hold-out behaviour since implementers need to conduct diligence on the essentiality and validity of SEPs before agreeing to take a licence. This may not constitute delay tactics. Where needed, SEP licensors always retain the option of responding to perceived delay by accused infringers by asserting SEPs and seeking a determination from a court regarding a reasonable royalty. European courts provide sufficient legal protection and are effective against hold-out, but the system could be improved if it were less expensive and quicker.

Some respondents claim that the national court practice increasingly favours SEP holders. This particularly applies in Germany after the *Sisvel v. Haier* decisions of Germany's Federal Court of Justice. They ask that the New Framework for SEPs bring the licensing negotiations back in line with the CJEU's ruling and ensure that injunctions are available only in exceptional circumstances in the SEP context.

Proponents for current framework not being sufficient for legal protection against hold-out:

Some respondents claim that they face significant hold-out from implementers who refuse to engage in good faith negotiations aimed at concluding a FRAND licence. Even if the CJEU *Huawei v ZTE* decision has brought some improvements as it reaffirms that there are obligations on both SEP holders and implementers, there is still hold out according to such respondents, proving that the legal protections are insufficient.

Respondents claim that hold-out is incentivized when it is difficult for innovators to obtain injunctions and appropriate damages. In fact, according to some respondents there are no financial consequences for bad faith implementers, as the worst they can get after years of hold-out is a FRAND royalty rate determination. Such implementers, however, continue to benefit from technologies that are covered by patent rights, thus denying the innovators the return on investment which is necessary for sustaining the innovation cycle. Respondents explain that such behaviour would disregard the emerging guidance from various courts in Europe cautioning against hold-out behaviour. They warn against distortion of competition, discrimination against companies that respect IP by taking a license, and weakening of the incentives for companies to innovate. Such respondents consider that that EU courts should be able to issue injunctions and award royalties and damages to incentivize implementers to settle rather than to hold out.

Some respondents caution that excessive protection and regulation could obstruct the competitive market principles and should not be undertaken lightly. Such new framework should, however, reduce the motivation for "hold-out" or create incentives for early licensing.

Q3. Do you consider that the current legal framework for SEPs provides a sufficient legal protection against "hold-up" (broadly opportunistic behaviour by SEP holders such as using their market power to extract excessive rents or terms from implementers)?

	All	Companies	Associations/trade union	Academia/Autho-rities/NGO/other	Citizens
Agree	43%	38%	43%	62%	40%
Neutral	9%	14%	0%	8%	0%
Disagree	48%	49%	57%	31%	60%
No. of replies	67	37	7	13	10

Note: Agree composes of "Fully agree" and "Somewhat agree"; Disagree composes of "Rather disagree" and "Fully disagree"; "No opinion / cannot answer" answers not taken into account.

	Implementers	SEP Holders
Agree	0%	100%
Neutral	7%	0%
Disagree	93%	0%
No. of replies	28	18

Note: Implementers those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	non-EU
Agree	47%	38%
Neutral	8%	14%
Disagree	44%	48%
No. of replies	36	21

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

Proponents for the current legal framework being sufficient:

Some respondents argue that SEP implementers do not need to acquire any technology from the SEP holder to implement a particular SEP, since the technology is described in a public specification, which can be implemented without delay.

Some respondents explain that the CJEU guidance in *Huawei v ZTE* and the subsequent decisions from various courts in Europe provide a clear indication that there is sufficient legal protection against 'hold-up'. They state that hold-up supposes the use of market power to extract excessive rents. As noted by the UK Supreme Court in the *Unwired Planet v Huawei* decision, the threat of an injunction cannot be employed by the claimants as a means of charging exorbitant fees, or for undue leverage in negotiations, since they cannot enforce their rights unless they have offered to license their patents on terms which the court is satisfied are fair, reasonable and non-discriminatory. According to such respondents, there is still no abundant evidence available that establishes the existence of hold-up in the FRAND context.

Proponents for the current legal framework being insufficient:

Respondents commented that the FRAND obligation is a good tool to protect licensees against hold-up, but its ambiguity is used by SEP holders to maximize royalties. This harms innovation, SMEs and the marketplace. According to them, hold-up is the fundamental reason there are so few companies entering or able to maintain their businesses in this space against SEP holders who may use SEP hold-up to distort markets, eliminate competition, and harm the European economy.

Some respondents believe that some courts have (mis)interpreted *Huawei v. ZTE* to impose unrealistic requirements on implementers to prove their willingness [to license], while failing to scrutinise whether the SEP owner's licence offer is truly FRAND. This places undue pressure on negotiations and may force the potential licensee to accept non-FRAND rates that go beyond the value of the patented invention or pay for patents that are not standard-essential.

Some argue that the framework fails in three ways: (i) it allows injunctions in all cases; (ii) it fails to require information necessary for FRAND licensing, e.g., full price and license terms; and (iii) it fails to treat a standard as a whole (the "full stack").

Some respondents argue that the current legal framework does not deal effectively with the issue that some SEP holders only want to license manufacturers of "end products" and refuse to grant licenses to upstream implementers. According to them, this strategy is aimed at maximizing the threat resulting from injunctions at the level of the most valuable products to extract the highest possible royalty rates.

Q4. What is the impact of the current framework for SEP licensing on start-ups and SMEs?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
It puts start-ups and SMEs at competitive disadvantage	51%	52%	38%	53%	55%
It does not impact start-ups and SMEs differently than other stakeholders	31%	26%	50%	27%	36%
It is more favourable to start-ups and SMEs	5%	3%	0%	7%	9%
Other, please specify	14%	19%	13%	13%	0%
No. of replies	65	31	8	15	11

	Implementers	SEP Holders
It puts start-ups and SMEs at competitive disadvantage	79%	6%
It does not impact start-ups and SMEs differently than other stakeholders	13%	56%
It is more favourable to start-ups and SMEs	8%	6%
Other, please specify	0%	33%
No. of replies	24	18

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	SME	Large
It puts start-ups and SMEs at competitive disadvantage	48%	52%
It does not impact start-ups and SMEs differently than other stakeholders	40%	21%
It is more favourable to start-ups and SMEs	0%	7%
Other, please specify	12%	21%
No. of replies	25	29

Note: SME: those who chose as organisation size: "Micro (1 to 9 employees)" or "Small (10 to 49 employees)" or "Medium (50 to 249 employees)"; Large: those who chose "Large (250 or more)"

	EU	non-EU
It puts start-ups and SMEs at competitive disadvantage	54%	41%
It does not impact start-ups and SMEs differently than other stakeholders	35%	18%
It is more favourable to start-ups and SMEs	3%	6%
Other, please specify	8%	35%
No. of replies	37	17

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

Positive impact

Some argue that SMEs benefit from standards. For example, in some cases such as the LTE patent pool, SMEs are given preferential treatment in terms of licensing conditions, etc. SMEs can also be the developers of standards. And they also benefit from the existence of standards and a balanced SEP licensing framework.

Other respondents argue that start-ups and SMEs generally are "under radar" and too small for any bigger licensor to be interested in them. They may continue infringing unnoticed. In practice, there are hardly any litigation against start-ups/SMEs, as litigation would be inefficient for the SEP holder.

Negative impact

Some respondents explained that the SEP marketplace is not transparent enough for SEPs to be identified and licences agreed before a product is launched, especially where the technology is time-

sensitive (e.g., the product life cycle is short), or for SMEs to provide for the accurate costing of SEP licences in their business plans.

Some respondents claim that there is a negative impact because of power asymmetry and lack of transparency puts SMEs at a disadvantage. SMEs face the same problems as larger companies; however, they are less equipped to weather the legal risks, costs, and complexity of transacting with SEP licensors as they do not have in-house expertise in all three areas of ICT, standardization and patent licensing and cannot afford to external experts like larger companies. Also, SMEs could probably not afford an injunction and therefore the mere threat of an injunction forces them to choose between accepting potentially supra-FRAND rates or being excluded from the market.

A respondent explained that the current legal framework furthermore favours foreign companies outside the EU. When those located outside the EU face injunction in the EU, they lose access to one national market. But when start-ups and SMEs located in the EU face injunction in the EU, they may lose their whole business. This may lead to limited innovation and delaying uptake of for example IoT.

Questions on the licensing process

Quantitative summary

Around half of respondents reported seeking a licence before a SEP holder approaches them. SEP holder usually contacted the respondents around 3 years after the first implementation of a standard in a product. Licence negotiations with a large SEP holder concerned in general between 1 and 50 SEP.

Almost three quarters of respondents request a licence in order not to infringe a SEP and 60% to be able to plan production and costs.

In terms of consequences of the current SEP licencing practices: Two thirds of all respondents and majority of Implementers try to share SEP cost/risks with their suppliers. Around 40% of all respondents, and two thirds of Implementers will try to settle with a SEP holder as quickly as possible to avoid litigation or will search for other technology or royalty free standard. Around a third of respondents (and a half of Implementers) will increase prices and may become less competitive.

The main reasons for licencing/having SEP are securing the return on investment (70% of answers), followed by use of SEP for defensive/bargaining purposes (60%) and participation in standardisation process in the future (40%).

SEP holders start contacting implementers on average two years after publication of a standard. On average around 60% of contacted implementers, reply within one year. Around 70% take a licence without any litigation. It takes on average 3 years and 3 months to conclude a licence.

Q5. What is the impact on your business of recent litigations in courts in different jurisdictions, including China, Germany, India and the UK?

Summary of comments

Positive impacts

According to some, recent court decisions from the European and US courts can provide useful guidance for parties negotiating in good faith to come to a licence agreement. Even if there are some differences between decisions (as they are based on different factual circumstances), they do provide further guidance.

Negative impacts

According to others, injunctions for SEPs under FRAND commitment have become more readily available. Such respondents pointed out in particular to the decision of the Germany's Federal Court of Justice *Sisvel vs. Haier*. They claim that the court effectively contradicted the CJEU's judgment *Huawei v. ZTE* and brought back the *Orange Book Standard*. It re-shifted the main burden of negotiations on licensees and increased the availability of injunctions. Those respondents explain that similar trends can be noticed in neighbouring jurisdictions (see, e.g., *Philips v Wiko* in the Netherlands). They claim that this can lead to forum shopping since the different jurisdictions have different opportunities for injunctions.

Furthermore, a litigator specialising in FRAND matters can see a split between the courts which apply the law of the contract (China, India, US, UK, France) and those which either refuse (Germany) or avoid the issue (NL). This has a major impact on both licensing-in and licensing-out strategies because it creates lots of forum shopping strategies, therefore creating more confusion for the legitimate players (licensors and implementers).

Some respondents see hold-up occur in the broader IT, mobile and automotive industry, and expect litigation to emerge in the IoT sector soon as well. Those respondents consider potential hold-up problematic considering the 5G rollout and widespread adoption of IoT devices. They see these issues emerge in relation to a small set of SEP holders active in the narrow field of wireless communication and codec standards.

Q6. In your experience, in licensing negotiations, how many SEPs are discussed technically between an implementer and a SEP holder with a large portfolio?

	All	Companies	Associations/trade union	Academia/Authorities/NGO/other	Citizens
< 20	60%	53%	60%	57%	82%
20-50	21%	27%	20%	14%	9%
50-100	6%	7%	20%	0%	0%
100-200	4%	3%	0%	0%	9%
200-400	6%	3%	0%	29%	0%
> 400	4%	7%	0%	0%	0%
No. of replies	53	30	5	7	11
Average*	63	75	28	96	25

** Weighted average calculated using the middle of ranges, for the last open range value of 600 assumed.*

	Implementers	SEP Holders
< 20	68%	53%
20-50	14%	24%
50-100	5%	12%
100-200	5%	6%
200-400	5%	6%
> 400	5%	0%
No. of replies	22	17
Average*	63	49

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.
** Weighted average calculated using the middle of ranges, for the last open range value of 600 assumed.*

	EU	non-EU
< 20	56%	53%
20-50	19%	33%
50-100	11%	0%
100-200	4%	0%
200-400	7%	7%
> 400	4%	7%

	EU	non-EU
No. of replies	27	15
Average*	70	77

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.
** Weighted average calculated using the middle of ranges, for the last open range value of 600 assumed.*

Summary of comments

Some respondents claim that it is very difficult to provide a realistic average as there are many variables that impact the number. In some licensing negotiations claim charts of less than 20 SEP families are exchanged, in others claim charts of more than 400 SEP families are exchanged. Different elements may play a role, such as: contract renewal or not, number of standards covered, the involved products, existence of cross licensing (SEP families of both parties involved), agreement between the parties, etc. However, technical discussions between SEP holder and implementer usually only take place based on so-called "proud lists" with claim charts.

QUESTIONS FOR SEP IMPLEMENTERS

Q7. Have you ever sought a licence before being approached by a SEP holder?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Yes	46%	50%	50%	40%	29%
No	20%	17%	0%	20%	43%
No opinion / cannot answer	35%	33%	50%	40%	29%
No. of replies	46	30	4	5	7

	Implementers	SEP Holders
Yes	52%	67%
No	9%	11%
No opinion / cannot answer	39%	22%
No. of replies	23	9

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	non-EU
Yes	44%	57%
No	20%	7%
No opinion / cannot answer	36%	36%
No. of replies	25	14

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

Yes

Some respondents underline that pursuant to *Huawei v. ZTE* SEP holders notify a user of a standard that it is potentially infringing its patents – not the other way around. However, in some instances, implementers may have proactively sought a SEP license or inquired about FRAND royalty rates, for example, when required to make product development decisions or to renew a contract. Furthermore, suppliers may also ask for licenses when their customers request indemnification as part of the supply arrangement. Some note that if they approach SEP holders, they often do not obtain a licence.

According to some respondents, proactively seeking a license works well when the licensor provides: (1) detailed information about their SEP portfolio, (2) complete proposed license terms, and (3) a rational price based on the value of the corresponding technology and their share of the patent stack for the corresponding standard. Such examples illustrate how FRAND licences can, and should, be transacted.

No

Some respondents explain that it would be impractical for implementers to seek licences first as there are too many SEP holders. Because licensing negotiations take time, by time all licences are in place, the licensed product may be obsolete. In addition, an implementer cannot know how many SEPs have been declared until several years after the technical specification is published. An implementer would also rarely know ex-ante the margin it will be able to make on its product. This is why, according to those respondents, FRAND terms need to be negotiated ex-post.

Others claim that the existing lack of transparency about the SEPs, the royalties and the level of licensing do not create an environment of trust conducive to a proactive approach from implementers to SEP holders.

Respondents in the *automotive sector* do not approach SEP holders because they consider that licences should be in principle acquired by upstream suppliers. Upstream licensing has long been, and continues to be, the default in the automotive industry for both SEPs and non-SEPs since a single vehicle can consist of over 10,000 individual parts supplied by specialised suppliers and it is neither practical nor feasible for them to have detailed technical knowledge of each part. Upstream suppliers know better the technology they implement than downstream users, and are therefore better placed to assess the FRAND-ness of a licence offer. Further, implementers cannot evaluate patents owned by other companies to see if they are valid rights and essential to certain standard.

Q8. If yes, how did that impact on your business?

	All	**Companies**	**Associations /trade union**	**Academia/ Authorities/ NGO/other**	**Citizens**
It had no impact	17%	27%	0%	0%	0%
It put me at competitive disadvantage	8%	13%	0%	0%	0%
It caused me delay of the time-to-market	4%	7%	0%	0%	0%
It gave me competitive advantage	4%	7%	0%	0%	0%
Other, please specify	67%	47%	100%	100%	100%
No. of replies	24	15	3	3	3

	Implementers	**SEP Holders**
It had no impact	15%	33%
It put me at competitive disadvantage	0%	0%
It caused me delay of the time-to-market	0%	0%
It gave me competitive advantage	0%	17%
Other, please specify	85%	50%
No. of replies	13	6

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	**non-EU**
It had no impact	17%	22%
It put me at competitive disadvantage	8%	11%
It caused me delay of the time-to-market	0%	11%

	EU	non-EU
It gave me competitive advantage	8%	0%
Other, please specify	67%	56%
No. of replies	12	9

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

Impact

There are positive and negative impacts from seeking SEP licenses early. Many respondents consider it provided legal certainty (also to customers) over costs and enabled proper planning of business activities and no competitive disadvantage assuming other implementers also pay similar royalties. Some also claims that seeking SEP licenses early can also facilitate market entry at a reduced IP risk and establish product differentiating features against business competitors.

Others note that at the same time, seeking SEP licenses early can hinder the ability for a business to compete in the market when there is no chance for product differentiation and if business competitors can effectively compete in the same market without having to take a license. Furthermore, some respondents have experienced some cases in the past as an implementer where the SEP holder took advantage of the fact that they proactively sought a license and asked for an excessively high royalty. In such cases, it will take time to conclude the negotiation, and this could lead to a delay for entering the market. Such behaviour seems less prevalent where the SEP holder is, at the same time, an implementer of the same standard(s) and has a more balanced approach to royalty demands.

No impact

In other respondents' opinion, this has had no real impact on the business; access to the standard is ensured via the FRAND commitment and the exact timing of the start of license negotiations does in principle not impact such access.

Q9. How much time after the first implementation of a standard in your products are you, on average, contacted by a SEP holder with an invitation to take a licence?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
less than 6 months	4%	7%	0%	0%	0%
6 – 12 months	8%	7%	0%	50%	0%
1 – 2 years	8%	13%	0%	0%	0%
2 – 4 years	42%	47%	100%	0%	29%
4 – 6 years	8%	13%	0%	0%	0%
More than 6 years	12%	7%	0%	0%	29%
I was never approached	19%	7%	0%	50%	43%
No. of replies	26	15	2	2	7
Average years*	2.8	2.9	3.0	0.4	3.1
Avg. for those approached**	3.4	3.1	3.0	0.8	5.5

** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed; ** without "I was never approached"*

	Implementers	SEP Holders
less than 6 months	8%	0%
6 – 12 months	17%	0%
1 – 2 years	8%	20%
2 – 4 years	33%	60%

	Implementers	SEP Holders
4 – 6 years	17%	0%
More than 6 years	8%	20%
I was never approached	8%	0%
No. of replies	12	5
Average years*	2.8	3.7
Avg. for those approached**	3.0	3.7

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.
** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed; ** without "I was never approached"*

	EU	non-EU
less than 6 months	0%	17%
6 – 12 months	8%	17%
1 – 2 years	15%	0%
2 – 4 years	46%	50%
4 – 6 years	15%	0%
More than 6 years	0%	17%
I was never approached	15%	0%
No. of replies	13	6
Average years*	2.4	3.0
Avg. for those approached**	2.9	3.0

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.
** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed; ** without "I was never approached"*

Summary of comments

Respondents note that there is no single answer to this question. Some claim that the timing depends on the relevant standard, the behaviour of the SEP holder as well as the product concerned. Some consider that the point in time when SEP holders contact can also differ depending on various elements such as (i) market expansion of products and businesses employing the standard, (ii) volume of products sold by implementers, and (iii) prosecution status of SEP holders' applications. According to some, the most typical pattern is for SEP holders to wait until there is significant revenue from the standard which follows irreversible product strategy and investment decisions from the standards implementer perspective. Those respondents claim that the implementer therefore has little or no visibility into royalty cost at the time these product development decisions need to be made. For them, it follows that the implementation of the standard in products may not always be the 'triggering' event for the SEP holder to reach out. The distribution/commercialization of the standard compliant product seems a more apparent 'triggering' event.

Q10. What would be the main reason for you to request a licence?

	All	Companies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
Not to infringe a SEP without a licence	72%	71%	80%	67%	71%
To have legal certainty over my costs and plan my business activities	60%	68%	60%	67%	29%
To be able to sell my products	35%	32%	60%	67%	14%
To be able to indemnify my customer	23%	21%	40%	67%	0%
To be able to carry our R&D and develop new products	23%	25%	40%	33%	0%
To be able to compete with other suppliers	16%	14%	40%	33%	0%
Other (please specify)	19%	18%	20%	67%	0%

	All	Companies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
No. of replies	43	28	5	3	7

Note: multiple answers possible

	Implementers	SEP Holders
Not to infringe a SEP without a licence	82%	44%
To have legal certainty over my costs and plan my business activities	73%	56%
To be able to sell my products	45%	11%
To be able to indemnify my customer	32%	11%
To be able to carry our R&D and develop new products	27%	11%
To be able to compete with other suppliers	18%	22%
Other (please specify)	9%	44%
No. of replies	22	9

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	non-EU
Not to infringe a SEP without a licence	74%	69%
To have legal certainty over my costs and plan my business activities	57%	85%
To be able to sell my products	30%	54%
To be able to indemnify my customer	22%	38%
To be able to carry our R&D and develop new products	22%	38%
To be able to compete with other suppliers	13%	31%
Other (please specify)	22%	23%
No. of replies	23	13

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

Respondents from the automotive industry explain that licences to SEPs are indispensable for the automotive industry and automotive manufacturers would need to take them if SEP holders refuse to license anybody else in the supply chain. Such respondents note that any company that decides to market unlicensed products is exposed to injunctions, damages claims, civil and criminal liability (for example, see Section 142, German Patent Act). For them, legal certainty is of particular importance as they assemble thousands of individual parts delivered just-in-time.

Respondents who supply components note further that their customers typically want products free of defects, including free of third-party rights. If the product is missing a license, the customer might seek indemnification at a later point in time when the market has already settled. The indemnification costs could then easily make an established business model unprofitable and wipe out extensive investments. Planning upfront is also difficult without knowing the potential costs for necessary licenses.

Some respondents noted that SMEs planning to use open standards request licenses for some or all the listed reasons in this question. They note that open standards are developed in a spirit of collaboration and transparency. However, licensing of those standards is "cloaked in secrecy and obfuscation". They claim that stopping the practise of requiring non-disclosure agreements to be signed before licensing terms are received will bring much needed transparency to the process and allow SME's to have legal certainty over their costs and business activities.

Q11. What are the average costs you incur for estimating your SEPs exposure per product that you want to bring on the market? These costs include cost for searching patent databases on enforceability, validity and ownership of the patent, assessing the essentiality of the patents, whether

there is an infringement, the potential number of true SEPs and the share of the individual SEP holders in those.

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
< 10.000 euros	37%	46%		0%	20%
10.000-50.000 euros	21%	15%		0%	40%
50.000-100.000 euros	5%	8%		0%	0%
100.000-250.000 euros	11%	15%		0%	0%
250.000-500.000 euros	0%	0%		0%	0%
> 500.000 euros	26%	15%		100%	40%
No. of replies	19	13	0	1	5
Average (EUR)*	228,000	155,000		750,000	313,000

** Weighted average calculated using the middle of ranges, for the last open range value of EUR 750,000 assumed, rounded to thousands*

	Implementers	SEP Holders
< 10.000 euros	33%	100%
10.000-50.000 euros	0%	0%
50.000-100.000 euros	0%	0%
100.000-250.000 euros	22%	0%
250.000-500.000 euros	0%	0%
> 500.000 euros	44%	0%
No. of replies	9	4
Average (EUR)*	374,000	5,000

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.
** Weighted average calculated using the middle of ranges, for the last open range value of EUR 750,000 assumed, rounded to thousands*

	EU	non-EU
< 10.000 euros	50%	33%
10.000-50.000 euros	13%	17%
50.000-100.000 euros	13%	0%
100.000-250.000 euros	13%	17%
250.000-500.000 euros	0%	0%
> 500.000 euros	13%	33%
No. of replies	8	6
Average (EUR)*	131,000	286,000

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.
** Weighted average calculated using the middle of ranges, for the last open range value of EUR 750,000 assumed, rounded to thousands*

Summary of comments

Some respondents claim that the costs in relation to ownership, enforceability, infringement etc. are typically incurred by the SEP holder as it is the SEP holder that provides this information. Some explain that for a SEP holder, there is a need to analyse the value of its own SEPs. To the extent that bilateral negotiations are required, the values of both companies' portfolios need to be analysed so they can be reflected to achieve a cross-license value.

Some respondents note that they devote significant resources to evaluating SEPs that may be related to their products, although they do not directly track these costs on a per product basis. These expenditures include substantial costs for salaries of personnel, for SEP analytics services, for outside attorneys, and for conducting SEP negotiations, ranging from travel to engaging outside experts to assess the merits of SEPs.

According to some, conditions also vary depending on the size of the portfolio, the products, and the licensing circumstances for the relevant technical standard(s). If a viable patent pool does exist (e.g., capturing a significant amount of overall SEPs or potential SEPs), the cost for investigation may be substantially reduced.

Other respondents note that significant costs may be imposed on licensees to evaluate the SEP landscape and particularly so when SEP holders are not forthcoming regarding the details of their SEP portfolios. Some respondents explain that, in theory, because there are some 100,000 patents declared essential to 5G alone (many of which may not be essential), spending EUR 1000 (1 or 2 hours of attorney fees) to verify if 500 of those patents are valid, essential and infringed, would already consume the upper limit of EUR 500,000 referred to in this question.

Some respondents explain that it may be impossible to remain a market leader without implementing the latest technologies in light electronic appliances (such as computers, radios, audio equipment, and televisions) and products on the IoT market. A new product would require FRAND negotiations. Because of uncertainties about the scope of a SEP holder's obligations to provide necessary information to implementers, implementers must bear the costs of developing arguments for FRAND negotiations. In addition, such FRAND arguments must be provided within a short time, costs tend to be higher. According to that respondent, because of those costs, many implementers prefer to get a license without pushing back on SEP holders' demands.

Q12. What is the main effect for SEP implementers, in particular start-ups and SMEs, of the costs involved in licensing SEPs (search, negotiation and litigation costs)?

	All	Companies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
I ask my suppliers to indemnify me for possible patent infringement	65%	63%	80%	50%	71%
I look for alternatives (e.g. not using standardised technology or royalty free standards)	38%	38%	60%	25%	29%
I settle as quickly as possible for a SEP licence, because it is cheaper than litigation	38%	25%	80%	25%	57%
I become less competitive	33%	25%	20%	25%	71%
I increase final price to my business or retail customers	33%	29%	60%	50%	14%
I go out of business/change business	20%	21%	40%	25%	0%
I take licence only if absolutely necessary	18%	4%	20%	75%	29%
Other, please specify	38%	42%	40%	50%	14%
No. of replies	40	24	5	4	7

Note: multiple answers possible; "No opinion / cannot answer" answers not taken into account.

	Implementers	SEP Holders
I ask my suppliers to indemnify me for possible patent infringement	90%	25%
I settle as quickly as possible for a SEP licence, because it is cheaper than litigation	62%	0%
I increase final price to my business or retail customers	57%	13%
I look for alternatives (e.g. not using standardised technology or royalty free standards)	52%	0%
I become less competitive	43%	0%
I go out of business/change business	38%	0%
I take licence only if absolutely necessary	14%	0%
Other, please specify	24%	75%
No. of replies	21	8

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion / cannot answer" answers not taken into account.

	SME	Large
I ask my suppliers to indemnify me for possible patent infringement	75%	60%
I settle as quickly as possible for a SEP licence, because it is cheaper than litigation	63%	24%
I increase final price to my business or retail customers	63%	28%
I look for alternatives (e.g. not using standardised technology or royalty free standards)	50%	36%
I go out of business/change business	38%	20%
I take licence only if absolutely necessary	38%	8%
I become less competitive	25%	24%
Other, please specify	25%	48%
No. of replies	8	25

Note: multiple answers possible; "No opinion / cannot answer" answers not taken into account.

	EU	non-EU
I ask my suppliers to indemnify me for possible patent infringement	63%	67%
I look for alternatives (e.g. not using standardised technology or royalty free standards)	33%	56%
I settle as quickly as possible for a SEP licence, because it is cheaper than litigation	29%	44%
I increase final price to my business or retail customers	25%	67%
I go out of business/change business	17%	44%
I become less competitive	13%	56%
I take licence only if absolutely necessary	13%	22%
Other, please specify	33%	67%
No. of replies	24	9

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "No opinion / cannot answer" answers not taken into account.

Summary of comments

Some responded that the reason they settle as fast as possible is the high cost of litigation and injunctions. For them it is better to accept a potentially non-FRAND agreement than pursue litigation.

Some noted that SMEs often do not have the resources to deal with larger enterprises holding numerous SEPs. As a result, SMEs may face potential litigation with no predictable outcome or may be forced to accept royalty demands made by the SEP holders. In the worst case, the SME may be forced to change their product, or abandon their business plan altogether, if they cannot afford the litigation or the potentially burdensome FRAND SEP licences. However, some responses claim that SMEs and start-ups are rarely the primary focus of any licensing program.

One respondent suggested that licensing costs should already be included in the financial projections ("bill of licenses") for new products by any responsible SEP implementer, and hence budgeted for in the final price to be paid by consumers. Provided there is a level playing field, this should not impact an implementer's competitive position. Others suggested that measures should be taken to protect and guide SMEs during the licensing negotiations, e.g. licensing rates transparency and availability of experts.

QUESTIONS FOR SEP HOLDERS

Q13. What are top three reasons for licensing/having SEPs?

	All	Companies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
For return on investment in R&D	71%	72%	67%	50%	83%
For defensive purposes/better bargaining power	61%	60%	67%	25%	83%
For continuation of future participation in standardisation	42%	44%	33%	50%	33%
For cross licensing	39%	36%	33%	25%	67%
It is our main source of income	26%	28%	0%	25%	33%

	All	Companies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
Other, please specify….	24%	24%	33%	50%	0%
No. of replies	38	25	3	4	6

Note: multiple answers possible.

	Implementers	SEP Holders
For defensive purposes/better bargaining power	91%	58%
For cross licensing	73%	8%
For return on investment in R&D	36%	100%
For continuation of future participation in standardisation	27%	58%
It is our main source of income	0%	42%
Other, please specify….	18%	25%
No. of replies	11	12

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.; multiple answers possible.

	EU	non-EU
For return on investment in R&D	78%	57%
For defensive purposes/better bargaining power	56%	57%
For continuation of future participation in standardisation	39%	50%
For cross licensing	28%	43%
It is our main source of income	22%	29%
Other, please specify….	33%	21%
No. of replies	18	14

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; multiple answers possible.

Summary of comments

Some respondents explain that the reasons for having/licensing SEPs is a company's strategic choice towards open innovation i.e. to contribute innovative technologies to standardization and debate about it in the standardization context. It enables the emergence of open standards on the market which are much more virtuous than proprietary standards. To enable this virtuous cycle, efficient protection and enforcement of IP and in particular standard essential patents is necessary in order to efficiently get an effective return on investment.

Some respondents claim that SEP holders seek to simplify access to technologies by reducing licensing barriers and by lowering transaction costs. It is their belief that through efficient and effective IP licensing, the necessary incentives for R&D are created, fostering a self-sustaining cycle that can fund future R&D activities. Technological progress and the entire society would suffer should the decision be made to reduce either (i) incentives to innovate or (ii) the comfort given to innovators by strong IP protection required to fight free riders. In a market-based economy, companies cannot keep making huge investments unless they make a reasonable return on their successful inventions

Respondents explain that companies seek to own and maintain SEP portfolios to protect their business – so they use their SEPs mainly for defensive purposes. Some claims that for some technology areas, there has been benefit in owning and licensing SEPs to penetrate and drive adoption of the technology/standard and therefore develop the market. For example, in the case of format licenses, *there was clarity in the licensing model at an early stage* which led implementers to readily adopting the technology and as a result the market developed rapidly.

Q14. On average, how much time after publication of a standard do you first start inviting SEP implementers to take a license for applications known at the time of its adoption?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
less than 6 months	13%	19%		0%	0%
6 – 12 months	13%	13%		50%	0%
1 – 2 years	13%	13%		50%	0%
2 – 4 years	17%	19%		0%	17%
4 – 6 years	13%	13%		0%	17%
More than 6 years	8%	6%		0%	17%
Never	25%	19%		0%	50%
No. of replies	24	16	0	2	6
Average years*	2.1	2.0		1.1	2.7
Avg. for those who start**	2.8	2.5		1.1	5.3

** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed; ** without "Never"*

	Implementers	SEP Holders
less than 6 months	0%	38%
6 – 12 months	0%	0%
1 – 2 years	17%	25%
2 – 4 years	0%	13%
4 – 6 years	0%	25%
More than 6 years	17%	0%
Never	67%	0%
No. of replies	6	8
Average years*	1.6	2.1
Avg. years for those who start**	4.8	2.1

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.
** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed; ** without "Never"*

	EU	non-EU
less than 6 months	25%	10%
6 – 12 months	13%	20%
1 – 2 years	13%	20%
2 – 4 years	25%	10%
4 – 6 years	25%	0%
More than 6 years	0%	10%
Never	0%	30%
No. of replies	8	10
Average years*	2.3	1.6
Avg. years for those who start**	2.3	2.3

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.
** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed; ** without "Never"*

Summary of comments

The comments vary largely and are not susceptible to summary. With regard to patent pools a respondent noted that the initial steps to create a patent pool often starts around the time of the finalization of a standard. The process to create a pool includes understanding the viability of a pool, engaging with the relevant patent owners, preparing the terms of the pool, evaluating patents and generating an understanding of the market of the products that implement the standard. This process may take up to 2 years and needs to be completed before corresponding licenses can be offered to implementers.

Q15. Do you contact all known SEP implementers from the selected category?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Yes	32%	31%	0%	67%	25%
No	68%	69%	100%	33%	75%
No. of replies	25	16	2	3	4

Note: "No opinion/ no answer" answers not taken into account.

	Implementers	SEP Holders
Yes	29%	30%
No	71%	70%
No. of replies	7	10

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion/ no answer" answers not taken into account.

	EU	non-EU
Yes	38%	25%
No	62%	75%
No. of replies	13	8

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "No opinion/ no answer" answers not taken into account.

Summary of comments

The comments differ on this question as well. Respondents note that there are significant costs involved in searching the market to identify the infringing products and there are markets in which new players come and go at a pace that cannot be fully addressed by any organization. It is not possible to search the entire market, which - in the SEP ecosystem - is usually global. Typically, because of this SEP holders leave out start-ups and SMEs.

Some do contact all SEP implementers known to them at a pace that is possible to handle for their organization. Regarding patent pools, it depends on the individual case, contact would be made by the patent pool administrator with as many implementers as practical.

Q16. What percentage of these SEP implementers reply within a year after sending the first letter?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
< 25%	31%	18%	0%	50%	100%
25-40%	0%	0%	0%	0%	0%
40-55%	13%	18%	0%	0%	0%
55%-70%	6%	9%	0%	0%	0%
70-85%	13%	18%	0%	0%	0%
> 85%	38%	36%	100%	50%	0%
No. of replies	16	11	1	2	2
Average %*	58%	64%	93%	53%	13%

Note: "It depends (please explain)" not presented
** Weighted average calculated using the middle of ranges, for the last open range value of 92.5% assumed.*

	Implementers	SEP Holders
< 25%	0%	33%
25-40%	0%	0%
40-55%	0%	17%

	Implementers	SEP Holders
55%-70%	0%	17%
70-85%	33%	0%
> 85%	67%	33%
No. of replies	3	6
Average %*	88%	53%

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "It depends (please explain)" not presented
** Weighted average calculated using the middle of ranges, for the last open range value of 92.5% assumed.*

	EU	non-EU
< 25%	43%	0%
25-40%	0%	0%
40-55%	0%	29%
55%-70%	14%	0%
70-85%	14%	14%
> 85%	29%	57%
No. of replies	7	7
Average %*	52%	78%

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "It depends (please explain)" not presented
** Weighted average calculated using the middle of ranges, for the last open range value of 92.5% assumed.*

Summary of comments

There are differences e.g. between jurisdictions and industries, but overall in one respondent's experience, most of the letters they sent are replied within a year after they were sent. However, a (swift) reply to a letter may not always be a sign of true willingness by the implementer. Respondents claim that the replies received are often an attempt to postpone discussions as much as possible and are rarely a clear indication of true willingness to take a license. Recent case-law offers a number of indicative examples, in which the implementer's response to a notification letter was not considered to be an expression of a sincere willingness to obtain a FRAND licence (e.g. *Sisvel v Haier*, German Federal Court of Justice).

Some argue that the effect from the *Huawei v. ZTE* CJEU judgment is that most SEP implementers now respond without too much delay. Unfortunately, in many cases this is just stating/ posturing the position that one is willing to take a license, without making significant further steps towards actual signing up to a license.

Respondents explain that this works differently with patent pools because licensing negotiations are conducted by licensing administrators under FRAND obligations. Licensing administrators may suggest taking legal action if no response is received to their first letter after a certain time, never exceeding one year. Given that such SEP pools include SEPs of many holders, the negotiation power of SEP pools may be important.

Q17. What percentage of the SEP implementers that reply take a license without litigation?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
< 25%	14%	10%		50%	0%
25-40%	14%	10%		0%	50%
40-55%	0%	0%		0%	0%
55%-70%	7%	10%		0%	0%
70-85%	14%	20%		0%	0%
> 85%	50%	50%		50%	50%
No. of replies	14	10	0	2	2

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Average %*	68%	73%		53%	63%

Note: "It depends (please explain)" not presented
** Weighted average calculated using the middle of ranges, for the last open range value of 92.5% assumed.*

	Implementers	SEP Holders
< 25%	0%	0%
25-40%	0%	20%
40-55%	0%	0%
55%-70%	0%	20%
70-85%	33%	0%
> 85%	67%	60%
No. of replies	3	5
Average %*	88%	75%

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "It depends (please explain)" not presented
** Weighted average calculated using the middle of ranges, for the last open range value of 92.5% assumed.*

	EU	non-EU
< 25%	33%	0%
25-40%	17%	0%
40-55%	0%	0%
55%-70%	17%	0%
70-85%	17%	17%
> 85%	17%	83%
No. of replies	6	6
Average %*	48%	90%

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "It depends (please explain)" not presented
** Weighted average calculated using the middle of ranges, for the last open range value of 92.5% assumed.*

Summary of comments

Some respondents consider that the statistics may not be meaningful as even if most of the implementers take a license without litigation, the ones who do not are almost always the largest implementers.

Some respondents explain that it is important to take into consideration the impact of litigation in general on the willingness of implementers to take a license without litigation. The effect of a litigation against a particular implementer may lead other implementers to take a licence. If patents were not enforced, the vast majority of implementers would consider that there is no reason to take a license.

Some respondents say that in their experience the greatest difficulty is with Asian-based companies, where it has proven difficult to settle without litigation and the threat of injunction.

Q18. On average, how much time after your first letter do implementers take a licence?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
less than 6 months	0%	0%		0%	0%
6-12 months	0%	0%		0%	0%
1-2 years	26%	27%		100%	0%
2-4 years	53%	60%		0%	33%
4-6 years	11%	7%		0%	33%

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
More than 6 years	11%	7%		0%	33%
No. of replies	19	15	0	1	3
Average years*	3.3	3.1		1.5	5.3

** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed.*

	Implementers	SEP Holders
less than 6 months	0%	0%
6-12 months	0%	0%
1-2 years	100%	11%
2-4 years	0%	78%
4-6 years	0%	11%
More than 6 years	0%	0%
No. of replies	3	9
Average years*	1.5	3.1

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.
** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed.*

	EU	non-EU
less than 6 months	0%	0%
6-12 months	0%	0%
1-2 years	14%	44%
2-4 years	71%	44%
4-6 years	0%	11%
More than 6 years	14%	0%
No. of replies	7	9
Average years*	3.5	2.6

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.
** Weighted average calculated using the middle of ranges, for the last open range value of 8 assumed.*

Summary of comments

Experience amongst the respondents with regard to handheld cellular devices shows that licensing discussions may take up to 6 years, often involving litigation. In general, willingness to enter meaningful discussions has been extremely low in the past decade. A respondent claimed that it could be characterized as a "systemic hold-out".

Respondents claim that there may not be typical timeframe within which a licence is concluded, as the duration of a negotiation would depend on various factors. They claim that SEP licensing negotiations are characterized by an information asymmetry. This asymmetry is magnified significantly when licensees are smaller players and have limited experience and expertise in negotiating SEP licences. SEP holders may withhold information without an NDA, and often the negotiation of an NDA is prolonged for a long time due to unreasonable terms proposed by the licensor (not allowing the potential licensee to verify information with suppliers, for example). SEP holders may also not provide sufficient information to substantiate their FRAND offer. Licensing negotiations may also be highly complex, e.g., when including cross licensing arrangements or other commercial agreements unrelated to the SEPs at issue.

Some respondents explain that technology in brown goods[357], IoT and automotive is rapidly advancing so negotiations usually proceed fast. Otherwise negotiated technology will be outdated already at the time of obtaining a license. They claim that if licensing negotiations cannot be

[357] Television sets, audio equipment, and similar household appliances.

concluded in a timely manner and no powerful objections are raised by the potential licensee, SEP holders would resort to litigation, and in this case, almost all of the implementers immediately choose to take a license, try to keep their costs at a minimum and avoid injunctions. In some cases, counterclaims are brought, and licensing negotiations almost reach a stalemate because of conflicting court decisions (which is possible e.g. if different jurisdictions are involved) or the refusal of decisions by appeal courts. In such cases, the process generally takes 4-6 years.

Also here, respondents believe that the geographical location of the implementer correlates with the implementer's timeliness in responding to our offer to license. In particular, it is stated that implementers based in China are very slow to respond. There is a wide range, and as a result an average figure is not informative; for instance, a respondent had experience with Chinese implementers which ignored its communications for over a year or wait until other larger OEM's take a license or simply file suit in a Chinese court without any notice.

Another respondent indicated that a 6-18 months timeframe is an indicator of a willing licensee. According to that respondent there could be a presumption that, absent specific circumstances, the implementer is not willing 18 months after the start of the negotiations.

Questions on the problems related to SEP licensing

Quantitative summary

Lack of transparency on FRAND royalty rate, on SEP landscape (who owns SEP) and divergent court rulings were named as the key problems by three quarters of all respondents, including all respondents from "Implementers" group. For "SEP Holders" the main problems were hold out and anti-suit injunctions.

Tables with replies per question

Q19. What problems do you encounter when it comes to SEP licensing?

"Agree and strongly agree" answers only	All	Companies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
Lack of transparency on FRAND royalty rate	68%	61%	86%	75%	80%
Lack of transparency of the SEPs landscape in general and of the share of the different SEP holders	67%	66%	86%	56%	70%
Divergent court rulings	67%	64%	86%	50%	78%
Court rulings ordering to take a worldwide licence	60%	52%	71%	50%	90%
Lack of guidance on the FRAND concept	57%	53%	86%	50%	60%
Lack of clarity on the level of licensing	55%	49%	57%	75%	60%
The licensing process is too expensive	53%	42%	67%	50%	90%
Injunctions	53%	49%	71%	38%	70%
Hold up / Unavailability of a licence	52%	47%	71%	50%	60%
Anti-suit injunctions	47%	44%	29%	75%	44%
Hold out	38%	34%	29%	67%	30%
No. of replies*	58-64	33-38	6-7	8-9	9-10

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
Lack of transparency on FRAND royalty rate	100%	19%
Lack of transparency of the SEPs landscape in general and of the share of the different SEP holders	97%	13%

"Agree and strongly agree" answers only	Implementers	SEP Holders
Court rulings ordering to take a worldwide licence	96%	6%
Lack of guidance on the FRAND concept	93%	19%
Divergent court rulings	86%	38%
Hold up / Unavailability of a licence	86%	6%
Lack of clarity on the level of licensing	83%	13%
Injunctions	83%	6%
The licensing process is too expensive	68%	25%
Anti-suit injunctions	29%	81%
Hold out	4%	100%
No. of replies*	28-29	15-17

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
Lack of transparency on FRAND royalty rate	71%	58%
Divergent court rulings	70%	56%
Lack of transparency of the SEPs landscape in general and of the share of the different SEP holders	69%	63%
Lack of guidance on the FRAND concept	59%	53%
Lack of clarity on the level of licensing	58%	47%
Anti-suit injunctions	56%	32%
Hold up / Unavailability of a licence	52%	50%
Court rulings ordering to take a worldwide licence	50%	61%
The licensing process is too expensive	50%	39%
Hold out	47%	26%
Injunctions	45%	58%
No. of replies*	30-35	18-19

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
Lack of transparency on FRAND royalty rate	68%	5%	27%	63
Lack of transparency of the SEPs landscape in general and of the share of the different SEP holders	67%	6%	27%	64
Divergent court rulings	67%	17%	17%	60
Court rulings ordering to take a worldwide licence	60%	17%	22%	58
Lack of guidance on the FRAND concept	57%	13%	30%	63
Lack of clarity on the level of licensing	55%	13%	32%	60
The licensing process is too expensive	53%	32%	15%	60
Injunctions	53%	16%	31%	62
Hold up / Unavailability of a licence	52%	11%	36%	61
Anti-suit injunctions	47%	27%	27%	60
Hold out	38%	16%	46%	61
Other (please specify)	86%	14%	0%	7

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies"	Agree	Neutral	Disagree	No.
Lack of transparency of the SEPs landscape in general and of the share of the different SEP holders	66%	5%	29%	38
Divergent court rulings	64%	17%	19%	36
Lack of transparency on FRAND royalty rate	61%	8%	32%	38
Lack of guidance on the FRAND concept	53%	8%	39%	38
Court rulings ordering to take a worldwide licence	52%	21%	27%	33

"Companies"	Agree	Neutral	Disagree	No.
Injunctions	49%	22%	30%	37
Lack of clarity on the level of licensing	49%	11%	40%	35
Hold up / Unavailability of a licence	47%	14%	39%	36
Anti-suit injunctions	44%	28%	28%	36
The licensing process is too expensive	42%	36%	22%	36
Hold out	34%	17%	49%	35
Other (please specify)	75%	25%	0%	4

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Summary of comments

Some argue that any lack of transparency regarding the aspects identified above are of particular importance for SMEs and start-ups, as they often do not have adequate knowledge and are unable to take appropriate action against SEP holders.

Other respondents believe there is no lack of transparency and that the SEPs are accessible through existing databases. Publicly and commercially available information, case law and government policy may be relied upon for constructive SEP licensing discussions in good faith. Some consider that absolute transparency is impossible to achieve.

Some believe that divergence on treatment of SEPs by national government policies and court decisions, including valuation, availability of injunctive relief and antisuit injunctions render SEP licensing difficult and costly. Others claim that court rulings within Europe are quite convergent, however globally, there is still some divergence, particularly as it relates to availability of injunctive relief.

Some respondents consider that it may be desirable to promote establishment of patent pools where essentiality check, uniform licensing conditions and one stop-shop efficiency can be achieved.

QUESTIONS FOR SEPS IMPLEMENTERS

Q20. Under which circumstances would you consider not using a certain standard? Question of particular relevance for start-ups and SMEs

"Agree and strongly agree" answers only	All	Companies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
There is an alternative technology which is available at better conditions	86%	87%	83%	67%	100%
There is no real need to implement the standard. The standardised technology is a mere add on.	73%	81%	67%	67%	33%
The requested royalty is too high	70%	71%	67%	67%	67%
Licensing negotiations and litigation are too costly	51%	52%	67%	33%	33%
The SEP holder refuses to give a licence	48%	50%	67%	50%	0%
It is not clear which patents are truly essential and require a licence for a particular implementation	29%	30%	33%	50%	0%
It is not clear which SEPs my products actually implement/use	29%	30%	33%	33%	0%
No. of replies*	31-35	20-23	6	2-3	3

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
There is an alternative technology which is available at better conditions	90%	75%

"Agree and strongly agree" answers only	Implementers	SEP Holders
The requested royalty is too high	80%	29%
There is no real need to implement the standard. The standardised technology is a mere add on.	74%	75%
The SEP holder refuses to give a licence	72%	0%
Licensing negotiations and litigation are too costly	67%	13%
It is not clear which patents are truly essential and require a licence for a particular implementation	35%	0%
It is not clear which SEPs my products actually implement/use	33%	0%
No. of replies*	18-21	7-8

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
There is an alternative technology which is available at better conditions	78%	100%
There is no real need to implement the standard. The standardised technology is a mere add on.	67%	100%
The requested royalty is too high	62%	89%
Licensing negotiations and litigation are too costly	52%	56%
The SEP holder refuses to give a licence	45%	75%
It is not clear which patents are truly essential and require a licence for a particular implementation	30%	38%
It is not clear which SEPs my products actually implement/use	30%	33%
No. of replies*	20-23	8-9

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Disagree	No.
There is an alternative technology which is available at better conditions	86%	14%	35
There is no real need to implement the standard. The standardised technology is a mere add on.	73%	27%	33
The requested royalty is too high	70%	30%	33
Licensing negotiations and litigation are too costly	51%	49%	35
The SEP holder refuses to give a licence	48%	52%	31
It is not clear which patents are truly essential and require a licence for a particular implementation	29%	71%	34
It is not clear which SEPs my products actually implement/use	29%	71%	35
Other (please specify)	100%	0%	5

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Disagree	No.
There is an alternative technology which is available at better conditions	87%	13%	23
There is no real need to implement the standard. The standardised technology is a mere add on.	81%	19%	21
The requested royalty is too high	71%	29%	21
Licensing negotiations and litigation are too costly	52%	48%	23
The SEP holder refuses to give a licence	50%	50%	20
It is not clear which patents are truly essential and require a licence for a particular implementation	30%	70%	23
It is not clear which SEPs my products actually implement/use	30%	70%	23
Other (please specify)	100%	0%	3

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"SMEs answers"	Agree	Disagree	No.
There is an alternative technology which is available at better conditions	88%	13%	8
There is no real need to implement the standard. The standardised technology is a mere add on.	75%	25%	8
Licensing negotiations and litigation are too costly	75%	25%	8
The requested royalty is too high	71%	29%	7
The SEP holder refuses to give a licence	63%	38%	8
It is not clear which patents are truly essential and require a licence for a particular implementation	38%	63%	8
It is not clear which SEPs my products actually implement/use	38%	63%	8
Other (please specify)			0

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account. All respondents who identified themselves as SMEs (please note that only 1 SME that is a company replied to this question)

Summary of comments

Some respondents noted that it was not unusual for companies, particularly start-ups and SMEs, to seek to use an alternate standard or abandon plans for a product because of concerns over the amount of royalties. According to them nearly all examples relate to cellular SEPs (versus other SEPs). The exponential growth of the cellular ecosystem over the last 30 years underlines its attractiveness, especially for innovative new businesses (including SMEs and start-ups).

Some respondents explain that OEMs are legally obliged to implement cellular communications SEPs and must use them regardless of the circumstances described above. Emergency calling ("eCall") became a mandatory feature of all vehicles produced after April 2018. If the parts providing eCall functionality are not supplied, no vehicle can leave the production line. Any injunction prohibiting the use of connectivity standards in a car may indirectly also prohibit the sale of the car as such.

Some respondents explain that suppliers are subject to instructions from their customers. In those cases, inclusion of the standard is already required to market a competitive product.

Furthermore, respondents explain that they have no choice but to use a particular standard if they want to ensure compliance to the function and cybersecurity of the product. For example, in the telecommunication industry, it is usually not an option to use non-standard alternative technology.

One respondent explains that standard implementation decisions are made well before patent licensing becomes an issue and that the question gets the timeline wrong. As an implementer, they would not know the amount of the royalty, or the patents asserted until years after they make the decision to implement a standard.

Q21. Which of the following behaviours would you assess as hold-up or opportunistic behaviour by a SEP holder?

"Agree and strongly agree" answers only	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
The SEP holder adopts discriminatory or exclusionary licensing terms or practices	84%	86%	83%	67%	83%
The SEP holder requires implementers to pay royalties for rights to patents that are not relevant to the implementer's specific products	83%	84%	83%	67%	83%
The SEP holder insists on a new licence at a higher price in the context of a patent pool when the implementer has a licence for the same patents of the same SEP holder.	79%	75%	83%	67%	100 %

"Agree and strongly agree" answers only	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
The SEP holder requires implementers to pay royalties for rights to patents that are not essential to the relevant standardized technology	78%	74%	83%	67%	100 %
The SEP holder refuses to license	78%	77%	83%	67%	83%
The SEP holder refuses to disclose the terms of prior licences with similarly situated companies	72%	65%	83%	67%	100 %
The SEP holder attempts to base the royalty owed on prior licences that were not reasonably comparable (due to differences in patents, duration, geographic scope, implementer type, etc.).	71%	63%	83%	67%	100 %
The SEP holder refuses to license to a certain level in the value chain	64%	56%	83%	67%	83%
The SEP holder brings the accused infringer's customers into the licensing dispute, by either contacting them, threatening to sue them, or actually suing them	60%	58%	50%	67%	80%
The SEP holder discloses the SEP to the Standard Development Organisation ("SDO") after the standard was adopted	51%	48%	67%	33%	60%
The SEP holder refuses to license at a certain price I find commercially acceptable	48%	41%	67%	67%	50%
No. of replies*	42-46	28-32	6	3	5-6

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
The SEP holder requires implementers to pay royalties for rights to patents that are not relevant to the implementer's specific products	100%	67%
The SEP holder adopts discriminatory or exclusionary licensing terms or practices	100%	50%
The SEP holder refuses to license	100%	33%
The SEP holder requires implementers to pay royalties for rights to patents that are not essential to the relevant standardized technology	100%	33%
The SEP holder insists on a new licence at a higher price in the context of a patent pool when the implementer has a licence for the same patents of the same SEP holder.	100%	14%
The SEP holder refuses to disclose the terms of prior licences with similarly situated companies	100%	0%
The SEP holder attempts to base the royalty owed on prior licences that were not reasonably comparable (due to differences in patents, duration, geographic scope, implementer type, etc.).	96%	0%
The SEP holder brings the accused infringer's customers into the licensing dispute, by either contacting them, threatening to sue them, or actually suing them	84%	0%
The SEP holder discloses the SEP to the Standard Development Organisation ("SDO") after the standard was adopted	82%	0%
The SEP holder refuses to license at a certain price I find commercially acceptable	74%	0%
The SEP holder refuses to license to a certain level in the value chain	96%	0%
No. of replies*	22-25	7-9

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
The SEP holder requires implementers to pay royalties for rights to patents that are not relevant to the implementer's specific products	84%	80%
The SEP holder adopts discriminatory or exclusionary licensing terms or practices	79%	93%
The SEP holder refuses to license	76%	79%
The SEP holder requires implementers to pay royalties for rights to patents that are not essential to the relevant standardized technology	76%	73%

"Agree and strongly agree" answers only	EU	non-EU
The SEP holder insists on a new licence at a higher price in the context of a patent pool when the implementer has a licence for the same patents of the same SEP holder.	70%	86%
The SEP holder refuses to disclose the terms of prior licences with similarly situated companies	68%	67%
The SEP holder attempts to base the royalty owed on prior licences that were not reasonably comparable (due to differences in patents, duration, geographic scope, implementer type, etc.).	63%	73%
The SEP holder refuses to license to a certain level in the value chain	60%	63%
The SEP holder brings the accused infringer's customers into the licensing dispute, by either contacting them, threatening to sue them, or actually suing them	52%	67%
The SEP holder discloses the SEP to the Standard Development Organisation ("SDO") after the standard was adopted	50%	50%
The SEP holder refuses to license at a certain price I find commercially acceptable	43%	53%
No. of replies*	23-25	14-16

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
The SEP holder adopts discriminatory or exclusionary licensing terms or practices	84%	11%	5%	44
The SEP holder requires implementers to pay royalties for rights to patents that are not relevant to the implementer's specific products	83%	11%	7%	46
The SEP holder insists on a new licence at a higher price in the context of a patent pool when the implementer has a licence for the same patents of the same SEP holder.	79%	12%	10%	42
The SEP holder requires implementers to pay royalties for rights to patents that are not essential to the relevant standardized technology	78%	11%	11%	46
The SEP holder refuses to license	78%	4%	18%	45
The SEP holder refuses to disclose the terms of prior licences with similarly situated companies	72%	4%	24%	46
The SEP holder attempts to base the royalty owed on prior licences that were not reasonably comparable (due to differences in patents, duration, geographic scope, implementer type, etc.).	71%	11%	18%	45
The SEP holder refuses to license to a certain level in the value chain	64%	6%	30%	47
The SEP holder brings the accused infringer's customers into the licensing dispute, by either contacting them, threatening to sue them, or actually suing them	60%	11%	29%	45
The SEP holder discloses the SEP to the Standard Development Organisation ("SDO") after the standard was adopted	51%	14%	35%	43
The SEP holder refuses to license at a certain price I find commercially acceptable	48%	23%	30%	44
Other (please specify)	86%	0%	14%	7

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
The SEP holder adopts discriminatory or exclusionary licensing terms or practices	86%	10%	3%	29
The SEP holder requires implementers to pay royalties for rights to patents that are not relevant to the implementer's specific products	84%	10%	6%	31
The SEP holder refuses to license	77%	3%	20%	30
The SEP holder insists on a new licence at a higher price in the context of a patent pool when the implementer has a licence for the same patents of the same SEP holder.	75%	14%	11%	28
The SEP holder requires implementers to pay royalties for rights to patents that are not essential to the relevant standardized technology	74%	13%	13%	31

"Companies answers"	Agree	Neutral	Disagree	No.
The SEP holder refuses to disclose the terms of prior licences with similarly situated companies	65%	6%	29%	31
The SEP holder attempts to base the royalty owed on prior licences that were not reasonably comparable (due to differences in patents, duration, geographic scope, implementer type, etc.).	63%	17%	20%	30
The SEP holder brings the accused infringer's customers into the licensing dispute, by either contacting them, threatening to sue them, or actually suing them	58%	10%	32%	31
The SEP holder refuses to license to a certain level in the value chain	56%	9%	34%	32
The SEP holder discloses the SEP to the Standard Development Organisation ("SDO") after the standard was adopted	48%	14%	38%	29
The SEP holder refuses to license at a certain price I find commercially acceptable	41%	24%	34%	29
Other (please specify)	83%	0%	17%	6

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Summary of answers

Some respondents commented that the statement "The SEP holder refuses to license at a certain price I find commercially acceptable" should read "The SEP holder refuses to license at a certain price I find FRAND".

Mostly agree

Some respondents proposed the inclusion of the following to the list under this question:

- SEP holders requiring potential licensees to enter into restrictive NDAs
- SEP holders refusing to disclose information necessary to evaluate essentiality, infringement and validity
- SEP holders not explaining how terms are FRAND
- SEP holders heavily redacting comparable agreements to prevent comparison
- SEP holders seeking a global portfolio rate whilst threatening an injunction
- Defensive suspension

Mostly disagree

Some respondents explain that most of the practices listed are not opportunistic. A SEP holder that refuses to license at all or refuses to license a particular implementer but takes no action to enforce its patents is not engaging in hold-up. It is simply allowing the implementer to use its technology.

Regarding 'excessive demands by the SEP owner' some respondents explain that a royalty demand by a SEP holder cannot be enforced without court intervention (and thus court evaluation/adjudication) and as such hold-up is not possible where a FRAND commitment has been given. Furthermore, a SEP holder can be bound by confidentiality clauses enforced upon demand of an implementer.

With respect to post-standardization disclosures, IPR policies of SDOs do not require patent searches and patent prosecution takes time, and therefore it is not uncommon for patent holders to have insufficient information to make disclosures pre-standardization.

One respondent clarified that they understand the question "The SEP holder requires implementers to pay royalties for rights to patents that are not essential to the relevant standardized technology" to be forcing a license combining SEPs with non-SEPs or forcing payment for non-SEPs that are not used. According to this and other respondents, it is possible that a SEP holder also has non-SEPs that may be infringed. There is nothing opportunistic about requiring a license for implemented patents, even if the product also practices SEPs.

QUESTION FOR SEP HOLDERS

Q22. Which of the following behaviours would you assess as hold-out or opportunistic behaviour by implementers?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
Repeatedly ask for information that the SEP holder has already provided	80%	89%	50%	75%	75%
Insist repeatedly that the licence offer is not FRAND without providing substantive arguments to demonstrate why	78%	81%	50%	75%	100 %
Ignore notifications and other communications for months	76%	78%	50%	75%	100 %
Express a willingness to take a FRAND licence - but only for each individual patent for which infringement, essentiality, and validity is confirmed by the courts	63%	74%	33%	50%	50%
Refuse to accept licence terms that have been confirmed by an EU court to be FRAND, and that are relevant and comparable for that implementer.	63%	70%	33%	50%	75%
Refuse or delay signing a non-disclosure agreement as a hold-out tactic	58%	65%	17%	75%	50%
Table a counter-offer only once litigation has been initiated	58%	63%	17%	75%	67%
Buy time by professing willingness to engage in constructive licensing negotiations - even as behaviour suggests otherwise	56%	56%	33%	75%	75%
Refuse to enter into a global licence agreement despite having a global business for products that use standards	54%	59%	17%	75%	50%
Insist on obtaining unreasonable amounts of information (e.g. a claim chart for every SEP in a portfolio) without appropriate confidentiality arrangements in place	51%	63%	17%	50%	25%
Table counter-offers that are obviously unreasonable and unacceptable for the rights holder (e.g. a licensing rate of just 0.001 per cent per patent family)	46%	59%	17%	25%	25%
Claim to lack information or to not understand the licence offer	28%	35%	0%	25%	25%
Redirect the SEP holder to upstream suppliers for licences	24%	26%	0%	50%	25%
Redirect the SEP holder to a subsidiary or holding company	17%	19%	0%	25%	25%
No. of replies*	40-41	26-27	6	4	3-4

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
Repeatedly ask for information that the SEP holder has already provided	56%	100%
Insist repeatedly that the licence offer is not FRAND without providing substantive arguments to demonstrate why	50%	100%
Ignore notifications and other communications for months	44%	100%
Express a willingness to take a FRAND licence - but only for each individual patent for which infringement, essentiality, and validity is confirmed by the courts	28%	100%
Refuse to accept licence terms that have been confirmed by an EU court to be FRAND, and that are relevant and comparable for that implementer.	28%	100%
Buy time by professing willingness to engage in constructive licensing negotiations - even as behaviour suggests otherwise	17%	100%
Refuse or delay signing a non-disclosure agreement as a hold-out tactic	6%	100%
Refuse to enter into a global licence agreement despite having a global business for products that use standards	6%	100%
Table a counter-offer only once litigation has been initiated	6%	100%
Claim to lack information or to not understand the licence offer	6%	50%
Redirect the SEP holder to a subsidiary or holding company	6%	31%

"Agree and strongly agree" answers only	Implementers	SEP Holders
Insist on obtaining unreasonable amounts of information (e.g. a claim chart for every SEP in a portfolio) without appropriate confidentiality arrangements in place	0%	100%
Table counter-offers that are obviously unreasonable and unacceptable for the rights holder (e.g. a licensing rate of just 0.001 per cent per patent family)	0%	100%
Redirect the SEP holder to upstream suppliers for licences	0%	46%
No. of replies*	17-18	12-13

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
Repeatedly ask for information that the SEP holder has already provided	83%	79%
Insist repeatedly that the licence offer is not FRAND without providing substantive arguments to demonstrate why	78%	71%
Ignore notifications and other communications for months	78%	64%
Express a willingness to take a FRAND licence - but only for each individual patent for which infringement, essentiality, and validity is confirmed by the courts	74%	50%
Refuse to accept licence terms that have been confirmed by an EU court to be FRAND, and that are relevant and comparable for that implementer.	70%	50%
Buy time by professing willingness to engage in constructive licensing negotiations - even as behaviour suggests otherwise	57%	50%
Refuse to enter into a global licence agreement despite having a global business for products that use standards	55%	53%
Refuse or delay signing a non-disclosure agreement as a hold-out tactic	52%	69%
Table a counter-offer only once litigation has been initiated	52%	64%
Insist on obtaining unreasonable amounts of information (e.g. a claim chart for every SEP in a portfolio) without appropriate confidentiality arrangements in place	52%	57%
Table counter-offers that are obviously unreasonable and unacceptable for the rights holder (e.g. a licensing rate of just 0.001 per cent per patent family)	48%	50%
Claim to lack information or to not understand the licence offer	32%	21%
Redirect the SEP holder to upstream suppliers for licences	26%	21%
Redirect the SEP holder to a subsidiary or holding company	17%	14%
No. of replies*	22-23	13-15

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
Repeatedly ask for information that the SEP holder has already provided	80%	7%	12%	41
Insist repeatedly that the licence offer is not FRAND without providing substantive arguments to demonstrate why	78%	7%	15%	41
Ignore notifications and other communications for months	76%	10%	15%	41
Express a willingness to take a FRAND licence - but only for each individual patent for which infringement, essentiality, and validity is confirmed by the courts	63%	10%	27%	41
Refuse to accept licence terms that have been confirmed by an EU court to be FRAND, and that are relevant and comparable for that implementer.	63%	10%	27%	41
Refuse or delay signing a non-disclosure agreement as a hold-out tactic	58%	8%	35%	40
Table a counter-offer only once litigation has been initiated	58%	15%	28%	40
Buy time by professing willingness to engage in constructive licensing negotiations - even as behaviour suggests otherwise	56%	17%	27%	41
Refuse to enter into a global licence agreement despite having a global business for products that use standards	54%	10%	37%	41
Insist on obtaining unreasonable amounts of information (e.g. a claim chart for every SEP in a portfolio) without appropriate confidentiality arrangements in place	51%	10%	39%	41

"All answers"	Agree	Neutral	Disagree	No.
Table counter-offers that are obviously unreasonable and unacceptable for the rights holder (e.g. a licensing rate of just 0.001 per cent per patent family)	46%	12%	41%	41
Claim to lack information or to not understand the licence offer	28%	35%	38%	40
Redirect the SEP holder to upstream suppliers for licences	24%	32%	44%	41
Redirect the SEP holder to a subsidiary or holding company	17%	37%	46%	41
Other (please specify)	100%	0%	0%	2

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
Repeatedly ask for information that the SEP holder has already provided	89%	7%	4%	27
Insist repeatedly that the licence offer is not FRAND without providing substantive arguments to demonstrate why	81%	7%	11%	27
Ignore notifications and other communications for months	78%	11%	11%	27
Express a willingness to take a FRAND licence - but only for each individual patent for which infringement, essentiality, and validity is confirmed by the courts	74%	4%	22%	27
Refuse to accept licence terms that have been confirmed by an EU court to be FRAND, and that are relevant and comparable for that implementer.	70%	7%	22%	27
Refuse or delay signing a non-disclosure agreement as a hold-out tactic	65%	4%	31%	26
Insist on obtaining unreasonable amounts of information (e.g. a claim chart for every SEP in a portfolio) without appropriate confidentiality arrangements in place	63%	7%	30%	27
Table a counter-offer only once litigation has been initiated	63%	15%	22%	27
Refuse to enter into a global licence agreement despite having a global business for products that use standards	59%	11%	30%	27
Table counter-offers that are obviously unreasonable and unacceptable for the rights holder (e.g. a licensing rate of just 0.001 per cent per patent family)	59%	7%	33%	27
Buy time by professing willingness to engage in constructive licensing negotiations - even as behaviour suggests otherwise	56%	19%	26%	27
Claim to lack information or to not understand the licence offer	35%	38%	27%	26
Redirect the SEP holder to upstream suppliers for licences	26%	41%	33%	27
Redirect the SEP holder to a subsidiary or holding company	19%	44%	37%	27
Other (please specify)	100%	0%	0%	2

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Summary of answers

Agree

Courts in the EU have confirmed that almost all of the aforementioned examples may constitute hold-out given the individual circumstances of the specific dispute. (e.g. the German Federal Court of Justice and the UK Supreme Court indicate that "willingness" requires more than pure statements).

Disagree

Some respondents commented that the scenarios are very broad and subjective, and that the reasons to such behaviour might be completely justified and acts in good faith (contrary to what is implied in the questions). Some of the statements in the question (such as 'buying time') refer to subjective assessments. What one party may perceive as 'buying time' may be good faith efforts trying to understand and assess whether an offer is FRAND.

While no empirical evidence base points to their occurrence being widespread/systemic, some respondents note that such instances are already fully addressable via judicial mechanisms under today's system in the EU.

Questions on transparency

Quantitative summary

Respondents asked for more public information on SEP as regards "patent and application number" (88% of all responses), "relevant standard, version, section of the standard" (80%), "contact details of SEP holder" (80%), "transfer of ownership" (77%), "licensing programs" (76%) and "standard FRAND terms and conditions" (72%).

Patent pools should disclose "standards subject to pool licensing" (100%), "product royalties per programme" (94%) and "list of SEP holders" (87%).

Around 70% of respondents considered that a confidential repository of licensing agreements could help judges and arbitrators to determine a FRAND rate. Such repository should contain information on "licensed SEPs" (96%), "royalties" (96%) and "methodology used to calculate the royalty" (94%).

Tables with replies per question

Q23. In your view, which of the information below should the SEP holder provide publicly?

"Agree and strongly agree" answers only	All	Compa-nies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Patent and application number	88%	84%	86%	92%	100%
Contact details of SEP holder	80%	73%	86%	85%	100%
Relevant standard, version, section of the standard	80%	76%	86%	85%	89%
Transfer of ownership, if any	77%	72%	86%	83%	78%
Licensing programs	76%	73%	71%	80%	89%
Standard FRAND terms and conditions	72%	64%	86%	75%	89%
High-level claim charts	63%	54%	71%	67%	89%
Information on the enforceability of the patent (e.g. application, granted, validity)	56%	59%	29%	56%	67%
Product categories that use the SEPs	52%	54%	29%	50%	67%
Essentiality confirmed by an independent third party	50%	51%	29%	55%	56%
List of licensees	46%	36%	43%	64%	67%
Detailed claim charts	45%	46%	43%	45%	44%
No. of replies*	62-66	36-37	7	9-13	9

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
Patent and application number	100%	65%
Relevant standard, version, section of the standard	100%	53%
Transfer of ownership, if any	96%	38%
Licensing programs	93%	50%
Standard FRAND terms and conditions	93%	41%
Contact details of SEP holder	89%	71%
High-level claim charts	86%	25%
Essentiality confirmed by an independent third party	75%	13%
Detailed claim charts	71%	0%
Information on the enforceability of the patent (e.g. application, granted, validity)	71%	19%
List of licensees	64%	12%
Product categories that use the SEPs	46%	50%
No. of replies*	28	16-17

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
Patent and application number	86%	84%
Relevant standard, version, section of the standard	82%	74%
Contact details of SEP holder	82%	68%
Licensing programs	74%	74%
Transfer of ownership, if any	73%	83%
Standard FRAND terms and conditions	70%	67%
High-level claim charts	61%	56%
Essentiality confirmed by an independent third party	49%	50%
Information on the enforceability of the patent (e.g. application, granted, validity)	49%	67%
Product categories that use the SEPs	47%	56%
Detailed claim charts	46%	44%
List of licensees	34%	58%
No. of replies*	35-38	18-19

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
Patent and application number	88%	8%	5%	65
Relevant standard, version, section of the standard	80%	5%	15%	66
Contact details of SEP holder	80%	14%	6%	66
Transfer of ownership, if any	77%	6%	17%	64
Licensing programs	76%	8%	16%	63
Standard FRAND terms and conditions	72%	9%	19%	64
High-level claim charts	63%	9%	28%	65
Information on the enforceability of the patent (e.g. application, granted, validity)	56%	18%	26%	62
Product categories that use the SEPs	52%	25%	22%	63
Essentiality confirmed by an independent third party	50%	22%	28%	64
List of licensees	46%	17%	37%	63
Detailed claim charts	45%	16%	39%	64
Other (please specify)	67%	17%	17%	6

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
Patent and application number	84%	11%	5%	37
Relevant standard, version, section of the standard	76%	5%	19%	37
Contact details of SEP holder	73%	19%	8%	37
Licensing programs	73%	11%	16%	37
Transfer of ownership, if any	72%	6%	22%	36
Standard FRAND terms and conditions	64%	17%	19%	36
Information on the enforceability of the patent (e.g. application, granted, validity)	59%	14%	27%	37
High-level claim charts	54%	14%	32%	37
Product categories that use the SEPs	54%	19%	27%	37
Essentiality confirmed by an independent third party	51%	19%	30%	37
Detailed claim charts	46%	14%	41%	37
List of licensees	36%	25%	39%	36
Other (please specify)	67%	33%	0%	3

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Summary of comments

It is very much felt by implementers that most SEP holders do not provide enough information about the essentiality of their SEPs to substantiate their claims that they are infringing their patents. As is clear from the percentages above, most implementers would like to have most of the listed

information to be provided by the SEP holders. For further details as to the information they would like to receive when evaluating a licence offer, many implementers refer to Annex B "Documentation Relating to Licensing Negotiations" of Consortium Workshop Agreement (CWA) 95000[358] which mentions in this regard that the details about the asserted patents (including ownership and validity) and explanations why these are infringed and how the royalty rate is calculated should be provided voluntarily and proactively by SEP holders. In addition, a respondent suggested that all such information should be made available in one place, to allow implementers to compare SEP holders' portfolios on essentiality, remaining lifetime, geographical scope, implementation levels, etc.

However, SEP holders prefer to keep most information confidential except for the data that is already publicly available such as the patent number, standard details and details of the licensing program. The more sensitive and confidential information, such as claim charts, third-party essentiality checks or list of licensees, they consider better suited for provision under a properly executed non-disclosure agreement (NDA) in the interest of both parties. It is mentioned that this is recognized as a general practice in section 4.4 of the ETSI Guide on IPR. It does not alter the normal practice of entering into a confidentiality agreement covering license negotiations where both parties typically exchange confidential information. Indeed, they stress that also licensees are keen to maintain the terms and conditions of the FRAND license strictly confidentiality in fear of being the next "target" for another SEP holder and have intervened to that effect before the courts. Most SEP holders are particularly reluctant to publicly disclose claim charts, or third-party essentiality checks. The latter in particular shouldn't be imposed without corresponding obligations on implementers to provide assessments of products' use of the standard.

As arguments in favour of as much transparency as possible it was mentioned that:

- Transparency is the foundation of an efficient market for SEP licences, in which costs are as low as possible, SEP holders receive FRAND royalty payments as soon as possible, and implementers have high certainty about the costs of SEP licensing. Information relevant to setting FRAND rates and other terms should be publicly available, unless its disclosure would plausibly damage a party. This will allow licensors and implementers to identify each other and agree licence terms without undue delay.
- Transparency is the prerequisite of predictability of the full patent licensing cost of implementing a standard before making the decision of whether to implement the standard and it is consistent with the very spirit of the patent system, which is based on disclosure by inventors of the content of their inventions and public access through patent offices to the description of inventions and the status of patents.
- Detailed claim charts, sufficient information about the license offer and its economic key points will be of particular relevance to start-ups, because they do not have the expertise in-house to do in-depth technical evaluations and economic analyses of entire SEP-ecosystems.

The hold-up problem and appearance of hold-out result from a significant lack of transparency, which creates information asymmetries and excessive leverage. Many of the problems raised in this survey

[358] See CWA95000.pdf (standict.eu). In 2017, industry players under the auspices of CEN-CENELEC attempted to establish business-led guidance in the form of a so-called 'consortium workshop agreement' (CWA). This Annex provides a list of information and documents that may typically be required by a potential licensee in order to evaluate a license offer, including: 1) Basic information that should always be voluntarily and proactively provided by the SEP holder; 2) Information that should be made available upon request by the potential licensee; 3) Additional information that should be made available when the asserted SEP's include patents that are, or have previously been included in a licensing program or patent pool.

would be resolved by making the FRAND rate transparent and making it easy for companies to verify that an offered rate is FRAND and that the SEPs are actually standard essential and infringed.

Q24. In your view, which of the information below should patent pools make publicly available?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
Standards subject to pool licensing	100%	100%	100%	100%	100 %
Product royalties per programme	94%	94%	100%	80%	100 %
List of SEP holders	90%	89%	100%	100%	78%
List of certified SEPs	87%	86%	100%	73%	100 %
Standard licence agreement per programme	81%	75%	86%	82%	100 %
Duplicate royalty policy	79%	81%	100%	70%	67%
Process for evaluating SEPs to be included in the pool (essentiality, validity etc.)	76%	69%	86%	70%	100 %
List of licensees	75%	75%	86%	73%	67%
Illustrative cross-references to standard explaining why the SEPs are found to be essential	74%	72%	86%	70%	78%
Pool Administrators' shareholders / ownership structure	70%	61%	83%	89%	78%
List of independent evaluators	63%	57%	71%	64%	78%
List of licensed products	48%	40%	29%	70%	67%
No. of replies*	56-63	31-36	6-7	9-11	9

Note: "Other (please specify)" and answers on the footnote to "Duplicate royalty policy" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
Standards subject to pool licensing	100%	100%
Product royalties per programme	100%	100%
List of certified SEPs	100%	81%
Standard licence agreement per programme	100%	63%
Duplicate royalty policy[1]	100%	50%
Process for evaluating SEPs to be included in the pool (essentiality, validity etc.)	96%	47%
Illustrative cross-references to standard explaining why the SEPs are found to be essential	96%	47%
List of SEP holders	93%	94%
List of licensees	89%	63%
Pool Administrators' shareholders / ownership structure	89%	33%
List of independent evaluators	79%	44%
List of licensed products	39%	29%
No. of replies*	27-28	10-16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
Standards subject to pool licensing	100%	100%
Product royalties per programme	92%	94%
List of SEP holders	92%	94%
List of certified SEPs	86%	83%
Duplicate royalty policy[1]	84%	75%

"Agree and strongly agree" answers only	EU	non-EU
Standard licence agreement per programme	78%	78%
Illustrative cross-references to standard explaining why the SEPs are found to be essential	75%	71%
List of licensees	72%	83%
Pool Administrators' shareholders / ownership structure	71%	65%
Process for evaluating SEPs to be included in the pool (essentiality, validity etc.)	69%	76%
List of independent evaluators	53%	76%
List of licensed products	40%	53%
No. of replies*	31-36	16-18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
Standards subject to pool licensing	100%	0%	0%	63
Product royalties per programme	94%	3%	3%	62
List of SEP holders	90%	3%	6%	63
List of certified SEPs	87%	5%	8%	63
Standard licence agreement per programme	81%	8%	11%	63
Duplicate royalty policy	79%	13%	9%	56
Process for evaluating SEPs to be included in the pool (essentiality, validity etc.)	76%	19%	5%	62
List of licensees	75%	13%	13%	63
Illustrative cross-references to standard explaining why the SEPs are found to be essential	74%	16%	10%	62
Pool Administrators' shareholders / ownership structure	70%	15%	15%	60
List of independent evaluators	63%	26%	11%	62
List of licensed products	48%	23%	30%	61
Other (please specify)	100%	0%	0%	6

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account
answers on the footnote to "Duplicate royalty policy" not included in the table

"Companies answers"	Agree	Neutral	Disagree	No.
Standards subject to pool licensing	100%	0%	0%	36
Product royalties per programme	94%	3%	3%	36
List of SEP holders	89%	6%	6%	36
List of certified SEPs	86%	8%	6%	36
Duplicate royalty policy[1]	81%	16%	3%	31
List of licensees	75%	11%	14%	36
Standard licence agreement per programme	75%	14%	11%	36
Illustrative cross-references to standard explaining why the SEPs are found to be essential	72%	22%	6%	36
Process for evaluating SEPs to be included in the pool (essentiality, validity etc.)	69%	25%	6%	36
Pool Administrators' shareholders / ownership structure	61%	22%	17%	36
List of independent evaluators	57%	37%	6%	35
List of licensed products	40%	26%	34%	35
Other (please specify)	100%	0%	0%	3

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account answers on the footnote to "Duplicate royalty policy" not included in the table

Summary of comments

In general, respondents consider that patent pool administrators, as the licensing agent of SEP holders, share the same obligations as the SEP holder and should readily provide necessary

information in the course of a SEP licensing negotiation. Some respondents are of the opinion that patent pools may even face higher competition concerns than bilateral licensing due to their combined market power, and as such it is appropriate for pools to be more transparent.

However, opinions differ as to what information should be made publicly available. For instance, according to a patent pool administrator, most of the information needed for licensors and licensees of all sizes to make informed decisions is already available through public means and can be supplemented as needed through other appropriate channels where confidentiality or other considerations need to be taken into account. In particular, SEP holders and patent pool administrators differ of opinion as to access to information concerning the set-up and internal workings of the pool. Where SEP holders and some patent pool administrators think that this info should not necessarily be public, some implementers would like to know the details of the share of patents held by each SEP holder, how royalties are shared amongst pool members and which other mechanisms exist to compensate SEP holders.

In addition, many implementers stress the importance of disclosure of the royalty rates, together with the explanation of their calculation and the justification why they are FRAND (by referring to comparable licences). To avoid double dipping, some implementer respondents would also like patent pool administrators to be transparent about already existing licenses in the value chain which cover the products of the licensee.

Q25. Which of the information below should a SEP implementer of the standard provide publicly?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
An indication of the standard being used	52%	44%	14%	67%	100 %
Contact details of implementer	48%	40%	14%	60%	89%
An indication of the standard and the relevant version of the standard	43%	35%	14%	58%	86%
An indication of the standard, the relevant version and section of the standard	29%	17%	14%	50%	71%
An indication of the standard, the relevant version, section and product category of the standard	25%	14%	14%	40%	71%
No. of replies*	61-63	35-37	7	10-12	7-9

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
An indication of the standard being used	38%	47%
Contact details of implementer	32%	56%
An indication of the standard and the relevant version of the standard	26%	47%
An indication of the standard, the relevant version and section of the standard	22%	29%
An indication of the standard, the relevant version, section and product category of the standard	15%	19%
No. of replies*	26-28	16-17

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
An indication of the standard being used	47%	42%
An indication of the standard and the relevant version of the standard	41%	32%
Contact details of implementer	36%	47%

"Agree and strongly agree" answers only	EU	non-EU
An indication of the standard, the relevant version and section of the standard	28%	16%
An indication of the standard, the relevant version, section and product category of the standard	24%	6%
No. of replies*	33-37	17-19

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
An indication of the standard being used	52%	11%	37%	62
Contact details of implementer	48%	13%	39%	61
An indication of the standard and the relevant version of the standard	43%	13%	44%	63
An indication of the standard, the relevant version and section of the standard	29%	18%	53%	62
An indication of the standard, the relevant version, section and product category of the standard	25%	21%	54%	61
Other (please specify)	100%	0%	0%	5

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
An indication of the standard being used	44%	14%	42%	36
Contact details of implementer	40%	17%	43%	35
An indication of the standard and the relevant version of the standard	35%	14%	51%	37
An indication of the standard, the relevant version and section of the standard	17%	19%	64%	36
An indication of the standard, the relevant version, section and product category of the standard	14%	24%	62%	37
Other (please specify)	100%	0%	0%	2

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Summary of comments

The majority of both SEP holder and implementer respondents do not see a need to publicly provide detailed information about the use of the standard by implementers other than the standard implemented (so the public can tell what systems the product will be compatible with) and appropriate contact information.

Main argument is that the implementer of (certain) SEPs is not necessarily the licensee. For many standard implementers, the components implementing parts of a standard come from another party (e.g., an IC supplier), and so the standard implementer has little information beyond the mere fact that the component purportedly practices the standard. As mentioned by some implementers in the car sector, automotive OEMs only know the identity of their direct supplier and are unable to provide contact details of other companies in the design chain. Also, the requirement would be costly, vast and unwieldy if it extended to every company in a value chain. Moreover, as mentioned by a large implementer, standards implementers have not made a FRAND commitment, and do not acquire market power from using a standard. It is of the opinion that product suppliers should not be required to publicly disclose what standards their products support. Information about the technologies or standards that a product is implementing may be commercially and competitively sensitive information. Where needed, sensitive information can be shared in bilateral negotiations, potentially under NDA.

Another reason given by some respondents is that information about the use of standards in user products is usually available from publicly accessible sources, e.g. via the internet, product data sheets or functional descriptions for the product or when an implementer of an ETSI standard undertakes conformance testing of products vis-à-vis a standard. In addition, experts on the standard

usually know which applications come into question for the standard. Potential users can therefore be identified relatively easily through market research.

Q26. How useful would the existence of a confidential repository of licensing agreements be to help judges and arbitrators determine a FRAND rate?

	All	Companies	Associations/ trade union	Academia/Authorities/ NGO/other	Citizens
Very useful	21%	24%	29%	8%	22%
Useful	17%	15%	0%	31%	22%
Somewhat useful	32%	29%	29%	38%	33%
Not useful	30%	32%	43%	23%	22%
No. of replies	63	34	7	13	9

Note: "No opinion" answers not taken into account.

	Implementers	SEP Holders
Very useful	31%	12%
Useful	19%	0%
Somewhat useful	23%	53%
Not useful	27%	35%
No. of replies	26	17

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion" answers not taken into account

	EU	non-EU
Very useful	25%	11%
Useful	17%	17%
Somewhat useful	28%	39%
Not useful	31%	33%
No. of replies	36	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "No opinion" answers not taken into account

Summary of comments

Respondents arguing that it would not be useful

Respondents that considered that it would not be useful to have a repository of confidential licensing agreements could be grouped in four different groups.

The first group claims that effective mechanisms already exist for courts, arbitrators and competition authorities to obtain information they may require in determining FRAND rates. Those mechanisms appropriately take into account various national legal considerations (including due process, confidentiality and relevance).

The second group considers that as a matter of principle, private parties should always be free to conclude commercial agreements in confidence. There should hence never be an obligation to submit licensing agreements to a repository. A voluntary repository, however, would not be useful because it could provide for a skewed data set.

And a third group considers that since everyone should pay the same amount for the same thing, and that amount should be set in advance before standard implementation. A repository of licensing agreements is not necessary to achieve this outcome.

Last but not least the fourth group expresses scepticism as to the quality, reliability and the completeness of such a repository.

Some respondents explain that as past practice has shown licensing agreements' information content is limited. In order to understand an agreement's rationale and mathematics much more information is needed as e.g. negotiation history, business history, complementary agreements. An agreement's pure numbers (royalty rate) are not good for a reference.

Some respondents claim that a license repository would be open to opportunistic conduct that would likely make it ineffective. For example, SEP holders can control to which companies they first license and can opportunistically choose targets more likely to acquiesce to create favourable examples. Such licenses may not be truly FRAND as they may be concluded under the threat of an injunction or litigation more generally. There are also dangers that side deals with related transactions (e.g. agreements to buy goods and services) may not be properly reflected in the repository.

Respondents arguing that it would be useful

Those respondents argued that implementers can only assess whether they are discriminated against if SEP holders disclose prior licences. SEP implementers need a clear legal framework for claiming and enforcing disclosure of relevant licences and other agreements. Otherwise, discrimination will remain the norm rather than an exception.

Some request that information on comparable licences is known at the earliest stage of a product development by all stakeholders.

According to some respondents, a repository of licensing agreements would increase access to licence agreements and information that is currently not shared with courts and arbitrators because of confidentiality considerations. This would translate into better adjudication about FRAND terms and increasing the level playing field and equal treatment of licensees.

Some argue that such repository should not be confidential at all. Transparency is key for efficient licensing and the implementation of new technologies. SMEs which plan to upgrade their products with connectivity must calculate their business case. Licensing costs have a significant impact. For SMEs lack of transparency is unacceptable.

Finally, a respondent explains that proprietary databases on patent licences already exist but are fragmented and incomplete since they rely on usually redacted financial disclosures and voluntary submissions by the contract parties. Examples are KTmine, Royalty Range, RoyaltySource, IPScio, Questel Orbit etc. Well-funded patent offices, such as the EPO, could be in the right position to maintain such a confidential repository also because they already (yet ineffectively) impose the recordation of patent licences and transfers into their official registers.

Q27. If there should be a repository who should have access to such confidential repository of licensing agreements?

	All	**Companies**	**Associations/ trade union**	**Academia/ Authorities/ NGO/other**	**Citizens**
Judges	84%	82%	100%	92%	67%
Arbitrators	71%	65%	100%	75%	67%
Mediators	50%	56%	43%	50%	33%
Lawyers	48%	47%	57%	42%	56%
Public authorities	27%	26%	14%	33%	33%
Trustees	23%	24%	43%	17%	11%
Other (please specify)	31%	26%	29%	33%	44%
No. of replies	62	34	7	12	9

Note: multiple answers possible

	Implementers	SEP Holders
Judges	92%	88%
Arbitrators	84%	65%
Lawyers	80%	12%
Mediators	60%	35%
Public authorities	48%	0%
Trustees	36%	12%
Other (please specify)	44%	18%
No. of replies	25	17

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3; multiple answers possible.

	EU	non-EU
Judges	94%	72%
Arbitrators	83%	50%
Mediators	60%	39%
Lawyers	49%	44%
Public authorities	29%	22%
Trustees	29%	17%
Other (please specify)	26%	33%
No. of replies	35	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; multiple answers possible.

Summary of comments

The opinions on who should have access to the repository vary.

Public

Those that argue that such a repository must be public consider that it will enable willing licensees, in particular SMEs to identify necessary licences and to determine the FRAND value for such a licence. Every licensee will be enabled to calculate a business case for the provision of goods and services it intends to provide. It furthermore will enable any customers to determine at an early stage whether or not a supplier took all necessary licences. Licensors will not have the burden to search for and contact every potential licensee. License negotiations will be accelerated as validity, relevance and licensing terms and conditions will not have to be explained multiple times but just once.

(Partially) confidential

Others who consider that the repository should be confidential argue that when sharing data, it is important to keep in mind the protection of business secrets and the fact that the data may have a high market value.

Some consider that to protect the various interests and confidential information only judges, arbitrators, mediators and public authorities should have access.

Others argue that if such repository is established, it is important to ensure that all parties to a litigation have access to the information to make sure rights of defence are maintained. It is not appropriate in an adversarial system for counsel not to have access to documents that the judge or arbitrator will rely on to make decisions. Accordingly, counsel at least will need to have access which will present a substantial danger of improper disclosure that will need to be addressed. In-house counsels should not have access, as these agreements could include sensitive information from competitors. Clients don't need to have access to the repository, but they should have access to the anonymised database. Commercially sensitive information can be redacted or sufficiently aggregated.

Q28 Under what conditions should access to the confidential repository of licensing agreements be granted?

Summary of answers

Some respondents explain that the repository could be used for pre-defined purposes, including (i) assessing the value of SEP licensing offers, (ii) determining the FRAND value of SEP licences, and (iii) determining whether there is any unjustified discrimination.

According to some respondents access could be granted on the following conditions: (i) only if the implementer makes an unconditional commitment to take a license once a FRAND rate determination is made; (ii) only to a limited number of outside attorneys and financial experts who agree to maintain the confidentiality of the terms.

Other respondents consider that the confidential repository should be accessible to potential licensees early in the negotiation process to balance information asymmetries and reduce transaction costs. To protect confidentiality, access should be conditioned on (i) there being a valid negotiation between two parties, and (ii) parties agreeing to destroy and actually destroying any information received from the repository once the negotiation is complete. The confidential repository will do little to reduce negotiating costs and increase transparency if it is only available in limited circumstances. Indeed, it could increase litigation if that were the only avenue to get access to the confidential repository.

Q29. No licence agreement is the same. They are catered to the needs of the concluding parties and the agreed terms and rates may be influenced by elements other than merely SEPs. If there were an obligation to submit licensing agreements to a confidential repository and parties were obliged to "unpack" the complex licensing agreements, i.e. provide a clear picture of the agreed terms and conditions, which elements of the agreement would need to be explained in a form to be submitted to the confidential repository of licensing agreements, summarising those agreements?

	All	**Compa-nies**	**Associa-tions/ trade union**	**Academia/ Authorities /NGO/ other**	**Citizens**
Licensed SEPs	96%	96%	100%	90%	100 %
Royalties	96%	96%	100%	90%	100 %
Methodology used to calculate the royalty	94%	92%	100%	90%	100 %
Duration	87%	83%	100%	80%	100 %
Licensed product	87%	88%	100%	90%	78%
Geographical scope	85%	83%	100%	80%	89%
Discounts	83%	83%	100%	80%	78%
Grant-backs	81%	79%	100%	90%	67%
Parties	79%	79%	100%	80%	67%
Reciprocity obligations	74%	67%	100%	90%	67%
Defensive suspension (clause that allows a SEP holder to terminate a licence upon the occurrence of a certain event, like being sued for patent infringement by a implementer or implementer's customer)	70%	58%	100%	80%	78%
Patent related (validity)	64%	67%	50%	80%	44%
Payment conditions (term, interest for late payments)	64%	67%	25%	80%	56%
Legal (applicable law, competent forum/court)	62%	58%	75%	70%	56%

	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities /NGO/ other	Citizens
Non-disclosure requirements	60%	54%	75%	70%	56%
Compliance (reporting obligations and auditing conditions)	51%	46%	50%	60%	56%
No. of replies	47	24	4	10	9

Note: multiple answers possible

	Implementers	SEP Holders
Licensed SEPs	100%	91%
Royalties	100%	91%
Methodology used to calculate the royalty	100%	82%
Discounts	100%	73%
Geographical scope	95%	82%
Duration	91%	91%
Parties	91%	73%
Licensed product	86%	82%
Grant-backs	86%	82%
Reciprocity obligations	82%	73%
Patent related (validity)	82%	27%
Defensive suspension (clause that allows a SEP holder to terminate a licence upon the occurrence of a certain event, like being sued for patent infringement by a implementer or implementer's customer)	77%	73%
Non-disclosure requirements	77%	27%
Legal (applicable law, competent forum/court)	73%	55%
Payment conditions (term, interest for late payments)	68%	45%
Compliance (reporting obligations and auditing conditions)	59%	36%
No. of replies	22	11

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3; multiple answers possible.

	EU	non-EU
Licensed SEPs	93%	100%
Royalties	93%	100%
Methodology used to calculate the royalty	93%	91%
Discounts	85%	82%
Licensed product	85%	100%
Geographical scope	81%	91%
Duration	81%	91%
Parties	81%	82%
Grant-backs	78%	100%
Reciprocity obligations	70%	91%
Patent related (validity)	63%	82%
Defensive suspension (clause that allows a SEP holder to terminate a licence upon the occurrence of a certain event, like being sued for patent infringement by a implementer or implementer's customer)	63%	82%
Legal (applicable law, competent forum/court)	63%	64%
Payment conditions (term, interest for late payments)	59%	82%
Non-disclosure requirements	52%	82%
Compliance (reporting obligations and auditing conditions)	41%	73%
No. of replies	27	11

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; multiple answers possible.

Summary of comments

Some respondents explain that first, the comparable licenses have to be identified. Once comparable licenses are identified, it is necessary to unpack them to identify the one-way royalty paid for a license to the SEP portfolio at issue. To do so, one must identify and isolate the value of other considerations included in the license, which may be difficult or impossible. In addition, any "unpacking" rule that requires only some terms of sometimes complex business arrangements to be disclosed is subject to being gamed by parties wishing to avoid disclosure.

Some respondents claim that the list only contains elements from the licence agreement and does not take into account potential interdependencies between elements and their relative importance. According to those respondents, the list does not contain any element that relates to the general background against which the licence agreement was signed. According to them FRAND requires the licence to be considered as a whole (internally) against the circumstances in which it was negotiated (externally). Such elements can include the overall economic situation (both general and particular), the product market segment, etc. One example of such external situations can be found in the decision of the German Federal Court of Justice in the *Sisvel v Haier* case (5 May 2020 - Case No. KZR 36/17) where the "Court held that Sisvel had not discriminated against Haier by offering different (higher) rates than those previously agreed with another licensee (allegedly) as a result of undue pressure by foreign state authorities". There might also be other commercial considerations that can be part of the agreement. Given the many different product segments, geographies, and other commercial and economic considerations, it is impossible to provide an exhaustive list of all the elements that may be relevant for the unpacking of the agreement. Unpacking' is a complex activity that cannot be captured by a defined procedure or in an excel sheet.

Some respondents note that FRAND terms may also differ because the parties might agree on different forms of monetary consideration which allow them to allocate commercial risk as they deem appropriate. Parties might also negotiate non-monetary, yet still valuable, terms consistent with FRAND.

Some respondents claim that an obligation for the parties to each license agreement submitted to the repository to explain and "unpack" licenses would be complex and would likely result in biased and incomplete views. It could also impact financial markets or impact other regulatory filings. Two parties would each unpack the same agreement differently.

Some respondents in favour of a repository consider that such repository should include all listed marked information, plus the information regarding the scope of the licence.

Should the repository be public or accessible to larger circle of authorised persons, the parties, the licensed product and royalties should be included in redacted form similar to the ordinary non-confidential versions of competition law decisions. For instance, instead of the explicit name of a company, the license repository could indicate its size, turnover, sector, geographical presence and so on.

The process of unpacking would need to be dynamic over time. It is not possible to represent the dynamic effects in a form.

Questions on essentiality

Quantitative summary

Around 60% of all respondents and 90% of Implementers supported third party essentiality checks as long as independent experts do them. Only 24% of SEP Holders supported such a solution. A third

of all respondents considered that essentiality checks should serve only an advisory role with no legal consequences.

Around two thirds of all respondents and around 80% of Implementers thought that essentiality assessment might help in assessing SEP exposure of a product and deciding whom to negotiate with, smoothen licensing negotiation and prevent over pricing. More than half of SEP Holders disagreed with these impacts, but agreed that checks might provide a reliable overview of the share of each SEP holders' essential patents.

As regards practical implementation, the respondents preferred that European Patent Office (EPO) conducts the checks (63% of all replies) on just "one SEP per SEP family" (63%).

Tables with replies per question

Q30. The SEPs legal framework does not provide for third party checks outside of court of patents declared essential to a standard. How useful would be to set up a system of essentiality checks?

	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
Useful, but only if the assessors would have the required expertise and are totally independent	61%	66%	71%	54%	44%
Useful, but only if it would be advisory and have no legal consequences	34%	34%	57%	31%	22%
Useful. It provides more transparency and reduces licensing costs	34%	37%	43%	38%	11%
Not useful. It is sufficient to develop private solutions to identify declared SEPs that are clearly not a true SEP.	10%	11%	0%	15%	11%
Not useful. It is sufficient, if SEP owners were obliged to update their self-declarations (so as to remove declared SEPs that are no longer SEPs)	7%	3%	0%	8%	33%
Not useful. It is sufficient, if SEP owners were obliged to submit claim charts confirmed by an independent third party	0%	0%	0%	0%	0%
Other, please specify	19%	18%	14%	31%	11%
No. of replies	67	38	7	13	9

Note: multiple answers possible; "No opinion" answers not taken into account; "No opinion" answers not taken into account

	Implementers	SEP Holders
Useful, but only if the assessors would have the required expertise and are totally independent	93%	24%
Useful, but only if it would be advisory and have no legal consequences	64%	0%
Useful. It provides more transparency and reduces licensing costs	46%	12%
Not useful. It is sufficient, if SEP owners were obliged to update their self-declarations (so as to remove declared SEPs that are no longer SEPs)	7%	6%
Not useful. It is sufficient to develop private solutions to identify declared SEPs that are clearly not a true SEP.	4%	18%
Not useful. It is sufficient, if SEP owners were obliged to submit claim charts confirmed by an independent third party	0%	0%
Other, please specify	4%	41%
No. of replies	28	17

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3; multiple answers possible; "No opinion" answers not taken into account; "No opinion" answers not taken into account.

	EU	non-EU
Useful, but only if the assessors would have the required expertise and are totally independent	63%	65%

	EU	non-EU
Useful, but only if it would be advisory and have no legal consequences	37%	35%
Useful. It provides more transparency and reduces licensing costs	37%	40%
Not useful. It is sufficient to develop private solutions to identify declared SEPs that are clearly not a true SEP.	5%	20%
Not useful. It is sufficient, if SEP owners were obliged to update their self-declarations (so as to remove declared SEPs that are no longer SEPs)	3%	5%
Not useful. It is sufficient, if SEP owners were obliged to submit claim charts confirmed by an independent third party	0%	0%
Other, please specify	21%	20%
No. of replies	38	20

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "No opinion" answers not taken into account; "No opinion" answers not taken into account.

Summary of comments

Proponents for a system of essentiality checks

The majority of all respondents (61%) consider the setting up of a system of essentiality checks as useful, if the assessors would have the required expertise and are totally independent users of designs. This is particularly true for those respondents who identified themselves as implementers, where 93% considered this useful contrary to 24% of SEP holders.

Those in favour of such a system point out that third party essentiality checks would reduce information asymmetry and make negotiation more efficient. Currently, the discrepancy between declared and truly essential patents causes legal and commercial uncertainty for potential licensees, who are unable to assess whether they need to acquire a licence, from whom, and what is the value of the IPR that they need to obtain. The complex SEP landscape may lead to violations of competition law, as SEP holders can use their position of unavoidable trading partners with respect to truly standard essential patents to force SEP licensees to also pay for IPR that they do not need. Under the current system, licensees need to bear the cost of establishing essentiality of SEPs for each individual licence negotiation. It is a time consuming and expensive process that slows down licensing negotiations. Third-party essentiality checks would smoothen SEP licence negotiations. However, the trust of potential licensees would be essential to achieve these gains. Untrusted essentiality checks would exacerbate the costs and inefficiencies of the current system. The legal framework must ensure that the assessors are competent and not subject to capture nor forum shopping and are not funded, or vetted, by SEP holders.

Proponents against a system of essentiality checks

Those respondents against a system of essentiality checks argue that making essentiality checks available may not necessarily facilitate SEP licensing. First, a disadvantage of essentiality checks is that they are not legally binding unless confirmed by courts. But even if essentiality is confirmed in court, parties may dispute validity, the requested royalty rate and still refuse licenses. Second, it is mentioned that the essentiality of a patent cannot be determined "objectively". It is a question of probability. Third, even if that is possible, determining essentiality ratios would be voluminous, very costly and determinations will still not be legally enforceable. Finally, the SEP holders that seek to monetize their portfolios have enough SEPs that at least some are essential to any given standard, making the question of essentiality less important in the aggregate. In particular, patent pool administrators point out that private solutions are available and sufficient. With the pool context in mind, a starting point for a market driven approach may for instance be one that puts in place an accreditation framework (rather than a single independent institution) where independent, specialised third parties can seek accreditation based on a determined set of criteria.

Q31. What would be the main advantage of third-party essentiality checks?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
It may help to be better informed about the actual SEP exposure of a given product	65%	65%	71%	62%	63%
It may help to reduce the required amount of resources spent on licensing of SEPs	65%	68%	71%	54%	63%
It may help to smoothen licensing negotiations	64%	62%	71%	69%	63%
It may help to negotiate a fair royalty (preventing over-pricing)	63%	59%	86%	69%	50%
It may help to provide a trustworthy and reliable overview of the share of each SEP holders' essential patents	63%	62%	86%	62%	50%
It may help in deciding with whom to engage in licensing discussions	62%	59%	86%	62%	50%
It may facilitate the construction of better benchmarks to be used in case of disputes	58%	57%	71%	60%	50%
It may make SEP declarants to become more selective in submitting 'potentially essential' or 'probably not essential' patents	48%	46%	43%	62%	43%
It may help the SEP holder to meet its obligations as referred to in Huawei v ZTE	41%	44%	29%	42%	38%
No. of replies*	59-67	32-39	7	10-13	7-8

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
It may help in deciding with whom to engage in licensing discussions	89%	24%
It may help to reduce the required amount of resources spent on licensing of SEPs	86%	29%
It may help to smoothen licensing negotiations	86%	35%
It may help to negotiate a fair royalty (preventing over-pricing)	86%	24%
It may help to provide a trustworthy and reliable overview of the share of each SEP holders' essential patents	85%	41%
It may facilitate the construction of better benchmarks to be used in case of disputes	82%	25%
It may help to be better informed about the actual SEP exposure of a given product	79%	35%
It may make SEP declarants to become more selective in submitting 'potentially essential' or 'probably not essential' patents	59%	24%
It may help the SEP holder to meet its obligations as referred to in Huawei v ZTE	46%	25%
No. of replies*	27-28	16-17

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
It may help to provide a trustworthy and reliable overview of the share of each SEP holders' essential patents	70%	55%
It may help to reduce the required amount of resources spent on licensing of SEPs	68%	60%
It may help to smoothen licensing negotiations	66%	62%
It may help in deciding with whom to engage in licensing discussions	65%	60%
It may help to negotiate a fair royalty (preventing over-pricing)	65%	65%
It may help to be better informed about the actual SEP exposure of a given product	63%	68%
It may facilitate the construction of better benchmarks to be used in case of disputes	59%	60%
It may make SEP declarants to become more selective in submitting 'potentially essential' or 'probably not essential' patents	49%	50%
It may help the SEP holder to meet its obligations as referred to in Huawei v ZTE	41%	41%
No. of replies*	34-38	17-21

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account

**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
It may help to be better informed about the actual SEP exposure of a given product	65%	18%	17%	65
It may help to reduce the required amount of resources spent on licensing of SEPs	65%	9%	26%	65
It may help to smoothen licensing negotiations	64%	13%	22%	67
It may help to provide a trustworthy and reliable overview of the share of each SEP holders' essential patents	63%	20%	17%	65
It may help to negotiate a fair royalty (preventing over-pricing)	63%	8%	29%	65
It may help in deciding with whom to engage in licensing discussions	62%	15%	23%	65
It may facilitate the construction of better benchmarks to be used in case of disputes	58%	18%	24%	62
It may make SEP declarants to become more selective in submitting 'potentially essential' or 'probably not essential' patents	48%	28%	23%	64
It may help the SEP holder to meet its obligations as referred to in Huawei v ZTE	41%	19%	41%	59
Other (please specify)	100%	0%	0%	2

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
It may help to reduce the required amount of resources spent on licensing of SEPs	68%	5%	27%	37
It may help to be better informed about the actual SEP exposure of a given product	65%	22%	14%	37
It may help to provide a trustworthy and reliable overview of the share of each SEP holders' essential patents	62%	27%	11%	37
It may help to smoothen licensing negotiations	62%	18%	21%	39
It may help in deciding with whom to engage in licensing discussions	59%	14%	27%	37
It may help to negotiate a fair royalty (preventing over-pricing)	59%	8%	32%	37
It may facilitate the construction of better benchmarks to be used in case of disputes	57%	22%	22%	37
It may make SEP declarants to become more selective in submitting 'potentially essential' or 'probably not essential' patents	46%	35%	19%	37
It may help the SEP holder to meet its obligations as referred to in Huawei v ZTE	44%	9%	47%	32
Other (please specify)				0

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Summary of comments

The majority of all respondents consider as important benefits of a system of third party essentiality checks that it may (i) provide better information on the actual SEP exposure of a given product (65%), (ii) reduce transaction costs (65%), (iii) smoothen licensing negotiations (64%), (iv) give insight in the share of each SEP holders' essential patents (63%), (v) help to negotiate a fair royalty (63%), (vi) help in deciding with whom to engage in licensing discussions (62%) and (vii) facilitate the construction of better benchmarks to be used in case of disputes (58%)

As particular advantages for start-ups and SMEs it is mentioned that third party essentiality checks could be useful for SMEs as they would provide additional transparency and bring down negotiation costs. Given the sheer size of SEP portfolios, potential licensees generally do not have sufficient time for carrying out the necessary analyses of SEPs. This would be especially important for start-ups that do not have the resources for analysing patents and standards. However, the risk of an ex-parte system would be the lack of resources for start-ups and SMEs to rebut an existing but flawed essentiality finding. A possible disadvantage of a system of third-party essentiality checks is that SMEs are

usually not asked to take a license, so that essentiality checks standing alone may give unsophisticated or unadvised SMEs a false impression of the possible costs to implement a standard.

Q32. If there were a legal obligation to conduct essentiality checks on all declared SEP families that SEP holders intend to license, how should those be made?

"Agree and strongly agree" answers only	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
One SEP per family	63%	71%	67%	30%	71%
Only SEPs that are licensed on FRAND terms and conditions, including cross licensing, excluding SEPs licensed on a royalty free basis	45%	43%	71%	56%	14%
For worldwide SEPs	40%	41%	33%	38%	50%
Sampling of both 'Numerator data' and 'Denominator data'.	37%	30%	14%	50%	71%
Sampling of 'Numerator data' (which is information on the actual SEPs portfolio of a specific patent owner for a specific standard).	35%	39%	14%	20%	57%
Sampling of 'Denominator data' (which is information on actual SEPs owned by all relevant patent owners for a specific standard).	33%	30%	29%	20%	71%
For European SEPs only	26%	27%	33%	38%	0%
One SEP per family that is being licensed on FRAND terms and conditions	24%	24%	50%	0%	33%
No. of replies*	46-57	26-34	6-7	8-10	6-7

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
One SEP per family	54%	71%
Only SEPs that are licensed on FRAND terms and conditions, including cross licensing, excluding SEPs licensed on a royalty free basis	60%	31%
For worldwide SEPs	57%	23%
Sampling of both 'Numerator data' and 'Denominator data'.	44%	20%
Sampling of 'Numerator data' (which is information on the actual SEPs portfolio of a specific patent owner for a specific standard).	39%	27%
Sampling of 'Denominator data' (which is information on actual SEPs owned by all relevant patent owners for a specific standard).	48%	13%
For European SEPs only	40%	15%
One SEP per family that is being licensed on FRAND terms and conditions	18%	31%
No. of replies*	20-26	13-15

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
One SEP per family	71%	44%
Only SEPs that are licensed on FRAND terms and conditions, including cross licensing, excluding SEPs licensed on a royalty free basis	59%	25%
For worldwide SEPs	41%	33%
Sampling of both 'Numerator data' and 'Denominator data'.	38%	15%
Sampling of 'Numerator data' (which is information on the actual SEPs portfolio of a specific patent owner for a specific standard).	38%	15%
Sampling of 'Denominator data' (which is information on actual SEPs owned by all relevant patent owners for a specific standard).	32%	15%

"Agree and strongly agree" answers only	EU	non-EU
For European SEPs only	32%	25%
One SEP per family that is being licensed on FRAND terms and conditions	29%	8%
No. of replies*	28-34	12-16

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
One SEP per family	63%	16%	21%	57
Only SEPs that are licensed on FRAND terms and conditions, including cross licensing, excluding SEPs licensed on a royalty free basis	45%	11%	43%	53
For worldwide SEPs	40%	9%	51%	47
Sampling of both 'Numerator data' and 'Denominator data'.	37%	20%	43%	54
Sampling of 'Numerator data' (which is information on the actual SEPs portfolio of a specific patent owner for a specific standard).	35%	21%	44%	52
Sampling of 'Denominator data' (which is information on actual SEPs owned by all relevant patent owners for a specific standard).	33%	27%	39%	51
For European SEPs only	26%	11%	63%	46
One SEP per family that is being licensed on FRAND terms and conditions	24%	22%	54%	50
Other (please specify)	75%	0%	25%	4

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
One SEP per family	71%	12%	18%	34
Only SEPs that are licensed on FRAND terms and conditions, including cross licensing, excluding SEPs licensed on a royalty free basis	43%	10%	47%	30
For worldwide SEPs	41%	11%	48%	27
Sampling of 'Numerator data' (which is information on the actual SEPs portfolio of a specific patent owner for a specific standard).	39%	18%	43%	28
Sampling of both 'Numerator data' and 'Denominator data'.	30%	23%	47%	30
Sampling of 'Denominator data' (which is information on actual SEPs owned by all relevant patent owners for a specific standard).	30%	30%	41%	27
For European SEPs only	27%	4%	69%	26
One SEP per family that is being licensed on FRAND terms and conditions	24%	24%	52%	29
Other (please specify)	0%	0%	100%	1

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Summary of comments

The majority of all respondents (63%) would prefer to check one SEP per family if there were a legal obligation to conduct essentiality checks on all declared SEP families that SEP holders intend to license. The approach of a SEP per family is best suited for this (although one should think about selecting the family member from the jurisdiction in which litigation is already taking place or this is at least foreseeable. The check should be done on a family member that successfully passed a full examination (pref. with most limited claim) and in the mother application in case of divisionary/continuation.

Respondents are moderately positive about sampling. Some, mainly "Implementers", warn against sampling in essentiality assessments since it would always give an approximate - not accurate - view of the entire portfolio. If sampling were nevertheless used, it should be random (not selected by the SEP holder), and large enough to provide a reliable indication of the overall strength of the portfolio and be done in a statistically transparent manner, so that error margins are clear. Moreover, ex-post sample-based methodologies have limited influence on over-declarations. Others, mainly "SEP Holders", stress that some level of sampling may be appropriate as essentiality checks on all SEPs are cost-prohibitive and would undermine FRAND licensing. Moreover, essentiality checks on all

SEPs that SEP holders "intend to license" would make no sense because implementers will demand a licence to all disclosed SEPs in order to ensure full freedom to operate.

As to the geographical coverage of the patents, in particular SEP holders would be in favour of a global scope of the essentiality checks since they tend to conclude global licenses for international standards. Patent pool administrators explain that global checks are achieved within the context of patent pools by mans of a full evaluation for each patent in certain significant countries and then a system of certifications to those evaluated claims for family patents in other countries. However, some argue against a global reach that a mandatory system of essentiality checks would risk taking on a quasi-extra judicial role and could potentially cause tensions with foreign jurisdictions, even if the outcome remains for informational purposes only.

Q33. If a system of third-party essentiality checks would be in place, which authority/body would be best placed for doing such essentiality checks?

	All	Companies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
The EPO	63%	64%	83%	78%	33%
The national patent offices	28%	27%	33%	44%	11%
Specialised law firms	28%	30%	17%	22%	33%
Other organisation, please specify	25%	18%	17%	33%	44%
A combination of the bodies listed in letters a, b, c or d. If so, please specify which bodies and why in your view both should be responsible for this task	11%	9%	0%	22%	11%
No. of replies	57	33	6	9	9

Note: multiple answers possible

	Implementers	SEP Holders
The EPO	73%	60%
The national patent offices	35%	0%
Other organisation, please specify	27%	13%
Specialised law firms	15%	47%
A combination of the bodies listed in letters a, b, c or d. If so, please specify which bodies and why in your view both should be responsible for this task	15%	0%
No. of replies	26	15

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3; multiple answers possible.

	EU	non-EU
The EPO	71%	64%
The national patent offices	32%	29%
Specialised law firms	21%	43%
Other organisation, please specify	18%	29%
A combination of the bodies listed in letters a, b, c or d. If so, please specify which bodies and why in your view both should be responsible for this task	9%	14%
No. of replies	34	14

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; multiple answers possible.

Summary of comments

Of all respondents a majority (63%) consider the EPO as the best placed authority to do the essentiality checks. Also, among Implementers and SEP Holders this authority is the preferred option (71% and 64% respectively). As for the other possible assessing entities, more than a quarter of all respondents (28%) consider the national patent offices and specialised law firms best placed to

perform the checks. However, where Implementers seem to prefer national patent offices over law firms (35% versus 15%), SEP Holders do not see a role for NIPOs as possible assessors and but instead mention the law firms (0% versus 47%) as a second-best option after the EPO.

All respondents agree that the body in charge of the essentiality checks should be impartial and independent, have the necessary expertise and access to standards and technical specifications through arrangements with SDOs. For some, this means that the EPO would be their preferred choice, be it alone or together with national patent offices. Others, however, are of the opinion that the EPO and national patent offices are not the best authorities for performing the checks, as they lack competence and their expertise concerns patentability, prosecution or patent validity. Other arguments raised against patents offices as possible evaluators are that the authority granting a SEP should not assess a SEP's essentiality to ensure highest possible objectivity and may not have the necessary resources to handle these checks.

Nevertheless, those respondents that opted for a combination of bodies, most saw a leading role for the EPO, which could do the checks together with national patent offices or outsource the checks to specialised firms under a possible certification framework. In such a case, the EPO should ensure the quality of the checks, organize the assessment activities internally or with certified institutions and ensure the independence and quality of engaged certified institutions.

Others see a role for a completely new organisation to be in charge of the essentiality checks. One respondent suggested that patent offices are not the best in place to do the checks but that a specific organisation could appoint several specialized law firms to perform these checks. Furthermore, there was mention of WIPO and the creation of a board of experts" (BOE) at SDO level and a "SEP court" that unlike the EPO, patent offices or private actors would be able to take decisions between two positions defended by two adverse parties.

Q34. Please explain what are in your view the main challenges to set up such a system, in terms of complexity and/or costs.

Summary of answers

SEP holders are mostly concerned by the costs of the system and who would have to pay for the checks. Requiring the essentiality of each SEP within a portfolio to be subjected to a separate review would inevitably impose significant costs and raise barriers to entry to effective licensing giving companies with sufficient financial resources an advantage. It is therefore suggested by some to establish incentives for patent owners to voluntarily initiate essentiality assessments. As an example, it is proposed that implementers should agree to accept the findings of third-party essentiality checks as a basis for signing up to the FRAND license. Translation costs are also to be taken into account.

The cost challenge is also closely linked to that of quality. In particular, some large SEP portfolio holders stress the importance of high-quality checks. For a new system to be relevant it needs to be rigorous, transparent and neutral. Less trust in the checks would reduce any benefit towards improving licensing. However, it would be challenging to create a system of essentiality checks that keeps the cost at a reasonable level while safeguarding quality.

As to the complexity of the system the respondents raise different concerns, concerning the scope, neutrality and continuity of the system, the expertise of the checkers, quality and uniformity of the checks, staffing capacity, possible abuse of the system and timing.

First, an issue of concern raised by all stakeholders, is the integrity of the organisation conducting the checks, specifically the independence and impartiality of its members. One worry is that it would be difficult to find staff with the required competencies that is not already engaged by an SEP holder or SEP implementer. Another is the potential for bias due to the source of funding.

The stakeholders also point to the choices to be made concerning the scope of the checks. Different interests are at take concerning questions as to the legal effect of the checks and whether they can be challenged, appealed or reassessed over time. Other questions that need to be answered are: which patents (of a family) need to be checked and against which standards? From which regions and SDOs? At what moment in time? What will be the definition of essentiality? And who decides which patents are going to be checked?

Another key challenge would be to ensure the required expertise on a continuous basis to be able to process huge numbers of potential SEPs in a uniform manner. There are not many engineers with that specific knowledge and building up capacity cannot be done overnight. The number of external lawyers would be limited, because they would have to meet such strict (predefined) criteria. If this requires close cooperation and coordination among different IP authorities, a clear, centralised and uniform procedure will need to be implemented to ensure consistent decisions. Moreover, there will be challenges in determining the correct staffing level, particularly for smaller or less active standards areas, as the workload will likely come in waves as new standards or versions of standards are published.

Finally, a major challenge pointed out by the SEP holders is to design the system in such a way as to avoid delaying tactics by implementers. Some see a risk of new opportunities of hold-out in case implementers would decide to challenge the essentiality check. “We don’t want to take a licence yet because we want to first see the essentiality checks for your Release 18 patents” is one example mentioned by a major SEP holder association of how an implementer could use coercive essentiality checks as a delaying tactic. Another SEP holder representative, namely a pool administrator, points out that a situation where a legal obligation would be put in place with no further obligation put, conversely, on the SEP implementers, would just generate costs and time waste without any real benefit.

Questions on FRAND (Fair, Reasonable and Non-Discriminatory) terms and conditions

Quantitative summary

Between 55% and 75% of all respondents and from 85% to 100% of Implementers, consider that SEP holder cannot refuse a licence following a request from an implementer. Majority of SEP Holders were of the opposite view.

60% of all respondents and 93% of Implementers consider that licencing could take place at any level of the value chain. Around 70% of SEP Holders consider that it should be at one level only (level allowing for the best monitoring of applications).

Around three quarters of respondents (93% of SEP Holders) agreed that fair and reasonable terms and conditions might depend on functionalities of the standard implemented in a product. Around 70% thought these terms could depend on the level of licencing.

For non-discrimination assessment, it matters if companies that use the same functionalities of the standard in similar applications are put at a competitive disadvantage (around 75% of all answers, and 94% of SEP Holders answers).

SEP Holders considered that discounts between 28% and 40% do not cause discrimination. For Implementers reasonable discounts amount to between 5% and 10%.

70% of all respondents and 100% of Implementers argued that it is important to know reasonable aggregate royalty rate for a product. Only 20% of SEP Holders shared that view.

Summary of comments

The summary of FRAND-related comments aims at explaining the main positions and pointing out to some comments that may be helpful to further the discussion.

I. Positions based on the principles "access to all", licensing at only one level in a value chain and FRAND terms and conditions based on end-use of the standardised technology

1. "Access to all" and licensing in the value chain

The proponents of the principle "access to all" explain that the FRAND commitment is not an active obligation to make an offer to license to all third parties. Rather, it requires SEP holders to allow access to the standards. It is up to an SEP holder how to provide such access.

According to those respondents, patent law bestows exclusive rights on patent holders. Hence, SEP holders have discretion who to license and at what level of the value chain, unless modified by a FRAND commitment. Most FRAND commitments do not specify a licensing level. Competition law (Article 102 TFEU) does not imply a preferred licensing level. Any intervention undermining a SEP holder's discretion over licensing level would likely contravene Articles 30 and 31 of the TRIPS Agreement.

Furthermore, some respondents explain that courts in Europe and other jurisdictions have rejected the contention that SEP holders are required to grant licenses to component and chip makers (See Nokia v Daimler, LG Mannheim 18 August 2020 - Case No. 2 O 34/19; Sharp v Daimler, District Court of Munich, judgment dated 10 September 2020, Case-No. 7 O 8818/19; US Court of Appeal for the Ninth Circuit in Federal Trade Commission v Qualcomm Inc., dated 11 August 2020.) See also HTC v Ericsson (US Court of Appeal). The US Court of Appeals for the Fifth Circuit ruled on 28 February 2022 that the supplier does not have a legal right to a licence and that Avanci and its licensors have not breached their FRAND obligations, No. 20-11032.

One respondent explained that FRAND commitments leave at least four possibilities to ensure access to standards: (i) concluding a FRAND license; (ii) indirectly benefiting from a license by selling to licensed end-device manufacturers holding so-called have-made rights; (iii) concluding non-assertion agreements, or (iv) benefiting from the SEP owner's policy of non-asserting patents at a certain level of the production chain. Another respondent added that, within the same value chain, if a license is provided upstream then lawful downstream access can be enabled via the principle of exhaustion. The specificities of the different SEP implementing industries call for the preservation of FRAND licensing flexibility.

A respondent notes that concerns may arise when an SEP holder seeks to enforce its SEPs towards a specific implementer. Consistent with the CJEU judgment in *Huawei v. ZTE*, a SEP holder cannot seek to exclude an implementer from the market without first offering a license on FRAND terms. Thus, even if a SEP holder were to have a practice of licensing at one level of the value chain, parties at other levels of the chain would have comfort that they would not be subject to a prohibitive order. Within this constraint, SEP holders are best suited to determine how to license and from whom to seek a royalty. A 'refusal to license' at a certain point in the supply chain, is not necessarily exclusionary and does not automatically impact the use of the standardized technology.

Some respondents explain that a refusal of a licence by a SEP holder does not in itself deny access to the technology, and it is therefore not problematic per se. In case a SEP holder is not ready to license its SEPs for a new application (e.g., when valuation remains unclear), it would not be unreasonable to not offer licenses until the market has developed. Doing so would prevent potential over-valuation or under-valuation of a technical standard in a new application. Some respondents also note that a SEP holder usually prepares a licensing program with an expected level of licensee in the value chain to avoid double dipping or free riding. This would create certainty and clarity for both the SEP holder and implementer (and others in the value chain). According to those views, where a SEP holder is still preparing its licensing programme, it may be reasonable for a SEP holder to temporarily refuse a request from implementer for a license.

2. FRAND terms and conditions

Some respondents assert that SEP holders are generally well-suited to determine the best manner, in which to license and they have the best understanding of their technology and its use in the marketplace. According to them, making changes to currently accepted industry models would be difficult to administer and would interfere with the ability of SEP holders to ensure consistent pricing among similarly situated licensees. This is because the value of a standard as used in the market only becomes apparent at the end-implementer level. In most cases it is then also logical that the royalties are paid by the manufacturer/seller of the end-implementer product or service, although in some markets it can be more practical to license at a different level (e.g. Tier 1 suppliers to automotive industry). The price would, however, be determined based on the value to the end-implementer. Those respondents consider that a SEP holder cannot be made responsible for the complexities of modern opaque supply chains or be bound by agreements between various implementers in the value chain.

Certain respondents also argue that prices need not to be uniform because terms may differ based on the technology that is being licensed (based on standard or version of the standard). According to them the royalties in a FRAND licence should reflect the economic value that the patented technology adds to the end product.

Some respondents explain that in a market economy, price must be based upon the value conferred. This means different prices for different applications. Critically, the value of a technology also depends upon its application/use. 5G can be incorporated in a vending machine to occasionally report stock levels. It can be used in a self-driving car. In the former, 5G is used occasionally and provides a moderate benefit. In the car, 5G will be used continuously and will be responsible for mission-critical safety features that benefit consumers, manufacturers, and society at large. Pricing 5G licence the same for vending machines and self-driving cars would not be fair and reasonable. A self-driving car licence would be too expensive for the vending machine provider. And a vending machine licence applied to self-driving cars would not generate the value to justify investing in the cellular standards.

A respondent explains that the statement “FR TC may depend on the functionalities of the standard that are being implemented” assumes incorrectly that it is obvious, or easily ascertainable, which standard functionalities are implemented in which products. For example, the first HEVC license offered a fixed rate for Main/Main10 implementations, with small additional charges for implementation of any of the optional “extensions” (Range Extension, Multi-View, and Scalability). The implementers (business people) often did not know whether their products implemented any of the optional extensions. Basing FR TC on the “application of the standard” in particular products or on “the functionalities of the standard that are being implemented” suggest a range of granular prices specific to each product. The realities of the business require less granular pricing applied to a range of products, averaged across the various permutations of application and function.

Some respondents note that the level of complexity of the negotiations will increase, if questions about the products’ main function are included. That would be another obstacle to achieve an agreement. The licensing negotiations should become easier, not more complex. If a question about a product’s main function was clarified with one implementer, would it mean that all subsequent implementers were bound by such finding?

Regarding the “ND” assessment, respondents note that European courts are increasingly aligned. In the UK (*Unwired Planet v Huawei*) Judge Birss analysed in detail the non-discrimination prong of FRAND, concluding that there is no requirement for “hard-edged” non-discrimination. Non-discrimination in the FRAND context does not mean that every licensee is entitled to the same rate, not even similarly situated competitors. This has been confirmed by the UK Supreme Court.

Some respondents explain that for the ND assessment, it is relevant whether: (i) the entities are competitors, and (ii) they would be put at a competitive disadvantage, if treated differently. Hence the following are generally not determinative: those using the same functionalities of a standard; those using the technology in the same applications; those using the same functionalities of a standard in similar or same applications.

Some respondents argue that if entities are at the same level of the value chain ND is relevant, provided they are competitors. Entities at different levels of the value chain are unlikely to be competitors and not similarly situated. ND relevance has to be determined on a case-by-case basis depending on whether they distort competition between similarly situated competitors in the relevant market.

The aspects of non-disclosure requirements, compliance and patent related issues, none of which are commercial in nature, seem unlikely to some respondents to distort competition (between competitors), and thus may have little relevance to the ND part of FRAND.

Some respondents note that ND may also be determined by external factors such as the business environment, the size of the business and the extent of competition. In the event of license negotiations, besides the above situations, the negotiation process, such as all relevant reactions during the negotiation process should be added to the factors in determining ND.

Some respondents argue that early bird discounts, volume discounts, early payment discounts and annual royalty caps are unlikely to cause discrimination if they are offered to all similarly situated implementers. As such, it is hard to say that any discount would be problematic. Such discounts serve as an incentive to conclude a FRAND licence and to avoid litigation. What courts have avoided, and policy makers should avoid, is a determination that ND operates as a most favoured nation clause which causes discounts to be applied to all, even those that do not qualify.

3. Arguments against the "license to all" principle

Some respondents believe that compelling licensing at all levels of the value chain would be inefficient and impracticable. Per the SEPs Expert Group report of January 2021 such a requirement would significantly increase negotiation costs for SEP holders. To avoid issues such as double dipping, licenses to component makers at each level would also have to accurately define and delineate each SEP from others both with respect to scope and with respect to SEPs used. A final difficulty would be that one would need to figure out the portion of the FRAND royalties that would be borne for each component. The cost of administering this solution would be significant and, therefore, the risk of hold-out would also be high.

Some respondents also note that licensing at multiple levels would create further undue administrative burden for the SEP owner, geographical complications, and severe non-compliance/under-reporting issues. If multiple parties are made responsible for payment, then usually nobody does. If SEP holders lose control of who to license it would have profound implications on efficiency, complexity, and cost of licensing. It will also be much more difficult to comply with the non-discrimination limb of FRAND. If the SEP holder chooses the licensing level, similarly situated parties can be licensed similarly.

Respondents warn that there would be a fundamental difficulty to implement this principle in practice. They note that monitoring can only be achieved via contractual engagements. There may be multiple end-use applications with potentially different values and the consequential challenge of anticipating the proper licensing value at the upstream level. In order for such monitoring to work, contractual engagements need to be in place at different levels granting the SEP holder enforceable auditing rights. A first level where the licensee/implementer/manufacturer of upstream level (intermediate) products, agrees with the SEP holder (licensor) that the license agreement will be subject to the acceptance of auditing rights by the producer of end products to the benefit of the SEP holder. Then a subsequent agreement whereby the producer of end products enters into a contractual

arrangement with the SEP holder to provide such auditing rights for the duration of the SEP license agreement and a reasonable term thereafter (as audit can only occur ex post). This is very difficult to set up in practice and will increase costs substantially for everyone (incl. consumers), but without it, monitoring upstream, the downstream activity in a global supply chain is not reasonably possible. Barriers would include confidentiality and dynamic market factors requiring frequent updates of supply chain information.

Some add that it also would also be difficult if not impossible for consumer product manufacturers to track and report each supplier for every component in each product they manufacture.

A respondent notes that the first-to-request scenario could easily lead to different supply chains being licensed at different levels, so competitors at the same level would not be treated similarly. Where the choice of licensing level results in uncertainty regarding value or use, the party choosing the level should bear the cost of such uncertainty.

4. Aggregate royalty

Some respondents argue that for an operating company, the decision to implement a particular standard into a product is primarily driven by market needs and consumer demand. Thus, not knowing the reasonable aggregate royalty for a standard, in most cases, would not impact implementation. Respondents add that whether a consumer is willing to pay €25 or €250 to add connectivity is a question for the market and such market decisions may not be known at first. Valuation declared ex ante can over- or under-value standardized technology. Businesses, whether large or small, must be able to operate without perfect information. But because the aggregate royalty will only be a small fraction of €25 to €250 value created by the utilisation of the standard, it will not be a primary cause of concern for businesses.

Respondents explains furthermore that hardly any company pays for all SEPs, thus the aggregate royalty rate is a hypothetical phenomenon, not a realistic one. Much has been written on theoretical "royalty stacks" but these are just that - theoretical. Tangible examples of the existence of such stacks are hard to come by. According to such respondents in practice, a reasonable aggregate royalty has never been known and this has presented no impediment to licensing or the adoption or implementation of standards. As a matter of economics, an aggregate royalty acts as an artificial, arbitrary cap that is advocated because it allows implementers to argue that royalties should be limited irrespective of the economic value provided by the patented technologies. Since many SEPs holders obtain returns on their R&D investments in ways other than by licensing their SEPs, such an aggregate royalty would be purely hypothetical and essentially irrelevant.

Another respondent points to some important challenges to such determination, including who would make it, when, whether it would be for the worldwide market, whether it would be updated on a regular basis and what impact would it have on the license agreements.

Some respondents argue that an approach based on aggregate royalty and the apportionment thereof may not be commercially feasible as it would require costly and time-consuming analysis. Top-down analysis is only one of SEP valuation approaches. Putting excessive emphasis on top-down places significant burden on the SEP licensing practice (e.g., requiring third party essentiality on all declared SEPs). Exclusive reliance on top-down may also hamper innovation incentives.

A respondent notes that past attempts to determine such reasonable aggregate did not lead to a usable outcomes.

Finally, respondents underlined that the aggregated royalty is just one aspect and has a limited significance without knowledge of the number of all SEPs, number of licensors, their licensing programs for a specific standard, ASP of products, volume and so on. If caps or lump-sum payments are agreed the aggregated royalty is of even less significance.

II. Positions in favour of a qualified "Licence to all" principle which may consider price differentiation and one level of licensing in a particular value chain

1. "License to all" principle

Respondents note that open standards were developed as building blocks to foster innovation and interoperability. The FRAND commitment, that any willing licensee should receive a license, supports innovation and interoperability, encourages the take up of open standards. They claim that the European Commission in its Horizontal Guidelines provide that licences should be available "to all third parties". A number of respondents argue that a refusal to offer a licence is contrary to the purpose of the FRAND commitment, undermines the purpose of standardisation, violates competition law, and harms innovation.

Respondents also argue that by voluntarily giving a FRAND-commitment, SEP-owners freely choose to restrict their right to decide to whom they want to license their SEPs. Against this background, "single point licensing" solutions cannot be imposed unilaterally by the SEP holder but would require the consent of all affected stakeholders in a value chain who are interested in taking a license. Moreover, any "single point licensing" solution would have to provide adequate protection against patent infringement claims to all actors at all levels of the value chain.

According to some respondents, pro-active licensing is the opposite of patent hold-out. A willing licensee should be able to reach the necessary level of certainty to calculate its business case and to start providing innovative products to customers. Since the decision to seek a license could be driven by the desire to enter new product markets using standardized technology and gain legal certainty, the right to a licence should also not be limited by the licensing practice of the SEP-holder or its decision to license its SEPs only to certain market-participants.

Some respondents explain that in principle, an implementer must be able to obtain a license for his products. An implementer cannot be forced to infringe another party's SEP under patent law and possibly commit a criminal act by doing so in certain jurisdictions, because it cannot take a licence. It should also be able to sell its products legally within the meaning of Article 42 of the UN Convention on Contracts for the International Sale of Goods (CISG), irrespective of the level of the supply chain at which it is located. This applies especially if it wishes to sell its products to other implementers who have not yet concluded a license agreement. If an implementer cannot request a licence of its own, it may become dependent on licensed customers. In effect, the refusal to license may restrict the economic freedom to operate of an implementer.

A number of respondents underline that licensing could take place at ANY level in the value chain, not at EVERY level (to avoid double-dipping). The market should be able to determine at which level licensing should take place. For different value chains, this level can be chosen differently. The most appropriate level of licensing may differ by industry, products and market structure. The outcome should minimize the effort of licensing, provide certainty to good faith implementers and licensors. Some note that it has also to guarantee that the value of a license is not marginalized if licensing takes place on a very low level of the value chain. Some respondents within this group consider that discussions of this kind should include both SEP holders and implementers, and potentially other industry stakeholders. Others argue, however, that the power to choose the level of licensing should be vested in SEP implementers, as they know best the characteristics of a particular industry.

A number of respondents argue that component suppliers are best positioned to evaluate the value of a SEP given their practical expertise in the standard. Further, component suppliers can centralize licensing and act as a clearinghouse providing licensed products to disparate companies, enabling access and furthering the adoption of the standard. If components are already licensed, then SMEs and other innovators will be free to focus on their own innovations by incorporating standardized functionalities without the fear of being sued and enjoined by SEP holders.

Respondents argue that it should be possible to pass the cost of a license downstream just like any other cost. However, they note two issues related to this. First, royalties are requested retroactively for products already sold on the market. Second, implementers upstream may not have the negotiation power to pass the costs downstream. Even if a licence is given downstream and "have made" rights are granted, the component supplier may be obliged contractually to compensate the end-product producer for the cost of the SEP royalties. Since the component manufacturer did not negotiate such price, it cannot economically bear the royalty burden thus generated.

Also here, some respondents caution against introducing a ‘first to request’ approach to determining the appropriate level of licensing in a value chain because this might open the SEP licensing process to gamesmanship. If the first entity to ask for a license can determine the level of licensing, the implementer is in a disproportionally weaker position. SEP holders know first of their SEPs before a manufacturer can assess whether its product uses a given SEP. They claim that such a right of determination of another would inadmissibly interfere with the right to obtain one's own license and thus restrict the freedom of one's own independent economic activity.

2. FRAND terms and conditions

A number of respondents argue that the licensing terms must bear a clear relationship to the economic value of the patented technology also in conjunction with all the other technologies incorporated in the company’s products at the selected licensing level.

Some argue that FR TC can be best determined based on the products which main function is that of the standardised technology. In particular, royalties should not capture the value of downstream innovation and investment by other undertakings. The role of connectivity SEPs is limited to enabling technology, they provide the ability of components to connect and transmit voice or data. This function is exactly the same in vehicles as in mobile handsets. The FR TC should therefore not differ depending on the application or use of the product.

Respondents argue that FR TC can, however, differ depending on the functionalities of the standard that are being implemented. R&D investments from SEP holders could then be rewarded if they lead to functionalities that are specifically relevant for a dedicated application. Definition of "functionalities" should, however, be clarified and may correspond to a specific set of sections of a standard.

Some respondents propose that the FR TC, including royalties, may be different depending on the percentage of implementation of the standard. If the standard is only partially implemented, only the patents applying to that portion are applicable, implying that the royalty cannot be the same for the entire SEP portfolio. Some respondents add that the FR TC could be different if the intensity of use of the standard is not the same. For example, a device that only transmits a few bytes of technical data in 5G, as opposed to a smartphone that would be used to do 5G intensive video streaming, downloading, conferencing etc., would not be subject to the same level of royalty.

With regard to the ND aspect of FRAND some respondents explain that it is intended to counteract a distortion of competition, which by definition is "between competitors." Therefore, a SEP holder should not discriminate between similarly situated competitors. SEP implementers active in various regions may be similarly situated. However, ND does not require that license terms offered or agreed to be identical between similarly situated licensees. Companies using the same functionality of a standard and those using the technology in the same applications are not necessarily competitors. Therefore, it is uncertain whether the ND aspect of FRAND applies. Companies at different levels of value chains are generally not likely to be competitors in the relevant market and therefore unlikely to be in a similar situation.

Other respondents claim that similarly situated entities are those that use the same functionalities of the standard. The use of the technology in different applications may not justify different treatment.

The choice of the level of licensing is neutral for the determination of FRAND terms and conditions. Such respondents caution against a general conclusion that discrimination is permitted as long as a company is not similarly situated to another.

Respondents note the following as justification for discriminatory treatment: licences limited to certain territories and local legal requirements.

Some respondents consider discounts for early bird, volume, etc. reasonable when (i) the implementers help to promote or contribute to the diffusion of the relevant standard (i.e., drive widespread implementation of the relevant technology in the market); and (ii) such discounts are made available in a non-discriminate manner to all implementers in a similar situation around the same time. The reasonable range of discount should be determined on a case-by-case basis depending on the market circumstances. When evaluating where discounts can be non-discriminating and/or anti-competitive, it is important to consider the particular timing and circumstances under which the discounts are offered to the implementers.

Some respondents note that significant early bird discounts without transparency (i.e., as to duration and amount) runs the risk of being discriminatory, so cannot speak to discount amount alone. A non-discriminatory example is the licensor publicly announcing a 20% discount during the first year. In contrast, the licensor using a secret, sweetheart deal with an early adopter to create adoption and lock-in would be discriminatory if higher rates are then charged to later adopters, or to future renewals. According to some respondents, volume discounts and annual royalty caps distinctly favour larger implementers over smaller ones. Any early payment discount that is not reflective of the risk-adjusted time value of money favours the more liquid implementers over those less so and thus may be discriminatory.

3. Arguments on "license to all" principle

Some respondents explain that the doctrine of patent exhaustion provides that the initial sale of a patented item terminates all patent rights to that item. Once the patent holder sells a product covered by a patent, that patent can no longer be asserted against a downstream buyer or implementer of the product. The patent exhaustion doctrine is critical in providing certainty to patent rights, and to preventing improper 'double dipping' in the context of SEP licensing.

Some respondents note that it would be preferable if all parties agreed on the licensing level and could agree on one level in line with proposals no. 28-33 of the EU expert report. Until such an agreement has been reached, an implementer should only be able to determine the licensing level for itself as long as no other license agreement has been concluded for the same licensed product at any other level. The SEP holder should be able to demand the acquisition of licenses from other implementers as long as the products manufactured, used or distributed by said implementers are not completely covered by license agreements of the SEP holder at another level of the supply chain (upstream = exhaustion, downstream = double dipping or have-made rights) or corresponding license agreements are requested by implementers at another level. If several license agreements are nevertheless concluded at different levels in a supply chain, the SEP holder should inform the licensees belonging to the supply chain and do the necessary to avoid double dipping due to overlapping licensing.

Some respondents consider that transparency of licensing rules should be sufficient to avoid double dipping. Furthermore, some respondents believe that SEP holders should provide clear information about existing licensees (who they are, license scope, license duration, etc.), and provide licensing mechanisms (e.g., clear sublicense rights in upstream licenses, precise definitions, appropriately limited audit rights) to accommodate situations where a licensee is paying for only some of the products they produce because others are already covered through upstream licenses.

Such respondents also note that component suppliers that sell licensed components have an incentive to make their customers aware that they are receiving licensed components. Developing mechanisms

to ensure customers avoid the paying unnecessary royalties would quickly become a competitive necessity for component suppliers.

Some respondents claim that accounting for double dipping would not be a major a concern and should not be an impediment to licensing upstream in the value chain. SEP holders and pools already need to account for cross-licenses and other arrangements that result in existing licenses. The SEP holder knows who it has licensed, or the potential licensee can ask its suppliers. It is common during negotiations for potential licensees to determine whether an upstream supplier is licensed (e.g., as in WiFi). Indeed, potential licensees are currently the ones verifying whether licenses already exist and persuading SEP holders to account for the existing licenses. SEP holders should maintain an auditable record of licensees so double dipping can be detected and remedied even in hindsight. According to those statements the burden is manageable (and has been managed) given the sums being paid. Some respondents note that where complex distribution and retail chains make exact monitoring practically impossible, the parties may agree on reasonable estimates for the share of sales into different applications. Respondents also point to proposal No. 35 of the EU Expert Report which provides for a specific marking of licensed products, which would allow monitoring.

4. Aggregate royalty

A number of respondents consider that it is critical for any company to have realistic estimates of its costs. Otherwise, it is unlikely to enter a market. SEP royalties are a key cost and thus it is important for a company using a standard to understand aggregate SEP royalties. Transparency in relation to a reasonable aggregate royalty is important for SMEs and start-ups wishing to engage in R&D and innovation of products implementing SEPs. Uncertainty as to the potential overall cost exposure resulting from licensing demands of SEP-holders against the SMEs/start-ups has a strong deterrent effect for standard-based innovation.

Some respondents also explain that opacity on costs that can turn a business case into deep red and royalties which can accumulate over years and have to be paid at one point in time can destroy the entire company. For start-ups the knowledge of licensing costs can be essential to collect money from investors. Furthermore, transparency on the reasonable aggregate royalty avoids patent hold-up, enables a qualified decision on which technology to choose and by that fair competition between alternative standards.

Some respondents stress that the aggregate royalty is also relevant for the assessment of an offer provided the SEP owner, which has to reflect his share of the overall stack of the relevant SEP portfolio accordingly.

Respondents note that the aggregate royalty may be per product, all standards included, or per standard. In both cases, this allows a SEP implementer: (i) to know his total exposure for a given standard, or for the totality of the standards implemented in its product, and (ii) to oppose to each SEP holder a ratio between the number of SEPs that this holder holds on the total of the SEPs of the standard versus the total amount of royalties attributed to the standard, or to the standards, implemented.

Respondents also note that by adding up the royalties claimed for the same standard by different SEP holders, the total amount of royalties may become prohibitive. For example, the aggregate royalty claimed for Blu-Ray technology was so high that almost none of the implementers had the economic leeway to implement this technology into their products and the end-implementers continued to use DVDs and then decided to satisfy their need for data space via HDDs. As a consequence, only implementers that are also SEP holders implemented this superior standard into their products, thereby stifling innovation and harming consumer welfare in the sense of access to better products.

Some respondents suggest that the aggregate royalty be determined in a process by both SEP holders and SEP implementers before individual licences are concluded. Preferably, the process could be led by a leading patent pool and a licensing negotiation group. Other respondents suggest that there could

be a mechanism, for example an SEP Royalty Court, that would ensure that the aggregate royalty burden for an entire standard is adjudicated in a single proceeding. Such a mechanism would reduce transaction costs and ensure predictability with respect to the cost to implement a particular standard. These proceedings should be open, transparent, and inclusive, permitting all SEP holders and all implementers to participate.

Some respondents also note that regulators may not be well suited to determine and impose aggregate rates for standards because they generally lack the expertise.

III. "License to all" principle based on a single value of the standardised technology irrespective of the use and licensing the smallest saleable patent practicing unit (SSPPU)

Respondents argue that all SEPs should be licensed at the top of the value chain, and patent exhaustion should apply to subsequent purchases of the licensed technology. If the license is granted at the level of the SEP implementer manufacturer of the smallest saleable unit implementing the SEP (case of the IEEE statutes), then there is no need to license downstream implementers in view of the exhaustion of the right. This will "clean up" the market, avoid abuses and secure the electronic components industry. The appropriate royalty base would thus be the smallest saleable patent practicing unit ("SSPPU"). In this context, it is important to note that the necessity to monitor this data would only arise if and when the parties have agreed to differentiate royalties according to the end use ('application-specific licensing').

Some respondents argue that standards are often not industry-specific or product-specific. Communication standards, for example, can be implemented in phones, cars, planes, thermostats, watches, appliances and hundreds or thousands of other devices. All of these very different downstream devices can incorporate the same components that implement the same standards. According to those views, SEPs generally cover only discrete aspects of particular components, and rarely if ever end devices employing the applicable standard. As such, basing royalties on the value added by others' downstream innovations would overcompensate SEP holders to the detriment of other industry participants and customers.

Some respondents refer to the Commission's SEP Communication stating that licensing terms have to bear a clear relationship to the economic value of the patented technology. The value primarily needs to focus on the technology itself and in principle should not include any element resulting from the decision to include the technology in the standard.[359] According to those views, royalties should not be based on the market power that a SEP holder obtains from the selection of its technology as part of the standard.

Some respondents argue that FRAND should not depend on the level of licensing or the value of products at a certain level of a value chain, but only on the value of the patented technology as such. Consequently, all standard-implementers that are seeking a license and make use of the patented technology for the same purposes/functionalities should be considered as similarly situated for the purpose of the "ND"- assessment.

According to them, the concept of non-discrimination is an important part of a SEP holder's commitment to license its SEPs under FRAND terms. SEP licensees have a legitimate expectation (based on the SEP holder's commitment) that they will be able to take SEP licenses on terms and conditions that are similar to other implementers of the standard. FRAND, however, can be a range and licensing terms need not be identical to be non-discriminatory.

Some argue that it is incorrect to suggest that discrimination is permitted as long as a company is not 'similarly situated' to another. For example, it would be inappropriate for a small market entrant to

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face discriminatory licensing demands as compared to larger, existing competitors, as such approaches would restrict competition and market entry.

IV. Qualitative royalty apportionment criteria

With respect to aggregated patent licensing pools and platforms, some respondents explain that there may be several criteria to determine royalty distribution among licensors. For example, there may be criteria that measure quality in addition to quantity, such as, inter alia, contributions to standards and past licensing success. Some respondents explain that perceived market value is the key criteria. Positive litigation track record and active licensing efforts increase the value of a patent portfolio.

Other criteria that could be considered include comparable licenses, technical importance of the claimed subject matter to the product, technical contributions to the standard, technical contributions to key features of the standard. It may also be important to consider whether a SEP holder is actively licensing/looking to license or enforce their rights or whether they simply hold SEPs for other strategic reasons. Some respondents note that the age of the portfolio is also an important factor if the license agreement is valid several years as is typically the case.

Some respondents note that person hours spent on a standard is not connected to the value of patents and not a proper basis for royalties. Metrics such as forward citation or jurisdictions are generally subject to manipulation and do not accurately gauge patent value. Forward citations, contribution to the standard, etc. are no significant criteria.

V. Comments on the CJEU *Huawei v. ZTE* negotiation process

According to some respondents further detailing of the *Huawei v ZTE* process would not be helpful. More detail would increase the problem of hold-out through workarounds.

Other respondents consider that ambiguities arise with regard to the availability of injunctions when the SEP holder has not made a FRAND offer. Such respondents claim that in some cases, courts grant injunctive relief based on an examination of whether the implementer's courter offer is FRAND, without first examining whether the SEP holder's prior is FRAND. Furthermore, they argue that ambiguities remain as to the amount of the security, if the SEP holder and the implementer make different offers, each of which is FRAND in its own right.

Most respondents consider that while all steps should be conducted without undue delay, it would be difficult to provide exact time frames for the individual steps. The appropriate amount of time required to complete each step would depend in the circumstances of each individual case.

Tables with replies per question

Q35. In your view, can a SEP holder refuse to licence in the following situations?

"No" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain but has not provided "have made" rights to that implementer	75%	70%	83%	86%	78%
An implementer asks for a licence for an application, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	71%	66%	86%	71%	80%
An implementer asks for a licence for using an optional part of the standard, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	67%	65%	86%	63%	67%

"No" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain and has provided the so called "have made" rights to that implementer	61%	59%	71%	57%	67%
An implementer asks for a license for a limited number of products and the SEP holder prefers to avoid licensing costs by providing guarantees that it will not enforce its patents.	54%	43%	83%	71%	56%
No. of replies*	50-57	28-34	6-7	7-8	9-10

Note: "No opinion" answers not taken into account; so the residual to 100% is Yes answers.

"No" answers only	Implementers	SEP Holders
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain but has not provided "have made" rights to that implementer	100%	33%
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain and has provided the so called "have made" rights to that implementer	97%	0%
An implementer asks for a licence for an application, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	93%	27%
An implementer asks for a licence for using an optional part of the standard, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	93%	20%
An implementer asks for a license for a limited number of products and the SEP holder prefers to avoid licensing costs by providing guarantees that it will not enforce its patents.	85%	8%
No. of replies*	26-29	13-16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. ""No opinion" answers not taken into account; so the residual to 100% is Yes answers.
**range, different number of replies per question*

"No" answers only	EU	non-EU
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain but has not provided "have made" rights to that implementer	73%	75%
An implementer asks for a licence for an application, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	65%	80%
An implementer asks for a licence for using an optional part of the standard, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	61%	80%
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain and has provided the so called "have made" rights to that implementer	56%	69%
An implementer asks for a license for a limited number of products and the SEP holder prefers to avoid licensing costs by providing guarantees that it will not enforce its patents.	46%	69%
No. of replies*	28-32	13-16

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; ""No opinion" answers not taken into account; so the residual to 100% is Yes answers.
**range, different number of replies per question*

"All answers"	Yes	No	No.
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain but has not provided "have made" rights to that implementer	25 %	75 %	55
An implementer asks for a licence for an application, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	29 %	71 %	56

"All answers"	Yes	No	No.
An implementer asks for a licence for using an optional part of the standard, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	33 %	67 %	55
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain and has provided the so called "have made" rights to that implementer	39 %	61 %	57
An implementer asks for a license for a limited number of products and the SEP holder prefers to avoid licensing costs by providing guarantees that it will not enforce its patents.	46 %	54 %	50

Note: "No opinion" answers not taken into account

"Companies answers"	Yes	No	No.
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain but has not provided "have made" rights to that implementer	30 %	70 %	33
An implementer asks for a licence for an application, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	34 %	66 %	32
An implementer asks for a licence for using an optional part of the standard, for which the SEP holder has not yet sent any letter inviting any implementer to take a licence	35 %	65 %	31
An implementer asks for a licence, the SEP holder is already licensing (or negotiating the licensing of) the application at another level of the value chain and has provided the so called "have made" rights to that implementer	41 %	59 %	34
An implementer asks for a license for a limited number of products and the SEP holder prefers to avoid licensing costs by providing guarantees that it will not enforce its patents.	57 %	43 %	28

Note: "No opinion" answers not taken into account

Q36. How would you assess the following statements for the determination of the level in the value chain for licensing of a SEP?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO /other	Citizens
Licencing could take place at every level of the value chain	60%	51%	71%	56%	90%
Licensing should take place at one level of the value chain only	47%	56%	50%	25%	30%
The implementers in a value chain should be able to determine the level of licensing	42%	49%	33%	38%	30%
The SEP holder is the only one who should be able to determine the level of licensing	28%	31%	14%	33%	22%
Both SEP holders and implementers should determine the level of licensing	24%	15%	0%	50%	50%
The level of licensing should be determined by the person who asks for a licence first. If an implementer asks first, implementers determine the level of licensing. If the SEP holder asks first, it determines the level of licensing.	0%	0%	0%	0%	0%
No. of replies*	58-63	34-37	6-7	8-9	9-10

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
Licencing could take place at every level of the value chain	93%	13%
The implementers in a value chain should be able to determine the level of licensing	68%	0%
Licensing should take place at one level of the value chain only	36%	69%
Both SEP holders and implementers should determine the level of licensing	19%	13%
The SEP holder is the only one who should be able to determine the level of licensing	3%	63%
The level of licensing should be determined by the person who asks for a licence first. If an implementer asks first, implementers determine the level of licensing. If the SEP holder asks first, it determines the level of licensing.	0%	0%
No. of replies*	27-29	15-16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
Licencing could take place at every level of the value chain	55%	55%
Licensing should take place at one level of the value chain only	52%	47%
The implementers in a value chain should be able to determine the level of licensing	41%	53%
The SEP holder is the only one who should be able to determine the level of licensing	27%	33%
Both SEP holders and implementers should determine the level of licensing	23%	12%
The level of licensing should be determined by the person who asks for a licence first. If an implementer asks first, implementers determine the level of licensing. If the SEP holder asks first, it determines the level of licensing.	0%	0%
No. of replies*	31-33	17-20

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
Licencing could take place at every level of the value chain	60%	8%	32%	63
Licensing should take place at one level of the value chain only	47%	18%	35%	60
The implementers in a value chain should be able to determine the level of licensing	42%	7%	51%	59
The SEP holder is the only one who should be able to determine the level of licensing	28%	8%	63%	60
Both SEP holders and implementers should determine the level of licensing	24%	10%	66%	58
The level of licensing should be determined by the person who asks for a licence first. If an implementer asks first, implementers determine the level of licensing. If the SEP holder asks first, it determines the level of licensing.	0%	3%	97%	59
Other (please specify)	75%	0%	25%	4

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
Licensing should take place at one level of the value chain only	56%	17%	28%	36
Licencing could take place at every level of the value chain	51%	8%	41%	37
The implementers in a value chain should be able to determine the level of licensing	49%	9%	43%	35
The SEP holder is the only one who should be able to determine the level of licensing	31%	9%	60%	35
Both SEP holders and implementers should determine the level of licensing	15%	15%	71%	34
The level of licensing should be determined by the person who asks for a licence first. If an implementer asks first, implementers determine the level of licensing. If the SEP holder asks first, it determines the level of licensing.	0%	6%	94%	34
Other (please specify)	50%	0%	50%	2

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Q37. If licensing were taking place at one level of the value chain only, what could be some guiding principles for the determination of that level of licensing?

"Agree and strongly agree" answers only	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Licensing should take place at the level of the product which main function is that of the standardised technology	49%	49%	67%	33%	57%
Licensing should take place at the most upstream level of the value chain	38%	39%	40%	13%	67%

"Agree and strongly agree" answers only	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Licensing should take place at the level of the product that incorporates most functionalities of the standardised technology	36%	33%	40%	44%	33%
Licensing should take place where the transaction costs are most efficient	35%	37%	14%	56%	17%
Licensing should take place at the end level product of the value chain	34%	33%	33%	33%	43%
Licensing should take place where the SEP holder is able to monitor in which application the licenced technology is used	30%	31%	17%	44%	17%
Licensing should take place where the licensed technology affects a significant proportion of the value-inducing functionalities of the licensed product	26%	14%	25%	56%	50%
Licensing should take place at a component (intermediate) level of the value chain	20%	22%	20%	25%	0%
No. of replies*	54-58	35-36	4-7	8-9	6-7

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
Licensing should take place at the level of the product which main function is that of the standardised technology	78%	6%
Licensing should take place at the most upstream level of the value chain	69%	0%
Licensing should take place at the level of the product that incorporates most functionalities of the standardised technology	42%	24%
Licensing should take place at a component (intermediate) level of the value chain	31%	0%
Licensing should take place where the transaction costs are most efficient	25%	53%
Licensing should take place where the licensed technology affects a significant proportion of the value-inducing functionalities of the licensed product	17%	47%
Licensing should take place where the SEP holder is able to monitor in which application the licenced technology is used	7%	76%
Licensing should take place at the end level product of the value chain	0%	88%
No. of replies*	24-28	16-17

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account

**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
Licensing should take place at the level of the product which main function is that of the standardised technology	47%	50%
Licensing should take place at the end level product of the value chain	38%	26%
Licensing should take place where the SEP holder is able to monitor in which application the licenced technology is used	34%	28%
Licensing should take place where the transaction costs are most efficient	33%	44%
Licensing should take place at the most upstream level of the value chain	30%	42%
Licensing should take place at the level of the product that incorporates most functionalities of the standardised technology	26%	53%
Licensing should take place where the licensed technology affects a significant proportion of the value-inducing functionalities of the licensed product	23%	22%
Licensing should take place at a component (intermediate) level of the value chain	13%	37%
No. of replies*	30-33	18-19

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
Licensing should take place at the level of the product which main function is that of the standardised technology	49%	23%	28%	57
Licensing should take place at the most upstream level of the value chain	38%	18%	44%	55
Licensing should take place at the level of the product that incorporates most functionalities of the standardised technology	36%	23%	41%	56
Licensing should take place where the transaction costs are most efficient	35%	44%	21%	57
Licensing should take place at the end level product of the value chain	34%	16%	50%	58
Licensing should take place where the SEP holder is able to monitor in which application the licenced technology is used	30%	21%	48%	56
Licensing should take place where the licensed technology affects a significant proportion of the value-inducing functionalities of the licensed product	26%	17%	57%	54
Licensing should take place at a component (intermediate) level of the value chain	20%	32%	48%	56
Other (please specify)	80%	0%	20%	5

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
Licensing should take place at the level of the product which main function is that of the standardised technology	49%	20%	31%	35
Licensing should take place at the most upstream level of the value chain	39%	19%	42%	36
Licensing should take place where the transaction costs are most efficient	37%	49%	14%	35
Licensing should take place at the end level product of the value chain	33%	14%	53%	36
Licensing should take place at the level of the product that incorporates most functionalities of the standardised technology	33%	22%	44%	36
Licensing should take place where the SEP holder is able to monitor in which application the licenced technology is used	31%	23%	46%	35
Licensing should take place at a component (intermediate) level of the value chain	22%	39%	39%	36
Licensing should take place where the licensed technology affects a significant proportion of the value-inducing functionalities of the licensed product	14%	20%	66%	35
Other (please specify)	0%	0%	100%	1

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Q40. How would you assess the following statements with regard to fair and reasonable terms and conditions ("FR TC")?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
The FR TC may depend on the functionalities of the standard that are being implemented.	75%	74%	100%	67%	70%
The FR TC are independent of the level of licensing.	68%	70%	67%	70%	60%
Implementers upstream should be able to pass the cost of the licence downstream.	67%	70%	50%	60%	78%
The FR TC may be different for the different applications of the standard.	56%	56%	29%	80%	50%
The FR TC are determined based on the added value that the patented technology brings to the product implementing the standard.	48%	44%	33%	60%	60%
The FR TC should be the same irrespective of how the standard is used.	34%	38%	43%	11%	33%
No. of replies*	52-61	27-34	6-7	9-10	9-10

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
The FR TC may depend on the functionalities of the standard that are being implemented.	75%	93%
The FR TC are independent of the level of licensing.	74%	75%
The FR TC should be the same irrespective of how the standard is used.	67%	0%
Implementers upstream should be able to pass the cost of the licence downstream.	66%	89%
The FR TC are determined based on the added value that the patented technology brings to the product implementing the standard.	37%	60%
The FR TC may be different for the different applications of the standard.	25%	100%
No. of replies*	27-29	9-16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
The FR TC may depend on the functionalities of the standard that are being implemented.	81%	67%
The FR TC are independent of the level of licensing.	71%	67%
Implementers upstream should be able to pass the cost of the licence downstream.	67%	63%
The FR TC may be different for the different applications of the standard.	56%	58%
The FR TC are determined based on the added value that the patented technology brings to the product implementing the standard.	40%	55%
The FR TC should be the same irrespective of how the standard is used.	31%	39%
No. of replies*	27-32	16-20

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
The FR TC may depend on the functionalities of the standard that are being implemented.	75%	15%	10%	60
The FR TC are independent of the level of licensing.	68%	12%	20%	59
Implementers upstream should be able to pass the cost of the licence downstream.	67%	29%	4%	52
The FR TC may be different for the different applications of the standard.	56%	10%	34%	61
The FR TC are determined based on the added value that the patented technology brings to the product implementing the standard.	48%	20%	32%	60
The FR TC should be the same irrespective of how the standard is used.	34%	14%	53%	59
Other (please specify)	100%	0%	0%	3

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
The FR TC may depend on the functionalities of the standard that are being implemented.	74%	18%	9%	34
The FR TC are independent of the level of licensing.	70%	12%	18%	33
Implementers upstream should be able to pass the cost of the licence downstream.	70%	30%	0%	27
The FR TC may be different for the different applications of the standard.	56%	6%	38%	34
The FR TC are determined based on the added value that the patented technology brings to the product implementing the standard.	44%	21%	35%	34
The FR TC should be the same irrespective of how the standard is used.	38%	9%	53%	34
Other (please specify)	100%	0%	0%	2

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Q41. How would you assess the following statements for the assessment of non-discrimination ("ND")?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
For the ND assessment, it matters whether a similarly situated entity is put at a competitive disadvantage	76%	74%	100%	67%	78%
Similarly situated entities are those that use the same functionalities of a standard in similar or same applications	76%	74%	100%	67%	78%
Entities at a different level in the value chain may be similarly situated if the FR TC are independent of the level of licensing	50%	57%	40%	38%	44%
Similarly situated entities are those that use the standardised technology in the same applications	43%	39%	29%	44%	67%
Similarly situated entities are those that are located at the same level in the value chain	42%	36%	33%	56%	56%
For the ND assessment, it matters whether a licence was taken at the same period of time	41%	44%	33%	40%	38%
Similarly situated entities are those that use the same functionalities of a standard	41%	38%	33%	44%	56%
No. of replies*	52-59	30-34	5-7	8-10	8-9

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
For the ND assessment, it matters whether a similarly situated entity is put at a competitive disadvantage	76%	94%
Similarly situated entities are those that use the same functionalities of a standard in similar or same applications	76%	94%
Entities at a different level in the value chain may be similarly situated if the FR TC are independent of the level of licensing	65%	27%
Similarly situated entities are those that use the standardised technology in the same applications	57%	27%
Similarly situated entities are those that use the same functionalities of a standard	56%	21%
Similarly situated entities are those that are located at the same level in the value chain	48%	33%
For the ND assessment, it matters whether a licence was taken at the same period of time	16%	76%
No. of replies*	25-28	11-17

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
For the ND assessment, it matters whether a similarly situated entity is put at a competitive disadvantage	90%	50%
Similarly situated entities are those that use the same functionalities of a standard in similar or same applications	90%	50%
Entities at a different level in the value chain may be similarly situated if the FR TC are independent of the level of licensing	46%	60%
Similarly situated entities are those that use the same functionalities of a standard	45%	25%
For the ND assessment, it matters whether a licence was taken at the same period of time	45%	35%
Similarly situated entities are those that use the standardised technology in the same applications	39%	38%
Similarly situated entities are those that are located at the same level in the value chain	38%	44%
No. of replies*	28-33	15-17

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
For the ND assessment, it matters whether a similarly situated entity is put at a competitive disadvantage	76%	13%	11%	55
Similarly situated entities are those that use the same functionalities of a standard in similar or same applications	76%	22%	24%	59
Entities at a different level in the value chain may be similarly situated if the FR TC are independent of the level of licensing	50%	19%	31%	52
Similarly situated entities are those that use the standardised technology in the same applications	43%	29%	28%	58
Similarly situated entities are those that are located at the same level in the value chain	42%	23%	35%	57
Similarly situated entities are those that use the same functionalities of a standard	41%	23%	36%	56
For the ND assessment, it matters whether a licence was taken at the same period of time	41%	38%	21%	56
Other (please specify)	100%	0%	0%	4

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
For the ND assessment, it matters whether a similarly situated entity is put at a competitive disadvantage	74%	13%	13%	31
Similarly situated entities are those that use the same functionalities of a standard in similar or same applications	74%	26%	24%	34
Entities at a different level in the value chain may be similarly situated if the FR TC are independent of the level of licensing	57%	17%	27%	30
Similarly situated entities are those that use the standardised technology in the same applications	39%	30%	30%	33
Similarly situated entities are those that are located at the same level in the value chain	36%	27%	36%	33
For the ND assessment, it matters whether a licence was taken at the same period of time	44%	28%	28%	32
Similarly situated entities are those that use the same functionalities of a standard	38%	28%	34%	32
Other (please specify)	100%	0%	0%	1

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Q42. What is the reasonable range of discounts that would not cause discrimination in the context of a licensing of a SEP?

Discounts are "Always are discriminatory" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities /NGO /other	Citizens
Annual Royalty Caps	38%	36%	0%	0%	67%
Volume discount	33%	25%	0%	0%	67%
Early bird discount (taking a licence at the beginning of a licensing programme)	29%	25%	0%	0%	50%
Early payment discount (making upfront payments of royalties)	29%	23%	0%	0%	50%
No. of replies*	21-24	11-13	1-2	1	6-8

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account. The residual to 100% shows those who choose rage between 1% and 50%
**range, different number of replies per question*

Discounts are "Always discriminatory" answers (column %) and average reasonable discount (column Avg.)	Implementers		SEP Holders	
	%	Avg.*	%	Avg.*
Annual Royalty Caps	50%	5%	0%	38%
Volume discount	50%	6%	0%	32%
Early bird discount (taking a licence at the beginning of a licensing programme)	43%	10%	0%	33%
Early payment discount (making upfront payments of royalties)	22%	6%	0%	28%
No. of replies**	7-9		8-10	

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. ""Other (please specify)" not included in the table; "No opinion" answers not taken into account. The residual to 100% shows those who choose rage between 1% and 50%
** Weighted average calculated using the middle of ranges, value of 0% for "Always discriminatory"*
***range, different number of replies per question*

Discounts are "Always discriminatory" answers (column %) and average reasonable discount (column Avg.)	EU		non-EU	
	%	Avg.*	%	Avg.*
Annual Royalty Caps	27%	24%	50%	23%
Early bird discount (taking a licence at the beginning of a licensing programme)	21%	23%	0%	45%
Early payment discount (making upfront payments of royalties)	21%	21%	0%	6%
Volume discount	15%	24%	50%	23%
No. of replies**	11-14		1-2	

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account. The residual to 100% shows those who choose rage between 1% and 50%
** Weighted average calculated using the middle of ranges, value of 0% for "Always discriminatory"*
***range, different number of replies per question*

"All answers"	Always discriminatory	1 to 10%	10 to 20%	20 to 30 %	30 to 40%	40 to 50 %	No.	Avg. *
Annual Royalty Caps	38%	14%	5%	14%	5%	24%	21	17%
Volume discount	30%	13%	9%	26%	4%	17%	23	18%
Early bird discount (taking a licence at the beginning of a licensing programme)	29%	10%	10%	24%	5%	24%	21	20%
Early payment discount (making upfront payments of royalties)	25%	38%	0%	13%	8%	17%	24	16%
Other (please specify)	50%	0%	0%	17%	0%	33%	6	19%

Note: "No opinion" answers not taken into account
** Weighted average calculated using the middle of ranges, value of 0% for "Always discriminatory"*

"Companies answers"	Always discriminatory	1 to 10%	10 to 20%	20 to 30 %	30 to 40%	40 to 50 %	No.	Avg. *
Annual Royalty Caps	36%	9%	0%	27%	0%	27%	11	20%
Volume discount	25%	0%	17%	42%	0%	17%	12	20%
Early bird discount (taking a licence at the beginning of a licensing programme)	25%	0%	8%	42%	8%	17%	12	22%
Early payment discount (making upfront payments of royalties)	23%	31%	0%	23%	15%	8%	13	16%
Other (please specify)	33%	0%	0%	0%	0%	67%	3	30%

Note: "No opinion" answers not taken into account
** Weighted average calculated using the middle of ranges, value of 0% for "Always discriminatory"*

Q43. Which of the following aspects of the licence terms and conditions are more likely to impact the non-discrimination part of FRAND? Please indicate their (relative) impact in the overall ND assessment below. The proposed rating below should describe the relative impact in the overall ND assessment.

"High" and "Very high" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities /NGO /other	Citizens
Royalty rate	82%	76%	60%	100%	100 %
Territorial scope of the licence	54%	48%	60%	71%	56%
Product scope of the licence (narrow or broad, end-product and/or modules)	54%	52%	60%	75%	40%
Payment conditions (term, interest for late payments, discounts)	49%	38%	60%	86%	50%
Patent related issues (validity)	45%	44%	40%	57%	40%
Term of the license (e.g. a particular time-period)	34%	32%	40%	63%	11%
Non-disclosure requirements	33%	24%	40%	43%	50%
Legal (applicable law, competent forum/court)	21%	10%	40%	13%	50%
Compliance (reporting obligations and auditing conditions)	19%	7%	20%	25%	50%
No. of replies*	47-53	25-30	5	7-8	9-10

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"High" and "Very high" answers only	Implementers	SEP Holders
Royalty rate	100%	46%
Territorial scope of the licence	72%	8%
Product scope of the licence (narrow or broad, end-product and/or modules)	68%	15%
Patent related issues (validity)	63%	9%
Payment conditions (term, interest for late payments, discounts)	56%	25%
Non-disclosure requirements	48%	0%
Term of the license (e.g. a particular time-period)	43%	8%
Legal (applicable law, competent forum/court)	32%	0%
Compliance (reporting obligations and auditing conditions)	32%	0%
No. of replies*	23-25	11-13

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"High" and "Very high" answers only	EU	non-EU
Royalty rate	73%	87%
Territorial scope of the licence	58%	47%
Product scope of the licence (narrow or broad, end-product and/or modules)	48%	73%
Payment conditions (term, interest for late payments, discounts)	46%	53%
Patent related issues (validity)	44%	50%
Term of the license (e.g. a particular time-period)	37%	43%
Non-disclosure requirements	27%	33%
Legal (applicable law, competent forum/court)	19%	7%
Compliance (reporting obligations and auditing conditions)	7%	19%
No. of replies*	25-27	12-16

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	High	Some	Low or no	No.
Royalty rate	82%	16%	2%	51
Territorial scope of the licence	54%	30%	16%	50
Product scope of the licence (narrow or broad, end-product and/or modules)	54%	29%	17%	52
Payment conditions (term, interest for late payments, discounts)	49%	35%	16%	51
Patent related issues (validity)	45%	23%	32%	47
Term of the license (e.g. a particular time-period)	34%	44%	22%	50

"All answers"	High	Some	Low or no	No.
Non-disclosure requirements	33%	16%	51%	51
Legal (applicable law, competent forum/court)	21%	29%	50%	52
Compliance (reporting obligations and auditing conditions)	19%	25%	57%	53
Other (please specify)	100%	0%	0%	4

Note: High composes of "High" and "Very high"; "Low or no" composes of "Low", "Very low" and "No impact"; "No opinion" answers not taken into account

"Companies answers"	High	Some	Low or no	No.
Royalty rate	76%	21%	3%	29
Product scope of the licence (narrow or broad, end-product and/or modules)	52%	38%	10%	29
Territorial scope of the licence	48%	41%	10%	29
Patent related issues (validity)	44%	32%	24%	25
Payment conditions (term, interest for late payments, discounts)	38%	48%	14%	29
Term of the license (e.g. a particular time-period)	32%	46%	21%	28
Non-disclosure requirements	24%	17%	59%	29
Legal (applicable law, competent forum/court)	10%	38%	52%	29
Compliance (reporting obligations and auditing conditions)	7%	23%	70%	30
Other (please specify)	100%	0%	0%	1

Note: High composes of "High" and "Very high"; "Low or no" composes of "Low", "Very low" and "No impact"; "No opinion" answers not taken into account

Q44. How important is it to know the reasonable aggregate royalty for all SEPs relevant to a potentially licensed product?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Important	70%	61%	86%	73%	89%
Neutral	17%	19%	14%	18%	11%
Not important	13%	19%	0%	9%	0%
No. of replies	63	36	7	11	9

Note: Important composes of "Important" and "Very important"; "Not important" composes of "Not so important" and "Not important"

	Implementers	SEP Holders
Important	100%	20%
Neutral	0%	40%
Not important	0%	40%
No. of replies	29	15

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. Important composes of "Important" and "Very important"; "Not important" composes of "Not so important" and "Not important"

	EU	non-EU
Important	67%	67%
Neutral	19%	17%
Not important	14%	17%
No. of replies	36	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; Important composes of "Important" and "Very important"; "Not important" composes of "Not so important" and "Not important"

Q45. How important is it to have a fair process for the determination of a reasonable aggregate royalty for all SEPs relevant to a licensed product?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Important	69%	61%	71%	73%	90%
Neutral	17%	22%	29%	9%	0%
Not important	14%	17%	0%	18%	10%
No. of replies	64	36	7	11	10

Note: Important composes of "Important" and "Very important"; "Not important" composes of "Not so important" and "Not important"

	Implementers	SEP Holders
Important	93%	25%
Neutral	3%	38%
Not important	3%	38%
No. of replies	29	16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. Important composes of "Important" and "Very important"; "Not important" composes of "Not so important" and "Not important"

	EU	non-EU
Important	67%	61%
Neutral	22%	17%
Not important	11%	22%
No. of replies	36	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; Important composes of "Important" and "Very important"; "Not important" composes of "Not so important" and "Not important"

Q46. The aggregate royalty may be apportioned among the various SEPs or SEP portfolios based on an estimate of the declared SEP that are actually essential ("true SEPs"). What could be an appropriate additional criterion for the apportionment of the aggregate royalty among the various SEPs or SEP portfolios?

	All	Compa-nies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
Number of "true" SEPs belonging to sections of the standard identified as of significant value	65%	62%	71%	44%	89%
Number of jurisdictions in which "true" SEPs are protected	47%	38%	43%	56%	78%
Number of significantly different claims	27%	27%	29%	33%	22%
Number of sections of the standard covered by "true" SEPs	18%	19%	14%	22%	11%
Man hours spent in contributing in the development of the standard at the SDO	6%	8%	0%	11%	0%
Forward citations360	5%	3%	0%	22%	0%
Other, please specify	35%	35%	29%	44%	33%
No. of replies	62	37	7	9	9

Note: multiple answers possible

	Implementers	SEP Holders
Number of "true" SEPs belonging to sections of the standard identified as of significant value	89%	40%

[360] A citation is a reference to a previous work (prior art) that is considered relevant to a current patent application. Forward citations are patents that cite a specific patent.

	Implementers	SEP Holders
Number of jurisdictions in which "true" SEPs are protected	52%	40%
Number of significantly different claims	33%	20%
Number of sections of the standard covered by "true" SEPs	22%	20%
Man hours spent in contributing in the development of the standard at the SDO	4%	0%
Forward citations	4%	7%
Other, please specify	15%	53%
No. of replies	27	15

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3; multiple answers possible.

	EU	non-EU
Number of "true" SEPs belonging to sections of the standard identified as of significant value	62%	58%
Number of jurisdictions in which "true" SEPs are protected	44%	37%
Number of significantly different claims	32%	21%
Number of sections of the standard covered by "true" SEPs	21%	16%
Man hours spent in contributing in the development of the standard at the SDO	9%	5%
Forward citations	6%	5%
Other, please specify	32%	42%
No. of replies	34	19

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; multiple answers possible.

Q47[361]. If there were an obligation to complete the "steps" provided in the Judgment of the Court of Justice of the European Union ("CJEU") of 16 July 2015, Huawei v. ZTE[362] within certain time limits, which period would be reasonable? Please note that we ask for average reasonable time limits with due account taken of the fact that the analysis would have to be conducted on a case-by-case basis[363].

"Fixed time limits are not desirable" answers only	All	Companies	Associations/ trade union	Academia/ Authorities/NGO /other	Citizens
The implementer expresses its willingness to conclude a licensing agreement on FRAND terms	46%	52%	86%	33%	0%
The SEP holder presents to the implementer a specific, written offer for a licence on FRAND terms	44%	45%	86%	44%	0%
The implementer responds to that offer (potentially with a counter offer)	45%	50%	86%	33%	0%
If applicable, the SEP holder rejects the counter offer	41%	42%	86%	44%	0%
If applicable, the implementer provides appropriate security	42%	45%	86%	33%	0%
If applicable, parties may agree on arbitration	42%	47%	86%	33%	0%
If applicable, the SEP holder requests an injunction	44%	43%	100%	44%	0%
No. of replies*	57-66	33-42	7	9	8-10

[361] Please note that there was an error in encoding this question into the EUSurvey system. The answers "3 to 5 months after the prior step", "5 to 7 months after the prior step" and ""more than 7 months after the prior step" appeared in two columns each instead of one. That is e.g. there was a separate column allowing for answering "3 to 5 months" followed by column "after the prior step". For the purpose of numerical analysis, these two columns were added together.

[362] Judgment of the Court of Justice of 16 July 2015, *Huawei Technologies Co. Ltd v ZTE Corp. and ZTE Deutschland GmbH*, C-170/13, ECLI:EU:C:2015:477, https://e-justice.europa.eu/ecli/ECLI:EU:C:2015:477.

[363] The reasonable amount of time needed for the implementer to express its willingness to obtain a license may vary depending on a number of factors, such as the number of patents at issue, the complexity of the technology, the level of knowledge the implementer may have about the technology and other.: The implementer expresses its willingness to conclude a licensing agreement on FRAND terms.

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account. *range, different number of replies per question

Implementers	Fixed time limits are not desirable	Months after the prior step				Other	No.	Avg. months *
		1 to 3	3 to 5	5 to 7	> 7			
The implementer expresses its willingness to conclude a licensing agreement on FRAND terms	67%	15%	19%	0%	0%	0%	27	1.0
The SEP holder presents to the implementer a specific, written offer for a licence on FRAND terms	64%	14%	11%	4%	4%	4%	28	1.2
The implementer responds to that offer (potentially with a counter offer)	68%	11%	4%	7%	7%	4%	28	1.4
If applicable, the SEP holder rejects the counter offer	57%	13%	17%	7%	7%	0%	30	1.8
If applicable, the implementer provides appropriate security	57%	3%	23%	10%	7%	0%	30	2.1
If applicable, parties may agree on arbitration	64%	7%	18%	7%	4%	0%	28	1.5
If applicable, the SEP holder requests an injunction	64%	0%	11%	7%	7%	11%	28	1.6

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3;"No opinion" answers not taken into account

** Weighted average calculated using the middle of ranges, for the "Fixed time limits are not desirable" value of 0, for the last open range value of 8 assumed; "Other" column not taken into account for average calculation.*

SEP Holders	Fixed time limits are not desirable	Months after the prior step				Other	No.	Avg. months *
		1 to 3	3 to 5	5 to 7	> 7			
The implementer expresses its willingness to conclude a licensing agreement on FRAND terms	31%	50%	6%	0%	0%	13%	16	1.1
The SEP holder presents to the implementer a specific, written offer for a licence on FRAND terms	38%	44%	13%	0%	0%	6%	16	1.2
The implementer responds to that offer (potentially with a counter offer)	31%	38%	13%	6%	0%	13%	16	1.6
If applicable, the SEP holder rejects the counter offer	33%	33%	17%	6%	6%	6%	18	2.1
If applicable, the implementer provides appropriate security	39%	22%	22%	6%	6%	6%	18	2.1
If applicable, parties may agree on arbitration	30%	10%	30%	15%	10%	5%	20	3.2
If applicable, the SEP holder requests an injunction	40%	10%	15%	20%	10%	5%	20	2.9

Note: Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3; "No opinion" answers not taken into account

** Weighted average calculated using the middle of ranges, for the "Fixed time limits are not desirable" value of 0, for the last open range value of 8 assumed; "Other" column not taken into account for average calculation.*

"Fixed time limits are not desirable" answers (column %) and average reasonable period in months (column Avg.)	EU		non-EU	
	%	Avg.*	%	Avg.*
The implementer expresses its willingness to conclude a licensing agreement on FRAND terms	47%	1.4	65%	0.7
The SEP holder presents to the implementer a specific, written offer for a licence on FRAND terms	46%	1.9	58%	1.6
The implementer responds to that offer (potentially with a counter offer)	48%	1.6	58%	1.3
If applicable, the SEP holder rejects the counter offer	43%	1.9	58%	1.5
If applicable, the implementer provides appropriate security	43%	2.3	57%	1.9
If applicable, parties may agree on arbitration	52%	1.8	48%	2.5
If applicable, the SEP holder requests an injunction	54%	1.8	43%	3.0
No. of replies**	32-35		17-23	

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account. The residual to 100% shows those who choose rage between 1% and 50%
** Weighted average calculated using the middle of ranges, for the "Fixed time limits are not desirable" value of 0, for the last open range value of 8 assumed; "Other" column not taken into account for average calculation.*
***range, different number of replies per question*

"All answers"	Fixed time limits are not desirable	Months after the prior step				Other	No.	Avg. months *
		1 to 3	3 to 5	5 to 7	> 7			
The implementer expresses its willingness to conclude a licensing agreement on FRAND terms	46%	30%	14%	0%	2%	9%	57	1.3
The SEP holder presents to the implementer a specific, written offer for a licence on FRAND terms	44%	24%	13%	6%	5%	8%	62	1.8
The implementer responds to that offer (potentially with a counter offer)	45%	23%	8%	8%	5%	10%	60	1.8
If applicable, the SEP holder rejects the counter offer	41%	25%	19%	6%	6%	3%	64	2.1
If applicable, the implementer provides appropriate security	42%	17%	22%	9%	6%	3%	64	2.3
If applicable, parties may agree on arbitration	42%	11%	25%	9%	8%	5%	64	2.5
If applicable, the SEP holder requests an injunction	44%	8%	12%	14%	11%	12%	66	2.6

Note: "No opinion" answers not taken into account
** Weighted average calculated using the middle of ranges, for the "Fixed time limits are not desirable" value of 0, for the last open range value of 8 assumed; "Other" column not taken into account for average calculation.*

"Companies answers"	Fixed time limits are not desirable	Months after the prior step				Other	No.	Avg. months *
		1 to 3	3 to 5	5 to 7	> 7			
The implementer expresses its willingness to conclude a licensing agreement on FRAND terms	52%	18%	18%	0%	3%	9%	33	1.4
The SEP holder presents to the implementer a specific, written offer for a licence on FRAND terms	45%	18%	16%	11%	8%	3%	38	2.2
The implementer responds to that offer (potentially with a counter offer)	50%	17%	11%	11%	6%	6%	36	1.9
If applicable, the SEP holder rejects the counter offer	42%	18%	21%	8%	8%	3%	38	2.3
If applicable, the implementer provides appropriate security	45%	8%	20%	15%	10%	3%	40	2.7
If applicable, parties may agree on arbitration	47%	11%	21%	8%	11%	3%	38	2.4
If applicable, the SEP holder requests an injunction	43%	5%	17%	12%	14%	10%	42	2.9

Note: "No opinion" answers not taken into account
** Weighted average calculated using the middle of ranges, for the "Fixed time limits are not desirable" value of 0, for the last open range value of 8 assumed; "Other" column not taken into account for average calculation.*

Q48[364]. Do you consider that the scope of the obligations imposed on both the SEP holder and implementers by CJEU Huawei v. ZTE is clear or needs to be clarified with regard to the following aspects?: The initial offer of the SEP holder must be FRAND

"Unclear" answers only	All	Companies	Associations/ trade union	Academia/ Authorities /NGO /other	Citizens
The initial offer of the SEP holder must be FRAND	43%	39%	71%	20%	63%
The amount of the security should be fair and reasonable	36%	42%	57%	0%	38%
The counter offer of the implementer must be FRAND	36%	35%	57%	0%	63%
A SEP holder cannot request an injunction before making a FRAND offer, even if the implementer has not expressed its willingness to take a licence	31%	31%	40%	33%	25%
No. of replies*	51-56	29-31	5-7	9-10	8

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

[364] Please note that there was an error in encoding this question into the EUSurvey system. It was not possible to select answer "Not clear". The tables below present thus only those who chose "Somewhat unclear" responses.

"Unclear" answers only	Implementer	Holder
The initial offer of the SEP holder must be FRAND	78%	13%
The counter offer of the implementer must be FRAND	67%	7%
The amount of the security should be fair and reasonable	63%	7%
A SEP holder cannot request an injunction before making a FRAND offer, even if the implementer has not expressed its willingness to take a licence	48%	27%
No. of replies*	23-27	15

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Unclear" answers only	EU	non-EU
The initial offer of the SEP holder must be FRAND	42%	33%
The counter offer of the implementer must be FRAND	36%	20%
The amount of the security should be fair and reasonable	36%	36%
A SEP holder cannot request an injunction before making a FRAND offer, even if the implementer has not expressed its willingness to take a licence	39%	17%
No. of replies*	31-33	12-15

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Unclear	Neutral	Clear	No.
The initial offer of the SEP holder must be FRAND	43%	16%	41%	56
The amount of the security should be fair and reasonable	36%	33%	31%	55
The counter offer of the implementer must be FRAND	36%	18%	46%	56
A SEP holder cannot request an injunction before making a FRAND offer, even if the implementer has not expressed its willingness to take a licence	31%	24%	45%	51

Note: Unclear composes of "Not clear" and "Somewhat unclear"; Clear composes of "Clear" and "Somewhat clear"; "No opinion" answers not taken into account

"Companies answers"	Unclear	Neutral	Clear	No.
The amount of the security should be fair and reasonable	42%	35%	23%	31
The initial offer of the SEP holder must be FRAND	39%	19%	42%	31
The counter offer of the implementer must be FRAND	35%	23%	42%	31
A SEP holder cannot request an injunction before making a FRAND offer, even if the implementer has not expressed its willingness to take a licence	31%	21%	48%	29

Note: Unclear composes of "Not clear" and "Somewhat unclear"; Clear composes of "Clear" and "Somewhat clear"; "No opinion" answers not taken into account

Q49. Which of the behaviours of an implementer listed below could indicate "willingness" to take a licence, and to what extent is that behaviour relevant?

"Somewhat relevant" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
Submits a FRAND counter-offer	93%	94%	86%	100%	88%
Agrees in writing to be willing to take a licence on FRAND terms and conditions, while reserving the right to challenge essentiality, validity, and infringement in Court	88%	91%	86%	100%	67%
Provides a security at a fair and reasonable amount	75%	77%	86%	91%	38%
When reference materials provided by SEP holder are not sufficient, such as not identifying the SEPs or not including claim charts, promptly requests the SEP holders to provide such materials	70%	63%	67%	89%	78%
Agrees on arbitration of the FRAND terms and conditions	51%	50%	29%	80%	38%

"Somewhat relevant" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
Informs the relevant SDO that it uses the standard, version, section and product category	33%	23%	14%	67%	44%
If it disagrees with the scope of the licence (in particular the validity and essentiality of the patents), it files relevant court proceedings in a timely manner	20%	19%	14%	33%	14%
No. of replies*	55-59	30-33	6-7	9-11	7-9

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Somewhat relevant" answers only	Implementers	SEP Holders
Agrees in writing to be willing to take a licence on FRAND terms and conditions, while reserving the right to challenge essentiality, validity, and infringement in Court	100%	71%
Submits a FRAND counter-offer	92%	94%
Provides a security at a fair and reasonable amount	73%	88%
When reference materials provided by SEP holder are not sufficient, such as not identifying the SEPs or not including claim charts, promptly requests the SEP holders to provide such materials	73%	63%
Agrees on arbitration of the FRAND terms and conditions	27%	69%
Informs the relevant SDO that it uses the standard, version, section and product category	27%	29%
If it disagrees with the scope of the licence (in particular the validity and essentiality of the patents), it files relevant court proceedings in a timely manner	15%	25%
No. of replies*	26-27	14-16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Somewhat relevant" answers only	EU	non-EU
Agrees in writing to be willing to take a licence on FRAND terms and conditions, while reserving the right to challenge essentiality, validity, and infringement in Court	93%	89%
Submits a FRAND counter-offer	94%	95%
Provides a security at a fair and reasonable amount	84%	76%
When reference materials provided by SEP holder are not sufficient, such as not identifying the SEPs or not including claim charts, promptly requests the SEP holders to provide such materials	61%	79%
Agrees on arbitration of the FRAND terms and conditions	45%	67%
Informs the relevant SDO that it uses the standard, version, section and product category	33%	25%
If it disagrees with the scope of the licence (in particular the validity and essentiality of the patents), it files relevant court proceedings in a timely manner	13%	33%
No. of replies*	28-32	16-19

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Somewhat relevant	Not relevant	Unrela-ted	No.
Submits a FRAND counter-offer	93%	7%	0%	59
Agrees in writing to be willing to take a licence on FRAND terms and conditions, while reserving the right to challenge essentiality, validity, and infringement in Court	88%	12%	0%	58
Provides a security at a fair and reasonable amount	75%	21%	4%	57

"All answers"	Somewhat relevant	Not relevant	Unrela-ted	No.
When reference materials provided by SEP holder are not sufficient, such as not identifying the SEPs or not including claim charts, promptly requests the SEP holders to provide such materials	70%	23%	7%	56
Agrees on arbitration of the FRAND terms and conditions	51%	39%	11%	57
Informs the relevant SDO that it uses the standard, version, section and product category	33%	35%	33%	55
If it disagrees with the scope of the licence (in particular the validity and essentiality of the patents), it files relevant court proceedings in a timely manner	20%	60%	20%	55
Other (please specify)	100%	0%	0%	4

Note Not relevant composes of "Rather not relevant" and "Not relevant"; "No opinion" answers not taken into account

"Companies answers"	Somewhat relevant	Not relevant	Unrela-ted	No.
Submits a FRAND counter-offer	94%	6%	0%	33
Agrees in writing to be willing to take a licence on FRAND terms and conditions, while reserving the right to challenge essentiality, validity, and infringement in Court	91%	9%	0%	32
Provides a security at a fair and reasonable amount	77%	19%	3%	31
When reference materials provided by SEP holder are not sufficient, such as not identifying the SEPs or not including claim charts, promptly requests the SEP holders to provide such materials	63%	31%	6%	32
Agrees on arbitration of the FRAND terms and conditions	50%	41%	9%	32
Informs the relevant SDO that it uses the standard, version, section and product category	23%	33%	43%	30
If it disagrees with the scope of the licence (in particular the validity and essentiality of the patents), it files relevant court proceedings in a timely manner	19%	59%	22%	32
Other (please specify)	100%	0%	0%	1

Note Not relevant composes of "Rather not relevant" and "Not relevant"; "No opinion" answers not taken into account

Q50. Which of the behaviours of a SEP holder listed below could indicate "willingness" to grant a licence on FRAND terms and conditions, and to what extent is that behaviour relevant?

"Very and somewhat relevant" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities /NGO /other	Citizens
Provides a FRAND offer that (i) sets a time limit allowing for a reasonable period of time for consideration and (ii) explains how the royalty is calculated or (iii) alternatively, demonstrates that the licence offer is on FRAND terms and conditions.	97%	94%	100%	100%	100 %
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with a high level claim chart to indicate the correlation between products that are actually manufactured and patent claims, specifying the way in which the SEPs have been infringed	85%	80%	86%	89%	100 %
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with information to which section of the standard they refer to, specifying the way in which the SEPs have been infringed	83%	80%	86%	90%	88%
Provides its standard FRAND terms and conditions (not subject to non-disclosure requirements)	76%	74%	43%	89%	100 %
Provides a list of the SEP (patent numbers) with certificate from an independent third party confirming their essentiality, specifying the way in which the SEPs have been infringed	68%	63%	71%	78%	75%
Agrees on arbitration of the FRAND terms and conditions	55%	57%	29%	75%	50%

"Very and somewhat relevant" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities /NGO /other	Citizens
No. of replies*	58-60	34-35	7	8-10	8

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Very and somewhat relevant" answers only	Implementers	SEP Holders
Provides a FRAND offer that (i) sets a time limit allowing for a reasonable period of time for consideration and (ii) explains how the royalty is calculated or (iii) alternatively, demonstrates that the licence offer is on FRAND terms and conditions.	100%	94%
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with a high level claim chart to indicate the correlation between products that are actually manufactured and patent claims, specifying the way in which the SEPs have been infringed	96%	63%
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with information to which section of the standard they refer to, specifying the way in which the SEPs have been infringed	93%	63%
Provides a list of the SEP (patent numbers) with certificate from an independent third party confirming their essentiality, specifying the way in which the SEPs have been infringed	93%	25%
Provides its standard FRAND terms and conditions (not subject to non-disclosure requirements)	85%	56%
Agrees on arbitration of the FRAND terms and conditions	41%	63%
No. of replies*	27	16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Very and somewhat relevant" answers only	EU	non-EU
Provides a FRAND offer that (i) sets a time limit allowing for a reasonable period of time for consideration and (ii) explains how the royalty is calculated or (iii) alternatively, demonstrates that the licence offer is on FRAND terms and conditions.	94%	100%
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with information to which section of the standard they refer to, specifying the way in which the SEPs have been infringed	85%	78%
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with a high level claim chart to indicate the correlation between products that are actually manufactured and patent claims, specifying the way in which the SEPs have been infringed	85%	78%
Provides its standard FRAND terms and conditions (not subject to non-disclosure requirements)	70%	78%
Provides a list of the SEP (patent numbers) with certificate from an independent third party confirming their essentiality, specifying the way in which the SEPs have been infringed	61%	78%
Agrees on arbitration of the FRAND terms and conditions	53%	61%
No. of replies*	32-34	17-18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Relevant	Not relevant	Unrela-ted	No.
Provides a FRAND offer that (i) sets a time limit allowing for a reasonable period of time for consideration and (ii) explains how the royalty is calculated or (iii) alternatively, demonstrates that the licence offer is on FRAND terms and conditions.	97%	3%	0%	59

"All answers"	Relevant	Not relevant	Unrelated	No.
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with a high level claim chart to indicate the correlation between products that are actually manufactured and patent claims, specifying the way in which the SEPs have been infringed	85%	14%	2%	59
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with information to which section of the standard they refer to, specifying the way in which the SEPs have been infringed	83%	15%	2%	60
Provides its standard FRAND terms and conditions (not subject to non-disclosure requirements)	76%	20%	3%	59
Provides a list of the SEP (patent numbers) with certificate from an independent third party confirming their essentiality, specifying the way in which the SEPs have been infringed	68%	32%	0%	59
Agrees on arbitration of the FRAND terms and conditions	55%	31%	14%	58
Other (please specify)	100%	0%	0%	6

Note Relevant composes of "Very relevant" and "Somewhat relevant"; Not relevant composes of "Rather not relevant" and "Not relevant";
"No opinion" answers not taken into account

"Companies answers"	Relevant	Not relevant	Unrelated	No.
Provides a FRAND offer that (i) sets a time limit allowing for a reasonable period of time for consideration and (ii) explains how the royalty is calculated or (iii) alternatively, demonstrates that the licence offer is on FRAND terms and conditions.	94%	6%	0%	34
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with a high level claim chart to indicate the correlation between products that are actually manufactured and patent claims, specifying the way in which the SEPs have been infringed	80%	17%	3%	35
Provides a list of the SEPs (patent numbers, the names of the standards at issue, the geographical scope of the patents) together with information to which section of the standard they refer to, specifying the way in which the SEPs have been infringed	80%	17%	3%	35
Provides its standard FRAND terms and conditions (not subject to non-disclosure requirements)	74%	23%	3%	35
Provides a list of the SEP (patent numbers) with certificate from an independent third party confirming their essentiality, specifying the way in which the SEPs have been infringed	63%	37%	0%	35
Agrees on arbitration of the FRAND terms and conditions	57%	29%	14%	35
Other (please specify)	100%	0%	0%	1

Note Relevant composes of "Very relevant" and "Somewhat relevant"; Not relevant composes of "Rather not relevant" and "Not relevant";
"No opinion" answers not taken into account

Questions on enforcement

Quantitative summary

Respondents estimated that court costs could range from approximately EUR 2.1 million for essentiality, EUR 6.6 million for injunction and EUR 7.1 million for FRAND disputes.

Arbitration (53% of all answers) was deemed more useful than mediation (35%) for FRAND assessment, especially by SEP Holders and academia/authorities/NGOs.

Two thirds of respondents were of the opinion that efficient SEP licencing would foster innovation by implementers, increase employment and allow for keeping high level of competence in the EU as well as foster transition to green economy.

Tables with replies per question

Q51. What is the average cost for you of a dispute (advice and litigation costs) in court, excluding the value of the SEPs licenses and any damages?

Average* EUR millions	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Related to an Injunction	6.6	6.4	0.8	1.5	9.9
Related to FRAND	7.1	7.8	7.8	0.8	7.9
Related to Essentiality	2.1	1.3			2.9
No. of replies**	11-26	5-12	0-9	1-3	2-5

Note: "Other (please specify)" not included in the table and calculations.
** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed. **range, different number of replies per question*

Implementers	Related to an Injunction	Related to FRAND	Related to Essentiality
Up to 500,000 euro	22%	0%	0%
From 500,000 euro to 1,000,000 Euro	11%	25%	20%
From 1,000,000 euro to 2,000,000 Euro	33%	0%	60%
From 2,000,000 euro to 3,000,000 Euro	11%	13%	20%
From 3,000,000 euro to 6,000,000 Euro	0%	25%	0%
From 6,000,000 euro to 10,000,000 Euro	11%	0%	0%
From 10,000,000 to 20,000,000 Euro	0%	0%	0%
Above 20,000,000 Euro	11%	13%	0%
Other please specify	0%	25%	0%
No. of replies	9	8	5
Average (EUR millions)*	5.1	7.2	1.6

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3
** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed, "Other (please specify)" not included in average calculations*

SEP Holders	Related to an Injunction	Related to FRAND	Related to Essentiality
Up to 500,000 euro	0%	6%	0%
From 500,000 euro to 1,000,000 Euro	20%	13%	25%
From 1,000,000 euro to 2,000,000 Euro	20%	13%	25%
From 2,000,000 euro to 3,000,000 Euro	20%	6%	0%
From 3,000,000 euro to 6,000,000 Euro	0%	13%	0%
From 6,000,000 euro to 10,000,000 Euro	0%	6%	25%
From 10,000,000 to 20,000,000 Euro	0%	19%	0%
Above 20,000,000 Euro	40%	6%	0%
Other please specify	0%	19%	25%
No. of replies	5	16	4
Average (EUR millions)*	13	7.6	3.4

Note: Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3
** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed, "Other (please specify)" not included in average calculations*

Average* (EUR millions)	EU	non-EU
Related to an Injunction	4.1	10.8

Average* (EUR millions)	EU	non-EU
Related to FRAND	6.4	9.4
Related to Essentiality	1.3	
No. of replies**	6-19	0-5

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table and calculations.

** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed. **range, different number of replies per question*

"All answers"	Related to an Injunction	Related to FRAND	Related to Essentiality
Up to 500,000 euro	17%	8%	9%
From 500,000 euro to 1,000,000 Euro	22%	15%	18%
From 1,000,000 euro to 2,000,000 Euro	22%	8%	36%
From 2,000,000 euro to 3,000,000 Euro	11%	8%	18%
From 3,000,000 euro to 6,000,000 Euro	0%	15%	0%
From 6,000,000 euro to 10,000,000 Euro	6%	4%	9%
From 10,000,000 to 20,000,000 Euro	0%	12%	0%
Above 20,000,000 Euro	17%	8%	0%
Other please specify	6%	23%	9%
No. of replies	18	26	11
Average (EUR millions)*	6.6	7.1	2.1

** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed, "Other (please specify)" not included in average calculations*

"Companies answers"	Related to an Injunction	Related to FRAND	Related to Essentiality
Up to 500,000 euro	17%	8%	20%
From 500,000 euro to 1,000,000 Euro	25%	0%	20%
From 1,000,000 euro to 2,000,000 Euro	17%	8%	40%
From 2,000,000 euro to 3,000,000 Euro	17%	8%	20%
From 3,000,000 euro to 6,000,000 Euro	0%	25%	0%
From 6,000,000 euro to 10,000,000 Euro	0%	0%	0%
From 10,000,000 to 20,000,000 Euro	0%	8%	0%
Above 20,000,000 Euro	17%	8%	0%
Other please specify	8%	33%	0%
No. of replies	12	12	5
Average (EUR millions)*	6.4	7.8	1.3

** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed, "Other (please specify)" not included in average calculations*

Summary of comments

Most respondents replied that the costs vary depending on the complexity of the specific case (e.g. the number of patents at issue, the number of jurisdictions where enforcement actions are taking place etc.), but in general SEP litigation costs are high. One respondent stated that if it is a global FRAND "war" costs can exceed 75 million dollars. Furthermore, most respondents believe that it is hard (if not impossible) to determine a response to this question, as companies typically do not maintain data based on the proposed categorizations (separating costs related to injunctions vs. FRAND vs. essentiality).

In general, some respondents have acknowledged that the costs are higher in the UK and US than in Europe.

Q52. What is the average cost of the dispute (advice and litigation costs) in arbitration, excluding the value of the SEPs licenses and any damages?

Average* EUR millions	All	Companies	Associations/trade union	Academia/ Authorities/ NGO/other	Citizens
Up to 500,000 euro	11%	18%		0%	0%
From 500,000 euro to 1,000,000 Euro	17%	27%		0%	0%
From 1,000,000 euro to 2,000,000 Euro	22%	9%		50%	40%
From 2,000,000 euro to 3,000,000 Euro	17%	27%		0%	0%
From 3,000,000 euro to 6,000,000 Euro	6%	0%		50%	0%
From 6,000,000 euro to 10,000,000 Euro	6%	0%		0%	20%
From 10,000,000 to 20,000,000 Euro	22%	18%		0%	40%
Above 20,000,000 Euro please specify	0%	0%		0%	0%
No. of replies	18	11	0	2	5
Average (EUR millions)*	4.9	3.8		3.0	8.2

** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed*

	Implementers	SEP Holders
Up to 500,000 euro	0%	0%
From 500,000 euro to 1,000,000 Euro	20%	13%
From 1,000,000 euro to 2,000,000 Euro	40%	25%
From 2,000,000 euro to 3,000,000 Euro	40%	13%
From 3,000,000 euro to 6,000,000 Euro	0%	13%
From 6,000,000 euro to 10,000,000 Euro	0%	0%
From 10,000,000 to 20,000,000 Euro	0%	38%
Above 20,000,000 Euro please specify	0%	0%
No. of replies	5	8
Average (EUR millions)*	1.8	7.0

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.
** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed*

	EU	non-EU
Up to 500,000 euro	20%	0%
From 500,000 euro to 1,000,000 Euro	20%	33%
From 1,000,000 euro to 2,000,000 Euro	10%	33%
From 2,000,000 euro to 3,000,000 Euro	30%	0%
From 3,000,000 euro to 6,000,000 Euro	10%	0%
From 6,000,000 euro to 10,000,000 Euro	0%	0%
From 10,000,000 to 20,000,000 Euro	10%	33%
Above 20,000,000 Euro please specify	0%	0%
No. of replies	10	3
Average (EUR millions)*	3.1	5.8

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.
** Weighted average calculated using the middle of ranges, for the last open range value of EUR 30 million assumed*

Summary of comments

Most respondents replied that the costs vary depending on the case. Some respondents explain that arbitration is not necessarily cheaper than court proceedings. Other respondents argue that when the parties agree to arbitration, they narrow the scope of what is actually in dispute. This reduces the cost and the time.

One respondent took the opportunity to comment that arbitration or mediation is not an effective resolution mechanism in SEP disputes. First, arbitration lacks the formal scaffolding of rules that apply in court, allowing for a wide range of effectively *ad hoc* judgments. Second, arbitrations do not generate transcripts or publicly available opinions, so therefore provide little guidance for future disputes.

Q53. How would you assess the use of mediation for FRAND assessments?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Not useful	16%	21%	0%	0%	33%
Neutral	38%	35%	50%	44%	33%
Useful	35%	32%	33%	56%	17%
Other, please specify	11%	12%	17%	0%	17%
No. of replies	55	34	6	9	6

Note: "No opinion" answers not taken into account

	Implementers	SEP Holders
Not useful	13%	27%
Neutral	50%	27%
Useful	17%	47%
Other, please specify	21%	0%
No. of replies	24	15

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	non-EU
Not useful	13%	17%
Neutral	39%	39%
Useful	42%	28%
Other, please specify	6%	17%
No. of replies	31	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

Mediation can help to limit the number of issues for later adjudication if the parties cannot resolve the dispute consensually and can be seen as a sign of good faith in negotiations. Many respondents find that mediation can be a useful tool only in a situation where both parties are acting in good faith and are willing to conclude a FRAND licence, and where only FRAND terms are subject of the mediation process and no other or few other issues are in dispute.

Some respondents underline that mediation can be useful if it is conducted by an experienced mediator who would be able to identify each party's strengths and weaknesses or in cases whether one or both parties do not have the required expertise to assess licensing conditions appropriately. To make mediation more effective, some respondents consider providing the mediator with a more active role (e.g., the possibility to review and assess comparable licenses) or potentially attaching certain effects to the outcome of the mediation on the further negotiations or litigation between the parties. However, it has been also held that the non-binding nature of mediation might affect the effectiveness of this procedure, as well as the fact that due to the complexity of SEP disputes, mediation can be a process with a low likelihood of a conclusive outcome. Transparency, predictability and creditability of mediation might be lower than the court's decisions that can deal with SEPs.

Almost all respondents agree that the use of mediation should be voluntary and not imposed upon the parties. Moreover, a respondent finds that a party that chooses not to participate in ADR should not be considered 'unwilling' on that basis.

A few respondents with mediation experience in FRAND cases report that none of them was successful or led to a resolution of the dispute. In their view, larger entities tend to prefer litigation

in their negotiation process. In general, mediation is perceived as useful that helps to clarify each party's position because mediation allows parties to put aside some negotiation posturing.

Some respondents argue that ADR would only prolong the negotiations.

Q54. How would you assess the use of arbitration for FRAND assessments?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Not useful	14%	18%	25%	0%	0%
Neutral	33%	39%	25%	13%	33%
Useful	53%	43%	50%	88%	67%
Other, please specify	0%	0%	0%	0%	0%
No. of replies	43	28	4	8	3

Note: "No opinion" answers not taken into account

	Implementers	SEP Holders
Not useful	31%	8%
Neutral	38%	15%
Useful	31%	77%
Other, please specify	0%	0%
No. of replies	16	13

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	non-EU
Not useful	9%	22%
Neutral	32%	33%
Useful	59%	44%
Other, please specify	0%	0%
No. of replies	22	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

For almost all respondents, arbitration (or for some respondents ADR in general) may be appropriate albeit only in situations where both parties are voluntarily interested in solving the dispute or limit the contested issues between them and are able to agree on an appropriate process. It is clear for all respondents that arbitration should not be mandated, some respondents find that the decision to enter into arbitration or not should not be used as an indication of willingness or reasonableness because parties should always have the option to resolve a dispute in the competent court. It has been stressed that there is no one-size-fits-all approach appropriate in all circumstances. Some respondents point to the fact that arbitration is also not necessarily faster or less costly than litigation. Some respondents even see limited value in arbitration as it can be used to create further delay in negotiations, while portraying to be "willing". It may for example be used for hold-out purposes.

Some respondents observe that since arbitration requires both parties to agree to it, it is unfortunately rarely used to settle FRAND disputes as it is often difficult to agree to the terms under which it will be conducted. Also, respondents find that due to the complexity of SEP disputes it is important that the arbitrators and institutes appointed have experience in dealing with these types of disputes, as well as handling technical issues.

Arbitration is also seen as unfit to contributing to a wider understanding of FRAND, including because the proceedings are confidential. Arbitration may not compel discovery of third parties. Arbitrators are faced with the absence of clear rules, which will result in unsatisfactory decisions that are not subject to appeal.

Other respondents find that the 'portfolio component' of SEP negotiation renders arbitration particularly helpful as proceedings can be shaped in a way to address these disputes at once, thus avoiding parallel litigation. Arbitration would also allow the parties to resolve FRAND value without having to deal with issues such as infringement, validity, or essentiality of individual patents.

However, respondents report that lack of transparency and no right to appellate review would affect confidence in the usefulness of arbitration. Moreover, arbitration might advantage large market players as they have the financial and knowledge resources. Some respondents even suggest that it is almost impossible to find good arbitrators in patent matters. One respondent argued that arbitrating SEP licensing disputes requires a high level of expertise in a variety of fields, including patent technology, patent law, and commercial (non-SEP) licensing.

Q55. What would be a credible independent arbitration body for making FRAND assessments?

	All	Compa-nies	Associations /trade union	Academia/ Authorities /NGO /other	Citizens
WIPO Arbitration and Mediation Center	57%	54%	33%	67%	63%
(the future) Patent Mediation and Arbitration Centre of the Unified Patent Court	45%	46%	33%	44%	50%
The International Court of Arbitration of the International Chamber of Commerce ("ICC")	43%	46%	33%	56%	25%
An independent EU body designated to conduct this function	39%	46%	0%	22%	50%
The London Court of International Arbitration ("LCIA")	27%	25%	33%	33%	25%
An ad hoc arbitration from a list of impartial arbitrators endorsed by a public authority	11%	8%	0%	0%	38%
Other (please specify)	23%	17%	33%	33%	25%
No. of replies	44	24	3	9	8

Note: multiple answers possible

	Implementers	SEP Holders
WIPO Arbitration and Mediation Center	69%	43%
An independent EU body designated to conduct this function	56%	21%
(the future) Patent Mediation and Arbitration Centre of the Unified Patent Court	44%	43%
The International Court of Arbitration of the International Chamber of Commerce ("ICC")	31%	64%
An ad hoc arbitration from a list of impartial arbitrators endorsed by a public authority	25%	7%
The London Court of International Arbitration ("LCIA")	19%	29%
Other (please specify)	25%	14%
No. of replies	16	14

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3; multiple answers possible

	EU	non-EU
WIPO Arbitration and Mediation Center	63%	42%
(the future) Patent Mediation and Arbitration Centre of the Unified Patent Court	54%	25%

	EU	non-EU
The International Court of Arbitration of the International Chamber of Commerce ("ICC")	50%	42%
An independent EU body designated to conduct this function	46%	17%
The London Court of International Arbitration ("LCIA")	21%	42%
An ad hoc arbitration from a list of impartial arbitrators endorsed by a public authority	4%	8%
Other (please specify)	8%	50%
No. of replies	24	12

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; multiple answers possible

Summary of comments

The majority of respondents find that any existing arbitration body agreed to by both parties should provide a credible FRAND assessment. A credible independent arbitration body for making FRAND assessments should have substantial experience handling large, complex, international disputes. In general, to maintain equity in the process, arbitration bodies that are independent and non-governmental will generally be preferable to bodies that are affiliated with national or multi-national governmental bodies. Costs should be affordable to SMEs. Some respondents caution against recommending or designating any particular arbitration body as one that must be used for SEP licensing disputes. Parties should be able to voluntarily choose arbitration bodies based on their needs and common agreement.

For most respondents ICC and LCIA meet the important qualifications. The ICC and LCIA have extensive experience in dealing with large, complex, commercial disputes. As such, they presently stand as the most credible bodies (in the above list) for FRAND disputes, which are functionally commercial in nature. Depending on the parties and issues, these potentially could include WIPO, and others, such as JAMS or ICDR. Some respondents show preference for WIPO as it is specialized in IP and technology disputes. The Singapore International Arbitration Centre ("SIAC"), the Hong Kong International Arbitration Centre ("HKIAC"), and the International Arbitration Center in Tokyo ("IACT") have also been mentioned. The qualities of the arbitrators are highly critical for addressing SEP licensing disputes through arbitration.

One respondent indicated that the WIPO Arbitration and Mediation Centre would offer a platform specifically tailored for FRAND disputes giving parties leeway to shape the procedure and even avails a database of more than 2000 neutral experts for parties to choose from. Regarding incentivising arbitration, there would be a government-led initiative in the US i.e. Protecting American Innovation and Development Bill of 2021, seeking to formalise an approach where a refusal to arbitrate could be regarded as unwillingness.

One respondent argues that members of SDOs, either in disputes between themselves or in disputes with third parties like implementers, should be required to resort to ADR mechanisms prior to any court litigation. For example, a "board of experts" could be established at the SDO level. Some SDOs have introduced an obligation to use arbitration in their IPR policies. The Geneva based DVB (Digital Video Broadcasting Group) has had such a policy in place for close to 30 years. To date it has never been used.

Other respondents do not consider SDOs as a suitable body to resolve this kind of commercial disputes. Not all parties to a licensing negotiation are members of SDOs. Furthermore, access to courts is a fundamental right (Article 47 EU Charter) and needs to remain available.

Some respondents argue that expert boards may be better positioned to evaluate a FRAND value for a licence than courts since finding a FRAND value for a licence is an economic rather than a legal

matter. Such expert panels can quickly and effectively provide a reasoned assessment without being bound by requests for evidence.

Other respondents note that ad hoc arbitration is unrealistic given the already existing difficulty of parties agreeing the terms of arbitration under the rules of a recognized arbitration institute. Nevertheless, a public list of impartial arbitrators with experience in FRAND disputes would be useful and could be used for selecting arbitrators by existing arbitration institutes or the parties to the proceedings.

Q56. What would be appropriate procedural rules for arbitration of FRAND disputes?

	All	Compa-nies	Associations /trade union	Academia/ Authorities/ NGO/other	Citizens
ICC Rules of Arbitration of the International Court of Arbitration	47%	48%	50%	38%	50%
The rules of the WIPO Arbitration and Mediation Center	47%	48%	25%	50%	50%
The rules agreed by the parties ad hoc	37%	40%	50%	25%	33%
The FRAND ADR case management guidelines proposed by the Munich IP Dispute Resolution Forum	21%	24%	0%	25%	17%
United Nations Commission on International Trade Law ("UNCITRAL") Arbitration Rules	16%	12%	0%	25%	33%
Other (please specify)	33%	32%	25%	50%	17%
No. of replies	43	25	4	8	6

Note: multiple answers possible

	Implementers	SEP Holders
The rules agreed by the parties ad hoc	63%	33%
The rules of the WIPO Arbitration and Mediation Center	47%	25%
ICC Rules of Arbitration of the International Court of Arbitration	37%	58%
The FRAND ADR case management guidelines proposed by the Munich IP Dispute Resolution Forum	21%	8%
United Nations Commission on International Trade Law ("UNCITRAL") Arbitration Rules	16%	0%
Other (please specify)	32%	25%
No. of replies	19	12

Note: Implementer: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; Holder: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3; multiple answers possible

	EU	non-EU
The rules of the WIPO Arbitration and Mediation Center	50%	38%
ICC Rules of Arbitration of the International Court of Arbitration	46%	46%
The rules agreed by the parties ad hoc	42%	31%
The FRAND ADR case management guidelines proposed by the Munich IP Dispute Resolution Forum	25%	15%
United Nations Commission on International Trade Law ("UNCITRAL") Arbitration Rules	8%	23%
Other (please specify)	21%	62%
No. of replies	24	13

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; multiple answers possible

Summary of comments

Many respondents suggested ICC or LCIA (even though it was not included in the list) as preferred rules in this type of context (and WIPO, if WIPO is used). Some respondents even suggested that the Commission should make guidelines for these types of litigations. Also, one respondent highlighted

that as SEPs are more widely used within vertical markets new arbitration bodies with particular sector expertise and appropriate procedural rules may come into being. Another respondent replied that if the Commission decides to have independent expert boards they should be hosted by existing institutions (like WIPO, EUIPO etc.) and the experts appointed in such cases should preferably be licensing experts and economists.

Other respondents mean that the biggest freedom possible should be allowed for the parties. When both parties agree to make use of arbitration, they should remain free to agree between themselves on the most appropriate arbitration body and also related procedural rules for their purpose. Still, it would be important for those rules not to shortcut validity or essentiality assessments.

Most respondents deem it crucial that whatever arbitration rules are used (WIPO, ICC, LCIA, UNCITRAL etc.), the procedures established by the tribunal for the specific FRAND dispute at hand allow for detailed consideration of the merits of the IP at issue, provide sufficient opportunity for discovery, and allow each party a reasonable opportunity to present the arguments and evidence it deems relevant to the tribunal's assessment.

Q57. How could arbitration be incentivised for making a FRAND assessment?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities /NGO /other	Citizens
Create a list of trusted arbitrators	48%	46%	33%	44%	71%
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license	44%	38%	17%	67%	63%
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license but explicitly providing for a review of any such FRAND assessment, if a court later finds some of the patents non-essential or invalid.	27%	21%	17%	75%	13%
SDOs to introduce such an obligation to use arbitration in their IPR policies	18%	17%	14%	20%	25%
No. of replies*	50-55	28-30	6-7	8-10	7-8

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
Create a list of trusted arbitrators	25%	81%
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license	18%	50%
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license but explicitly providing for a review of any such FRAND assessment, if a court later finds some of the patents non-essential or invalid.	14%	13%
SDOs to introduce such an obligation to use arbitration in their IPR policies	13%	7%
No. of replies*	20-23	14-16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
Create a list of trusted arbitrators	50%	35%
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license	29%	63%

"Agree and strongly agree" answers only	EU	non-EU
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license but explicitly providing for a review of any such FRAND assessment, if a court later finds some of the patents non-essential or invalid.	25%	40%
SDOs to introduce such an obligation to use arbitration in their IPR policies	10%	29%
No. of replies*	26-30	15-17

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
Create a list of trusted arbitrators	48%	20%	32%	50
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license	44%	21%	35%	52
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license but explicitly providing for a review of any such FRAND assessment, if a court later finds some of the patents non-essential or invalid.	27%	18%	55%	51
SDOs to introduce such an obligation to use arbitration in their IPR policies	18%	20%	62%	55
Other (please specify)	100%	0%	0%	4

Note: Agree composes of "Agree" and "Strongly agree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
Create a list of trusted arbitrators	46%	21%	32%	28
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license	38%	21%	41%	29
Consider agreement to arbitrate and to accept outcome of arbitrator's determination of royalty rate as an indication that the party is "willing" to license but explicitly providing for a review of any such FRAND assessment, if a court later finds some of the patents non-essential or invalid.	21%	10%	69%	29
SDOs to introduce such an obligation to use arbitration in their IPR policies	17%	20%	63%	30
Other (please specify)				0

Note: Agree composes of "Agree" and "Strongly agree"; "No opinion" answers not taken into account

Summary of comments

Some respondents find that creating incentives for parties to resolve differences in arbitration could have positive effects. If the methodology of FRAND assessment is publicly available it may incentivise arbitration. Moreover, arbitration that is known to be swift, neutral, transparent, reasonably priced and of high quality would incentivise its use and speed up licensing agreements. Arbitration can be effective to achieve global SEP licensing resolution. Some respondents find that not only incentivising arbitration may be appropriate but that also an offer or refusal to arbitrate could be taken into account in assessing willingness to conclude a license. However, this would apply if the agreement to arbitrate is reasonable and complete and if there is an agreement to take a license at the terms decided by such arbitration. Some respondents observed that otherwise arbitration might lead to delay in negotiations.

However, other respondents reject the idea of mandating arbitration. ADR should be incentivised with caution, avoiding penalising a refusal to agree to arbitration as an indication of unwillingness or unreasonableness, since parties should retain the right to seek redress in courts. Moreover, the willingness to enter a license agreement must be explicitly declared. Mandatory arbitration may circumvent built-in safeguards against a potential licensee having to license non-essential, invalid or non-infringed patents, in circumstances where very few litigated patents meet all these criteria. Some

respondents indicate that mandatory arbitration may affect the fundamental right of access to justice/court and the national jurisdictions to rule over national, public rights associated with each patent. They emphasise that parties should be able to choose voluntarily arbitration and arbitration bodies based on their needs and common agreement, and prescription of any particular process may be inappropriate.

Some respondents are against incentivising arbitration or ADR in general as well as against recommending or designating any particular arbitration body as one that must be used for SEP licensing disputes. It is argued that it may be contributing to reducing transparency and predictability of outcomes.

Some respondents argue that an arbitration award that is subject to review based on future invalidity or non-infringement would be appropriate only in portfolios involving few patents and even then, if the arbitrators are obligated to presume that all of the patents are proven valid and infringed in making their award. Otherwise, a reassessment of the award would negate the arbitration at significant cost.

Q58. What transparency requirements should be attached to arbitration on FRAND assessments?

"Agree and strongly agree" answers only	All	Compa-nies	Associa-tions/ trade union	Academia/ Authorities/ NGO/other	Citizens
The arbitral tribunal shall disclose the methodology used for the calculation of a FRAND rate	86%	77%	100%	89%	100 %
Information on specific licensing rates but no third-party confidential information or other party confidential information shall be disclosed	66%	56%	86%	78%	75%
Information on the name of the parties and patent registration and application numbers	58%	52%	71%	56%	75%
No. of replies*	55-56	31-32	7-8	9	8

Note: "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	Implementers	SEP Holders
The arbitral tribunal shall disclose the methodology used for the calculation of a FRAND rate	100%	73%
Information on specific licensing rates but no third-party confidential information or other party confidential information shall be disclosed	92%	29%
Information on the name of the parties and patent registration and application numbers	75%	21%
No. of replies*	24-25	14-15

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"Agree and strongly agree" answers only	EU	non-EU
The arbitral tribunal shall disclose the methodology used for the calculation of a FRAND rate	83%	83%
Information on specific licensing rates but no third-party confidential information or other party confidential information shall be disclosed	65%	65%
Information on the name of the parties and patent registration and application numbers	50%	65%
No. of replies*	30-31	17-18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "Other (please specify)" not included in the table; "No opinion" answers not taken into account
**range, different number of replies per question*

"All answers"	Agree	Neutral	Disagree	No.
The arbitral tribunal shall disclose the methodology used for the calculation of a FRAND rate	86%	5%	9%	56
Information on specific licensing rates but no third party confidential information or other party confidential information shall be disclosed	66%	2%	32%	56
Information on the name of the parties and patent registration and application numbers	58%	15%	27%	55
Other (please specify)	86%	0%	14%	7

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

"Companies answers"	Agree	Neutral	Disagree	No.
The arbitral tribunal shall disclose the methodology used for the calculation of a FRAND rate	77%	10%	13%	31
Information on specific licensing rates but no third party confidential information or other party confidential information shall be disclosed	56%	3%	41%	32
Information on the name of the parties and patent registration and application numbers	52%	23%	26%	31
Other (please specify)	100%	0%	0%	1

Note: Agree composes of "Agree" and "Strongly agree"; Disagree composes of "Disagree" and "Strongly disagree"; "No opinion" answers not taken into account

Summary of comments

Some respondents find that it is in public interest to disclose all the details of FRAND arbitration and publish awards related to SEPs, especially regarding royalty rates. Every decision increases the transparency of the SEP landscape and provides benchmarks for potential licensees to assess whether a given licence offer is FRAND. The new framework for SEPs should ensure that data on essentiality, validity, and FRAND-ness of licences continue to enter the public domain also when disputes are adjudicated by arbitrators.

The majority of respondents find that transparency in an arbitration body's approach and methodology would be important to contribute to a broader understanding of FRAND terms and could aid in comparability exercises. SEP licensing information should be transparent, but at the same time, confidentiality is an important advantage of arbitration which should be preserved to strike a balance.

Some respondents indicate, however, that disclosure of specific licensing rates is unlikely to be helpful without confidential information, as various confidential factors will likely be taken into account in determining the rates; thereby limiting the usefulness of this disclosure to those without access to the confidential information (such as commercial information of sensitive nature). Any obligation to disclose rates would make arbitration less attractive and thereby discourage arbitration as a method to resolve FRAND disputes. Disclosure of royalty rates or lump sum royalty payments may not be sufficient as those can be incorrectly interpreted if relevant aspects of the decision are not also considered in analysing the resulting award.

There should not be transparency requirements on arbitration unless arbitration is mandatory. If arbitration is mandatory, then transparency obligations modelled on those of courts (i.e., general public disclosure with an opportunity to protect confidential information) may be appropriate. However, mandatory application of arbitration rules undermines the broadly accepted public legal system.

Q59. Should it be possible to request authorities to "report" on imports of unlicensed products, if some conditions are fulfilled?365 This does not concern detentions of imports under the regular intellectual property rights' enforcement procedures by customs.

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Yes	31%	27%	14%	43%	60%
No	53%	57%	71%	43%	20%
Depends (please explain)	16%	17%	14%	14%	20%
No. of replies	49	30	7	7	5

Note: "No opinion" answers not taken into account

	Implementers	SEP Holders
Yes	8%	53%
No	88%	13%
Depends (please explain)	4%	33%
No. of replies	24	15

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	non-EU
Yes	24%	33%
No	55%	60%
Depends (please explain)	21%	7%
No. of replies	29	15

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

Some respondents find this solution somewhat useful, as they would provide an indication of the scope of the ongoing infringement. In theory this could, with the right framework and procedures, help identify imports of unlicensed products. Such a measure could be a useful complement to the licensors' own efforts in screening the market for unlicensed products and would be helpful in ensuring a level playing field for good-faith implementers. Some note that if licensing takes place at end-product level, it should be ensured that the import of unlicensed components is not reported.

The majority of respondents find that authorities should not be entrusted with reporting on imports of unlicensed products. Such information can already be obtained through a court proceeding adjudicating the merits with appropriate safeguards in place. The European Commission should promote the protection of intellectual property, the licensing thereof and a global level-playing-field for (European) implementers who have taken licenses. However, a list of unlicensed products being imported into the European Union would require a detailed legal and technical analysis to determine whether a product is "unlicensed" or counterfeit. The verification by authorities that unlicensed products are being imported may be more difficult than proving counterfeit products. It is questionable whether public authorities, such as custom offices, are in a position to determine whether a given product implements a particular SEP, and whether this SEP is in fact essential and valid. It also would require significant administrative effort not only by authorities but also by

[365] Such conditions could for example be a proof that a SEP holder asked an implementer to take a licence, provided the necessary information on the SEPs concerned and its FRAND terms and conditions and the implementer did not respond.

importers that would ultimately negate any potential benefit of such an endeavour. It is also unclear why such reporting would be reserved to SEPs as opposed to other patents.

Other respondents caution that it would not be clear how this would work or how it would not be open to abuse for obtaining commercially sensitive information on imports. It would be further unclear who would determine if a license offer is FRAND compliant and how the FRAND terms and conditions would be judged. Further, since product distribution information is generally commercially available, the proposed report may not meaningfully provide additional information to SEP holders or improve SEP licensing. The only conceivable purpose of such reports could be to stop such imports, i.e. to effectively enforce an injunction. That should only ever be possible in the context of legitimately enforcing an injunction issued by a court. Additionally, there would be no justification for treating SEPs differently from non-SEPs in this respect.

Some respondents also warn that such reporting should not include the right to seize goods. To minimize the risk of a company being unfairly targeted by such reporting and to encourage a more balanced playing field, maybe the "reports" could also be shared in some way with the unlicensed implementer (if it desires to receive such information) to demonstrate that others are licensed.

Respondents note that Regulation No 608/2013 concerning customs enforcement of intellectual property rights currently entitles customs authorities to detain unlicensed products. It is therefore unclear what this proposal envisages in addition to current EU rules. Although border seizures follow specific rules that take into consideration both the implementer's and SEP holder's interests, it has been observed that border detentions would de facto be injunctions enforced by customs authorities, and as such highly problematic when enforced in relation to SEPs for which a FRAND commitment has been provided.

It is unclear to what extent a report might encourage good licensing behaviour. Another possibility could be to create a parallel route for enforcement through an administrative measure such as an EU-wide customs embargo, based on an administrative finding of essentiality or a national court finding of infringement.

Q60. Would a positive list of licensed implementers be important?

	All	**Companies**	**Associations/ trade union**	**Academia/ Authorities/ NGO/other**	**Citizens**
Important	43%	46%	0%	56%	50%
Neutral	19%	20%	33%	11%	13%
Not important	38%	34%	67%	33%	38%
No. of replies	58	35	6	9	8

Note: Important composes of "Very important" and "Important"; Not important composes of "Not so important" and "Not important";

	Implementers	**SEP Holders**
Important	35%	36%
Neutral	15%	29%
Not important	50%	36%
No. of replies	26	14

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3.

	EU	**non-EU**
Important	41%	44%
Neutral	19%	22%

	EU	non-EU
Not important	41%	33%
No. of replies	32	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent.

Summary of comments

Some respondents support the idea of a positive list. Such a list would enable to select only those suppliers having a license, thus reducing the exposure to patent-related risk. It may also identify competitors that are not licensed, incentivize other implementers to take a license as it would be public that they are unlicensed, helping to ensure that no company is at a relative disadvantage. Such a list would enhance the reputation of the listed companies for respecting IP rights and making clear to more reluctant potential licensees that they cannot resist licensing on the basis that their competitors are not licensed. It would also help authorities to observe if implementers are holding out.

It was also mentioned that such a list would enable SMEs and start-ups to determine whether or not taking a license would be a competitive advantage or disadvantage. Such list would help to determine which portfolios should be regarded as established and needed in the industry.

Some respondents take a more cautious approach, arguing that a list would help licensing parties determine a risk of double dipping. It is also observed that such lists are often provided by patent pools, unless both parties agreed otherwise. In the context of a patent pool, it would be easy to generate such a list of licensed implementers because the licensing point is identical. In that case, having a list of licensed implementers can help SEP holders and good-faith implementers to monitor the licensing situation to ensure a levelled playing field in the market. For bilateral licenses, on the other hand, it would be more difficult as licensees tend to not want to disclose their license status. This may be so because having such a list would incentivize more SEP holders to initiate license discussions with them.

Some respondent's question the basis of a positive list. It is unclear whether the positive list should be prepared by the SEP holder or the implementer and what the aim of such list should be. And even if these problems were resolved, question arise, whether this list would be constituted voluntarily or mandatory. The other question is whether such a list would be compatible with the NDAs put in place.

Some respondents note that there is also a question about the information needed to properly understand such a list (e.g., licensed product scope, licensed patent scope, licensed geographical scope, current or expired license, etc.). They also explain that in theory this may be helpful, however in practise difficult to keep up to date and costly to maintain. The focus should be on reducing the complexity and barriers to licensing encourage the use of SEPs.

Some note that it could be useful if such a list was created for "licensed products", instead of "licensed implementers".

Q61. If infringement of SEP is confirmed, the court may (i) order an injunction for the future and (ii) grant damages for the past. The injunction for the future would in principle lead the infringer to take a licence, if it wants to continue to sell its products. In that context, should the court be empowered (under certain conditions – see following question) to order the parties to submit any disagreement on the FRAND terms and conditions to arbitration.

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Yes	17%	18%	0%	25%	20%
No	68%	74%	100%	38%	40%
Depends (please explain)	15%	9%	0%	38%	40%
No. of replies	53	34	6	8	5

Note: "No opinion" answers not taken into account

	Implementers	SEP Holders
Yes	16%	14%
No	72%	71%
Depends (please explain)	12%	14%
No. of replies	25	14

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion" answers not taken into account

	EU	non-EU
Yes	13%	22%
No	77%	61%
Depends (please explain)	10%	17%
No. of replies	30	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "No opinion" answers not taken into account

Summary of comments

The majority of respondents find that courts should not be able to order the parties to submit any disagreement on the FRAND terms and conditions to arbitration under any conditions. Arbitration should remain voluntarily and only upon a mutual agreement of the parties concerned. When an injunction is obtained, arbitration or negotiation under the threat of enforcement of an injunction raises issues of fairness.

Courts should not be able to order the parties to submit disagreements on FRAND terms to arbitration, as that would effectively preclude access to the court. Parties remain free to resolve their dispute by the court. However, if either party does not accept arbitration of FRAND terms during licensing negotiations, such may be an indication of bad faith with corresponding consequences under *Huawei v ZTE*.

It has also been argued that the question of "empowering the court to submit a disagreement to arbitration" is well beyond the remit of the European Commission's competencies. For some respondents, arbitration can be useful when both parties are acting in good faith with a view to conclude a license agreement and only a specific, limited set of open items remain. Some find it confusing why arbitration would be a useful tool in a situation where a court is already adjudicating a case. Furthermore, this idea raises many potential issues (legal basis, right of access to courts, what arbitration rules, confidentiality to name just a few) and does not seem to solve a specific problem. Furthermore, ADR is not useful when parties disagree on virtually all terms and conditions. Finally, the process whereby both courts and arbitration panels have to work on the same case, would substantially increase the cost of a FRAND adjudication.

Generally, if the court is issuing an injunction, such an implementer has already been deemed unwilling, which also presupposes that the SEP-holder's offer was FRAND. Thus, a further arbitration would be a waste of resources. It was observed that referring to arbitration at least to

determine FRAND royalties would be an unreasonable burden for the SEP holder, and further hold-out tactics.

It has been argued on the other hand that the possibility for national courts to refer disputes regarding FRAND-terms to arbitration could alleviate this problem and help to overcome the reluctance of some national courts to review/set FRAND-terms themselves.

Some respondents propose that the court should not be obliged to refer the parties to arbitration but should be able to refer them to a state mediation body staffed with independent experts. This body should not be allowed to make a binding decision on the dispute but should be required to issue a vote in favour of an agreement that is justified in the same way as an expert opinion. Then there is a good chance that the parties will agree to it. If they do not agree, the vote can be used like an expert opinion in the proceedings to be continued. This would be similar to the procedure before the arbitration boards at the German Patent and Trademark Office for employee inventor compensation and for copyright compensation under the German Collecting Societies Act.

Q62 Under what conditions should the court be able to order the parties to submit any disagreement on the FRAND terms and conditions to arbitration?

Summary of comments

Respondents argue that Huawei v ZTE provides clarity on when injunctions are available to SEP holders against unwilling licensees. It has also been referred to the CJEU decision in Phoenix Contact v Harting on the availability of preliminary injunctions under EU law. Issues with the TRIPs Agreement EU Charter of fundamental Rights have been raised. Extra procedural layers do not make an efficient SEP licensing ecosystem. A SEP holder has a right to access the courts. The parties can, during court proceedings, agree to mediation, arbitration, or to conclude a commercial agreement.

As with the previous question almost all respondents indicate that neither party in litigation should be forced into arbitration. Some of the respondents reiterate the lack of clarity of the exact problem that such a dual procedure would solve and how the many legal challenges attached to this exercise could be addressed. Such a measure would deprive the judicial system of its function and, in particular, would deprive the parties of the availability of remedies. It is not desirable to make private justice compulsory; it must remain optional and at the choice of the parties.

Respondents that find a referral to arbitration not per se excluded observe the following: A competent court should be able to take such an action if there is reasonable doubt about FRAND-ness and a lack of clarity about the license agreement offered by the SEP holder. Obviously, arbitration needs to be done under NDA. The decision made in arbitration should also be legally binding on the parties to truly end the dispute. The first condition should be that the court has determined that the patent in question is a true SEP and that it is valid. The second condition should be that parties at least have undertaken reasonably efforts to reach an agreement about a FRAND license, but that a certain gap remained which could have not been solved in the litigation process.

It has been also held that once a SEP holder has obtained an injunction, its bargaining power increases significantly, and neutral arbitrators could be a means to focus on the value of the SEPs rather than determining royalties based on the enhanced bargaining power from the injunction.

Some respondents point out that some countries already have the discretion or even an obligation to offer or order mediation at certain points in the litigation process. Given the consensual nature of mediation and associated costs, inviting the parties to consider mediation may be viewed as the preferred approach. However, what is key is that any court facilitated mediation takes place under

the guidance of a neutral expert FRAND mediator, in order to maximize the prospect for a conclusive outcome or an effective narrowing of the issues.

Q63. If a SEP holder refuses to make a FRAND offer (for whatever reason), should the implementer be empowered to request a court to rule on the legality of the refusal?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Yes	75%	63%	86%	100%	89%
No	14%	22%	14%	0%	0%
Depends (please explain)	11%	16%	0%	0%	11%
No. of replies	57	32	7	9	9

Note: "No opinion" answers not taken into account

	Implementers	SEP Holders
Yes	96%	33%
No	4%	40%
Depends (please explain)	0%	27%
No. of replies	28	15

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion" answers not taken into account

	EU	non-EU
Yes	75%	69%
No	22%	6%
Depends (please explain)	3%	25%
No. of replies	32	16

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "No opinion" answers not taken into account

Summary of comments

Many respondents confirm the possibility pointing out that this would be the current law.

Some respondents observe that FRAND commitment requires SEP holders to make a FRAND licence offer to any willing licensee, regardless of its position in the supply chain or any other feature of a licensee. It is argued that the rules of most SSOs do not include any qualification of potential licensees or an explicit (or implicit) limitation to the catalogue of parties that can benefit from the FRAND commitment. At the contractual level, the FRAND commitment raises the legitimate expectation on part of third parties that a SEP holder will in fact grant licences on FRAND terms. At the competition law level, refusal to license SEPs may violate Articles 101 and 102 TFEU (see Huawei vs. ZTE, para. 54).

Other respondents hold that the fundamental right of access to justice in the EU does not imply that there is a positive obligation to offer a license to all implementers. Courts should be empowered to rule on cases where a SEP holder refuses to offer a licence and determine if the SEP owners' behaviour is in line with its FRAND commitment. Courts should have the discretion and latitude to determine whether a refusal to offer a licence is legitimate. A user of the standard should also be empowered to ask the court for a ruling that the SEP holder must agree to a specific licensing agreement as found to be FRAND by the court. But it also been stated that where a patent holder is not asserting its SEPs against a party, there is no harm from the refusal to make a FRAND offer to that party.

Some respondents argue that the new framework for SEPs should expressively confirm that the SEP implementer has the right to request a court to rule on the legality of the refusal and grant a compulsory licence.

One respondent cites § 315 of the German Civil Code. Under this mechanism, a willing licensee may leave the actual license terms to be set by SEP holder and – unless the willing licensee agrees to the SEP holder's suggestion – the terms would be finally determined by a court. This mechanism requires the consent of both parties but minimizes the dispute in comparison to "full" infringement litigation with a FRAND defence. It focuses the dispute on finding FRAND license terms, and it avoids the risk of an injunction. However, each party, on its own, should be able to file an action for determination of FRAND license terms before a court.

Q64. Would you agree that efficient SEP licensing would also foster innovations by implementers, including start-ups and SMEs?

	All	Companies	Associations/ trade union	Academia/ Authorities/ NGO/other	Citizens
Yes	66%	61%	29%	89%	89%
No	5%	8%	0%	0%	0%
There is no direct link	15%	11%	43%	11%	11%
Other (please specify)	15%	19%	29%	0%	0%
No. of replies	61	36	7	9	9

Note: "No opinion" answers not taken into account

	Implementers	SEP Holders
Yes	70%	56%
No	4%	0%
There is no direct link	7%	25%
Other (please specify)	19%	19%
No. of replies	27	16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion" answers not taken into account

	SME	Large
Yes	60%	63%
No	0%	9%
There is no direct link	30%	6%
Other (please specify)	10%	22%
No. of replies	20	32

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion" answers not taken into account

	EU	non-EU
Yes	70%	47%
No	3%	11%
There is no direct link	15%	16%
Other (please specify)	12%	26%
No. of replies	33	19

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "No opinion" answers not taken into account

Summary of comments

Some respondents find that efficient licensing benefits SEP holders, both small and large, because it allows them to obtain a timely and fair compensation for contributing their inventions to the standard,

which in turn enables them to keep investing in R&D to develop new advanced technologies that will underpin future standards. They also believe that efficient licensing also helps implementers, by allowing them to obtain the benefit of a FRAND agreement, allowing it to efficiently allocate resources towards developing products and services that take advantages of the advanced features enabled by the standard.

Some respondents clarify that "efficient" SEP licensing means license negotiations conducted in good faith, neither hold-up nor hold-out. Efficient licensing can also benefit from transparency regarding the essentiality of SEPs, the overall SEP landscape of the standard, and the respective shares of SEP holders. A framework for fair negotiation should be established, with which judicial enforcement can be avoided. For efficiency, standard licensing programs established close in time to the adoption of the standard and early formation of patent pools can also be beneficial.

Many respondents also find that if the term 'efficient SEP licensing' means 'efficient SEP licensing on FRAND terms' at the single appropriate level in the value chain where the license is broad enough to encompass all actions throughout the value chain, it can help market uptake of a standard. It will provide assurance to market entrants that their investments will not be undermined by excessive and unfair SEP practices, FRAND– if properly applied and followed – can incentivise investment, innovation, and market development, especially for SMEs or start-ups. However, current lack of transparency for the total licensing costs for a particular product is one of the main obstacles in particular for start-ups and SMEs, to develop smart products.

Some respondents demand more detailed rules on non-discrimination to improve the level playing field. Otherwise, SEP holders might seek to charge higher royalties from SMEs that happen to make more profit or are more prominent in the market, which would in effect penalise market success.

A respondent explains that some of the various aspects which may create efficiencies are: (1) Any entity asking for a FRAND SEP license should get a FRAND offer. (2) Licensing upstream in the supply chain is usually more efficient than licensing downstream. (3) SEP holders who seek to create SEP licensing revenue should at an early stage publish their standard TCs including the FRAND rate. (4) Patent pools may facilitate efficient licensing, provided their rate is FRAND and published and the pool reaches a critical mass with respect to covered licensors and covered patents. (5) FRAND rates should be moderate to foster dissemination of the standard in many industries and applications. (6) Essentiality checks conducted by an independent trusted entity can enhance transparency and facilitate negotiations. (7) If set-up appropriately, licensing negotiation groups may facilitate efficient FRAND licensing.

One respondent observes that European SMEs are not pursued for SEP licensing. In emerging IoT, SMEs are far more likely to develop software that needs no SEP licensing than make hardware like IoT modules that are mostly made in China and might be the target for SEP licensing.

Q65. Would you agree that efficient SEP licensing would increase employment and keep a high level of competence in the EU?

	All	**Companies**	**Associations/ trade union**	**Academia/ Authorities/ NGO/other**	**Citizens**
Yes	65%	62%	29%	70%	100%
No	3%	6%	0%	0%	0%
There is no direct link	17%	15%	43%	20%	0%
Other (please specify)	15%	18%	29%	10%	0%
No. of replies	60	34	7	10	9

Note: "No opinion" answers not taken into account

	Implementers	SEP Holders
Yes	63%	56%
No	4%	0%
There is no direct link	15%	25%
Other (please specify)	19%	19%
No. of replies	27	16

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion" answers not taken into account

	EU	non-EU
Yes	58%	61%
No	3%	6%
There is no direct link	24%	11%
Other (please specify)	15%	22%
No. of replies	33	18

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "No opinion" answers not taken into account

Summary of comments

The majority of respondents find that efficient licensing is essential for licensors and licensees to foster innovation. Innovation supports the introduction of entire classes of new products.

Some respondents note that efficient SEP licensing promises to save transactions costs which, in turn, can be reinvested in research and development of new technologies, standardisation activities, as well as new applications and products using these standardised technologies. Efficient SEP licensing is a key part of the innovation cycle and plays an important role in stimulating new investments and employment.

Some respondents argue that cellular standards play a significant role for innovation and the creation of employment. If companies that contribute their best technology to a standard for the use by all are not adequately compensated for such contributions on reasonable terms, then the system is not commercially viable. Whilst it is true that innovation occurs both in the standardisation context as well as in the implementation of the standards, fundamental research in the cellular industry very often takes place in the former. A robust IP and legal system that rewards invention and stops the bad faith behaviour has been mostly by implementers holding-out and forcing litigation would no doubt increase employment and maintain or increase the high levels of competence in the EU.

Other respondents argue that a FRAND framework that ensures fair licensing and eliminates holdup would increase employment and keep a high level of competence in innovation in the EU. A narrow definition of efficiency over fairness will serve the narrow interests of a limited number of SEP licensors that focus on monetizing cellular SEPs over the interests of a much broader constituency of companies that are interested in using standards to fuel innovation.

Some respondents note that efficient SEP licensing is necessity for ensuring that the EU maintains its leadership in manufacturing after its transition into the IoT. The SEP licensing framework is outdated and sways in the direction of SEP holders. Transparency is a necessity for ensuring efficient licensing. The number of European SEP holders is decreasing year by year. More than every third 5G declaration nowadays comes from a Chinese company. European manufacturing will suffer by facing foreign companies that are vertically integrated and can get cheaper access to IPR. European manufacturing industries dependent on the policies of foreign patent holders.

It has been underlined that he global app ecosystem, worth more than €1.5 trillion, is responsible for more than one million European jobs, and serves as a key driver of the €7 trillion IoT revolution. An efficient SEP licensing framework keeps SMEs and start-ups in business, and therefore, increases employment and keeps high levels of competence in the EU.

Some respondents point to the fact the given the current shortage of microchips in many industries demonstrates, it is important to have manufacturing facilities located within the EU rather than being highly dependent from components manufactured in other regions. Therefore, it is important to build a robust, reliable FRAND licensing framework for SEPs in the EU in which users of the standard as licensees can trust that they are not put at a competitive disadvantage versus SEP users in other regions of the world.

A respondent notes that most SEP-related disputes, although hidden behind the argument of "inefficiency," concern the distribution of rents between SEP holders and implementers. Shifting rents from SEP holders to implementers, or the other way around, is not going to expand the economy or increase the number of jobs.

Finally, some respondents consider that it is unclear what the concept of "efficient" SEP licensing refers to. Without this notion being defined and specified, it is impossible to agree or disagree.

Q66. Would efficient SEP licensing foster the EU's transition to the green economy enabling projects related to, for example, smart manufacturing, smart grids and energy and smart mobility?

	All	**Companies**	**Associations/ trade union**	**Academia/ Authorities/ NGO/other**	**Citizens**
Yes	66%	62%	29%	88%	89%
No	5%	6%	0%	0%	11%
There is no direct link	17%	18%	43%	13%	0%
Other (please specify)	12%	15%	29%	0%	0%
No. of replies	58	34	7	8	9

Note: "No opinion" answers not taken into account

	Implementers	**SEP Holders**
Yes	64%	60%
No	4%	0%
There is no direct link	12%	27%
Other (please specify)	20%	13%
No. of replies	25	15

Note: Implementers: those who agreed with Q2 and disagreed, were neutral or had no opinion on Q3; SEP Holders: those who disagreed, were neutral or had no opinion on Q2 and agreed with Q3. "No opinion" answers not taken into account

	EU	**non-EU**
Yes	64%	56%
No	3%	6%
There is no direct link	21%	19%
Other (please specify)	12%	19%
No. of replies	33	16

Note: EU – respondents from EU except citizens; non-EU – respondents from non-EU countries except citizens. Corrections to self-identification have been made based on the headquarters location of the respondent; "No opinion" answers not taken into account

Summary of comments

Many respondents confirm that a well-functioning, 'efficient SEP licensing on FRAND terms' at the appropriate level in the value chain is necessary to ensure broad adoption and interoperability of the

technologies that will drive the EU's transition to the green economy, including smart manufacturing, smart grids and energy, and smart mobility. Fair licensing would empower a much larger group of companies to enter new fields, launch new products, and spur widespread innovation that will help power the transition to a green economy. Likewise, it has been held that disputes arise especially in the context of licensing SEPs relating to mobile communication standards, in particular 5G, which are essential for smart manufacturing, smart grids, energy and smart mobility. A predicable legal framework would clearly boost innovation based on such standards and thus foster EUs transition to a green economy.

An efficient SEP licensing regime will encourage SMEs to use open standards such as those generated by ETSI. Use of these open standards will ensure interoperability between applications within vertical markets such as Mobility, Energy and Manufacturing. This interoperability will encourage data sharing and analysis within and between markets, driving innovation, leading to more efficient use of limited energy resources. The current dysfunctional licensing system is benefitting a few SEP holders at the expense of the majority of implementers.

Other respondents note that the transition to the green economy is a vast topic that contains many different projects which require collaboration. The collaborative model of open standardization, based on FRAND licensing, can play a role in the vast effort that the transition requires. For example, energy efficiency is central in the development of the future ICT standards (for instance see the ITU-T Focus Group on "Environmental Efficiency for Artificial Intelligence and other Emerging Technologies" (FG-AI4EE)).

Such respondents find that efficient licensing is ensuring the availability of remedies that disincentivize hold-out behaviour. And ensuring that innovators are properly rewarded for their inventions, participation in standardisation bodies, enabling future investments in new technologies, better versions of standards and new standards. Without the ability to recoup these investments, there is no incentive to innovate and to further invest in the necessary technologies needed to facilitate the transition to green economy enabling projects. Access to efficient licensing solutions ensures wide uptake of standardised technologies and R&D in new smart and greener applications and products. New standardised technologies are often more energy efficient.