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The EU Institutions have been interested in improving the predictability, reliability and transparency of the standard-essential patent (“SEP”) licensing framework, as evidenced by several reports and communications over the recent years.¹ In 2017, the European Commission committed to setting up an expert group (“EG”) to monitor SEP licensing markets and gather information on the internet of things (“IoT”) industries practices. In January 2021, the EG published a Report examining the challenges of SEP licensing in the IoT.² The EG members failed to reach a consensus on how SEP licensing markers should evolve, and the Report contains a large number (79) of proposals with different degrees of support. As the EG noted, its main objective is to “generate ideas for a further debate.”³

This paper focuses on the three areas where the EG strongly recommends departing from traditional competition law prohibitions of collective price-fixing and industry coordination.⁴ After introducing the IoT SEP licensing issues that prompted the EG (Section 1), the analysis of the Report notes a major shift towards greater collective industry actions – from choosing the supply chains levels for licensing SEPs (Section 2), agreeing on the aggregate royalty rates for a standard for

different product categories (Section 3), to forming patent pools and implementer licensing platforms (Section 4). Overall, these recommendations call on competition authorities to recognise the efficiency of industry-wide coordination to simplify SEP licensing. Still, as the conclusion underlines, challenges remain about their proper implementation in practice and placing the necessary safeguards to prevent cartelisation on technology sellers or users sides.

I. What Are the Challenges of SEP Licensing in the IoT?

The IoT is expected to disrupt the current SEP licensing landscape radically. Until now, SEP licensing disputes have been traditionally associated with ICT and consumer electronics industries, but with the advent of 5G, there will be many other devices from many different sectors using cellular and other ICT-related standards.⁵ Connected cars, health devices, utility meters and smart manufacturing industries are already there and many more will come. Thus, licensing demands for connectivity and interoperability SEPs will expand to new IoT verticals.

Additionally, communication standards

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¹ P. Régibeau et al, “Transparency, Predictability and Efficiency of SSO-based Standardisation and SEP Licensing: A Report for the European Commission,” (2016); Commission, “Setting Out the EU Approach to Standard Essential Patents,” [Communication] COM(2017) 712 Final; L. McDonagh, E. Bonadio, “Standard Essential Patents and the Internet of Things,” (2019) (In Depth Analysis commissioned by the European Parliament); Commission, “Making the most of EU’s Innovative Potential: An Intellectual Property Action Plan to Support the EU’s Recovery and Resilience,” [Communication] COM(2020) 760 final; R. Bekkers et al, “Pilot Study for Essentiality Assessment of Standard Essential Patents,” (2020).

² J. Baron et al, “Group of Experts on Licensing and Valuation of Standard Essential Patents - Contribution to the Debate on SEPs,” (January 2021) (SEPs Expert Group Report)

<https://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=40990&no=5>.

³ *Ibid.* 17.

⁴ A detailed commentary on all proposals is outside the scope of this short paper.

⁵ D. Teece, “5G and the Global Economy: How Static Competition Policy Frameworks Can Defeat Open Innovation,” (Summer 2019) 3(2) *CPI Antitrust Chronicle* 14; K. Gupta, “5G and Its Anticipated Intellectual Property and Antitrust Policy Issues,” (Summer 2019) 3(2) *CPI Antitrust Chronicle* 28, 29-30.

represent just a small piece of the IoT puzzle.⁶ IoT objects also cover: i) quality and security standards, ii) standards for cooperation between IoT devices and cloud services, iii) standards within IoT devices and iv) cybersecurity standards.⁷ IoT implementers also need a license for all such standards. The IoT also brings new business models, such as multisided platforms connecting different customer groups and cloud firms providing software- and analytics-as-a-service, on top of all IoT vertical-specific satellite industries. Where to license SEPs within IoT verticals and how much to price for different uses of SEPs by different IoT products clearly becomes chaotic.⁸ Questioning whether over-the-top IoT firms will ever be SEP licensees is not science fiction any longer. Finally, many IoT implementers will be SMEs, making it imperative to provide a clearer SEP licensing landscape and reduce licensing transaction costs for inexperienced and resource-constrained undertakings.

II. Value Chain Licensing

The question of where to license SEPs in the supply chain has become a central issue in the recent litigation. Namely, tensions arise from a clash between different IoT industry practices – in the telecommunication industry, the prevailing practice is to license at the end-device level, while in the automotive industry licensing is done at a component level where it is customary to obtain components clear of all third-party rights and indemnity clauses for

end-device manufacturers. There is an ongoing debate whether SEP owners are under a legal obligation to license at all levels of the supply chain to anyone who requests so, or are they free to select the appropriate licensing level.⁹

In the recent SEP disputes in Germany, Nokia, Sharp and Conversant sued Daimler for SEP infringement and obtained injunctions after Daimler refused to take a licence and pointed to its suppliers as the appropriate licensees.¹⁰ In retaliation, Daimler and its component supplier Continental complained to the European Commission that Nokia's practice of licensing SEPs only to car manufacturers and refusing to license component makers is anti-competitive.¹¹ Recently, the Dusseldorf Regional Court referred to the ECJ the question of the compatibility of Nokia's licensing SEPs only to car manufacturers with Article 102 TFEU.¹²

Against this background, the SEP EG proposes three guiding principles for value chain licensing: i) licensing at a single level in the value chain for a particular product or application; ii) a uniform FRAND royalty for a specific product irrespective of the level of licensing; and iii) FRAND royalty is a cost element in the price of a non-finished product (component) and should be passed on downstream.¹³ Overall, these are sound principles that recognise the efficiencies of licensing only at a single point in the production chain and the fact that a royalty should not vary depending on where the SEP is licensed. The main argument for

⁶ SEPs Expert Group Report, 37-38.

⁷ *Ibid.* 9; M. Schneider, "SEP Licensing for the Internet of Things – Challenges for Patent Owners and Implementers," (Winter 2020) 3(2) *CPI Antitrust Chronicle* 46, 47.

⁸ *Ibid.* 21, 43.

⁹ J-S. Borghetti et al, "FRAND Licensing Levels Under EU Law," (2021) *European Competition Journal*.

¹⁰ District Court of Mannheim, 2 0 34/19 *Nokia v. Daimler* (18 August 2020); Mathieu Klos, "Setback for Daimler in Connected Cars Dispute Against Avanci Pool Members," (September 11, 2020) *JUVE Patent*; Konstanze Richter, "Daimler Loses to Conversant Over Connected Cars SEP," (October 28, 2020) *JUVE Patent*.

¹¹ See F.Yun Chee, "Continental, Valeo seek EU antitrust action against Nokia," (April 17, 2019) *Reuters*; S. Graham, "Nokia, Daimler, Continental Ramp up global patent chess match," (June 14, 2019) *Law.com*.

¹² Regional Court Dusseldorf, "Order for Reference to the European Court of Justice in the Patent Infringement Suit Nokia/Daimler," [Press Release] (26.11.2020).

¹³ SEPs Expert Group Report 84-85.

component-level licensing is usually to drive down royalties by capping them at a fraction of current profit margins of unlicensed components, which does not reflect the true value that standardised technology brings to end-products and consumers. For example, assuming the aggregate royalty for cellular standards to be \$15,¹⁴ the royalty can easily exceed current profit margins or even the price of unlicensed components. Thus, these principles correctly recognise that the IP price is an input cost that ultimately needs to be passed on further downstream, making it price-wise irrelevant whether a component or end-device manufacturer pays a royalty.

The implementation of the above principles is left to collective negotiations between SEP owners and implementers before an independent facilitating body (that can be a body formed specifically for that purpose, or existing licensing administrators or SDOs).¹⁵ It is first suggested that SEP owners internally agree on where they would like to license in the value chain and then hold discussions with implementers. The novelty is the recognition that collective negotiations, in this case, should be permitted by antitrust rules. Leaving a fragmented landscape where different SEP owners would license at various supply chain levels will cause tensions, litigation and inefficiencies to implementers that cannot plan their licensing costs. Ideally, all standardisation stakeholders should reach an agreement, but should they fail, the hope is that many SEP owners will follow an agreed licensing position which may pressure other companies to accept the outcome.

In the future, the European Commission could include a specific provision on licensing level negotiations in the new Guidelines on Horizontal Cooperation Agreement which are

currently under review. Safeguards should be ensured to prevent industry members from further horizontal collusion and exchange of sensitive commercial information.

The Report also includes recommendations on how to facilitate the implementation of value chain licensing models. If licensing at the end-product level is adopted, component manufacturers need to be sufficiently protected to produce their components lawfully. A novel proposal is to grant component suppliers royalty-free licences dependent on the existence and payment of a downstream licence.¹⁶ This would prevent exhaustion on the downstream level as upstream licences are dependent on downstream ones and would, at the same time, provide legal certainty to component makers. The applicability of this proposal would need to be further clarified by the Commission. However, if licensing at a component level is adopted, SEP owners should be allowed to charge different royalties for different downstream applications reflecting the SEP value contributed to final products. A radical option is to change patent laws to restrict exhaustion only to specified field-of-use, so licensing at a component level would not automatically lead to exhaustion for all other downstream uses.¹⁷ More practical suggestions are to use various technical measures, such as software codes, enabling the component to be used in a particular type on end-product. This would permit easier tracking of which component goes to what end-product and allow differential pricing. Alternatively, SEP owners could charge different royalties depending on connectivity rates if chips for different applications use different connectivity rates.¹⁸

Overall, the value chain licensing principles is

¹⁴Which is not unrealistic, patent pool Avanci gathering the largest cellular SEP portfolio charges \$15 per connected car. See <https://www.avanci.com/marketplace/#li-pricing>.

¹⁵ SEPs Expert Group Report 86-88.

¹⁶ *Ibid.* 92.

¹⁷ *Ibid.* 93.

¹⁸ *Ibid.* 94.

sound and represents a move in the right direction. Of course, the implementation remains problematic, but recognising the benefits of collective negotiations and industry-wide agreement on licensing levels and principles might lead to optimal solutions. The Commission and its international antitrust enforcement peers should venture into endorsing collaborative licensing initiatives while neutralising collusion risks.

III. Standard's Price Transparency

The SEP Expert Group suggested ways to introduce more transparency into the aggregate technology price of the standard. Currently, the overall price of connectivity standards is unknown, each SEP owner being responsible for individually licensing and enforcing its SEPs. This creates tensions as implementers cannot forecast IP costs and leads to disputes over the reasonableness of SEP owners' individual royalties.

Some unilateral and collective measures by SEP owners are considered to increase clarity on the aggregate price of the standard. First, SEP owners could unilaterally announce their most restricting licensing terms, preferably before the standard is set, and declare their views on the reasonable aggregate royalty for a standard.¹⁹ However, the *ex ante* announcements of most restrictive licensing

terms are nothing new. The idea has been around for years,²⁰ even endorsed by the EC in its horizontal-cooperation guidelines. Many companies are already posting their maximum prices.²¹ The problem with unilateral price announcements is that it is impossible to precisely estimate *ex ante* the value that the standard will bring to different devices and applications. To be on the safe side, companies would simply announce the maximum possible rate. Still, these maximum prices will not be used in practice, and concrete licensing offers will be made once more information on the standard and downstream products is known.²² Thus having mandatory *ex ante* maximum price announcement would not add anything useful to SEP licensing. Additionally, unilateral views on a standard's aggregate royalty will not provide a clear picture to standard implementers. For example, consider if one SEP owner announces an aggregate rate of \$10 per product, other 5 percent of the end-product price, while a third SEP owner would prefer a lower \$1 rate per product. Implementers would still be left with unclear and conflicting information on the standard's aggregate price.

Recognising these shortcomings, the SEP expert group also considers a collective action where SEP owners would agree on a reasonable aggregate royalty for a standard

¹⁹ *Ibid.* 101; K. Gupta, "5G and Its Anticipated Intellectual Property and Antitrust Policy Issues," (Summer 2019) 3(2) *CPI Antitrust Chronicle* 28, 32.

²⁰ See G. Ohana et al, "Disclosure and Negotiation of Licensing Terms Prior to Adoption of Industry Standards: Preventing Another Patent Ambush?," (2003) 24 *European Competition Law Review* 648; R. Skitol, "Concerted Buying Power: Its Potential for Addressing the Patent Hold-up Problem in Standard Setting," (2005) 72 *Antitrust Law Journal* 727; M. Lemley, "Ten Things to Do About Patent Holdup and Standards (and One Not To)," (2007) 48 *Boston College Law Review* 149; U.S. Department of Justice and the Federal Trade Commission, *Antitrust Enforcement of Intellectual Property Rights: Promoting Innovation and Competition* (2007) 49-50.

²¹ For example for 5G, Ericsson announced that it would license its 5G SEP portfolio between \$2.5 and \$5 per device, Nokia up to EUR 3 per device, up to \$1.2 for Interdigital, 3.25% of the end-device price by Qualcomm. See E. Stasik, D. Cohen, "Royalty Rates and Licensing Strategies for Essential Patents on 5G Telecommunication Standards: What to Expect," (2020) *Les Nouvelles* 176.

²² Based on early announcements by nine SEP owners, an aggregate royalty burden for 4G LTE standard consisted of 14.8% of the end-product price, but in practice it seems that the cumulative SEP royalty yield is only 3.4% of the smartphone's average selling price, see E. Stasik, "Royalty Rates and Licensing Strategies for Essential Patents on LTE (4G) Telecommunications Standards," (2010) *Les Nouvelles* 114; A. Galetovic, S. Haber, L. Zaretski, "An Estimate of the Average Cumulative Royalty Yield in the World Mobile Phone Industry: Theory, Measurement and Results," (2018) 42 *Telecommunications Policy* 263). Also, J. Contreras, "Technical Standards and Ex Ante Disclosure: Results and Analysis of an Empirical Study," (2013) 53 *Jurimetrics* 163, 178-179 (illustrating how the Next Generation Mobile Network consortium required members to disclose their maximum SEP royalty rates and for some standards the aggregate royalty rate was 130% of the relevant product price).

for different product categories.²³ The proposed aggregate royalty would then be reviewed together with implementers. This would be a better option than unilateral announcements, as it provides an agreed price of the standard that implementers can take into account in their business plans and enables better estimation of the value of individual SEP portfolios. However, it is remarkable for the Report to recognise and endorse the efficiency of industry price-fixing in standard-setting. A collective price-setting needs to be endorsed by competition authorities, to whom the SEP Expert Group suggest a more lenient attitude *vis-à-vis* industry-wide price negotiations. Nevertheless, the implementation of joint price negotiations must include appropriate competition safeguards ensuring that implementers do not act as buyer's cartel and collectively exert anti-competitive pressure to depress royalties below a reasonable level.²⁴

Therefore, while implementers should be consulted about the reasonableness of standard's technology aggregate price, the final pricing decision should better be left to SEP owners.²⁵ Technology developers have the incentive to price reasonably, as the amount of collected royalties depends on a standard's successful adoption in the market. It would also be easier to reach a consensus among a more uniform group, although SEP owners themselves also have different business models depending on whether they are only upstream technology developers or are vertically integrated. Permitting companies that have not developed and do not own technology to decide on its price would effectively resemble an expropriation of technology, making SEP owners rightfully

sceptical about participating in such joint negotiations.

IV. Joint Licensing Actions for the IoT

The EG recognises that IoT verticals need patent pools and similar joint initiatives to overcome the transaction costs of SEP licensing, offer one-stop-shop licensing and freedom to operate for IoT implementers.²⁶

According to the Report, the EC guidelines or a communication should induce SDOs to foster the external formation of patent pools already during the final phase of standardisation.²⁷ The independence of SDOs from the patent pools reassures antitrust hub-and-spoke collusion concerns and ensures that licensing negotiations do not delay standardisation. Anticipating pool formation before the standard's adoption realigns the commercialisation of standard-implementing products with the availability of a licence for the relevant SEPs, avoids past-due royalties for un-licensed use and clears uncertainties over a reasonable estimate of the aggregate FRAND royalty burden. One example SDOs should follow is DVB, a consortium developing digital TV standards, which fosters voluntary, yet external, joint licensing programmes. The DVB FRAND IPR policy foresees that, within two years after adopting a specification, at least 70 percent of all relevant SEP holders must establish a patent pool, or disputes between DVB members are subject to mandatory arbitration.²⁸ As of February 2021, Sisvel acts as a patent pool administrator for seven DVB standard specifications.²⁹ More engagement by SDOs for the smooth uptake

²³ SEPs Expert Group Report 105-107.

²⁴ G. Sidak, "Patent Holdup and Oligopsonistic Collusion in Standard-Setting Organizations," (2009) 5 *Journal of Competition Law & Economics* 123; R Gilbert, "Deal or No Deal? Licensing Negotiations in Standard Setting Organizations," (2011) 77 *Antitrust Law Journal* 855, 866-68; A. Layne-Farrar, G. Llobet, J. Padilla, "Preventing Patent Hold Up: An Economic Assessment of Ex Ante Licensing Negotiations in Standard Setting," (2009) 37 *AIPLA Quarterly Journal* 445.

²⁵ P. Regibeau et al, 44-45.

²⁶ SEPs Expert Group Report, 158-161.

²⁷ *Ibid.* 162.

²⁸ *Ibid.* 163.

²⁹ <https://dvb.org/about/policies-procedures/licensing-programmes/>.

of their IoT standards is welcome, as evidenced by the alleged interaction on the issue between ETSI and DVB, as declared by an ETSI representative during the first DG GROW online seminar after the publication of the SEP EG report.³⁰ The desirable forthcoming revision of the Art. 101 TFEU horizontal cooperation guidelines comes handy for the EC to foster SDOs' patent pool fostering.

As the ultimate solution, the EG considered establishing a pool of pools that would aggregate and license in one package all standards for a particular product category like the One-Blue pool does for Blu-ray disks players and recorders.³¹ This suggestion is ambitious since it would increase licensing transaction-cost savings yet much to be desired. In fact, patent pools have rarely succeeded gathering all relevant SEP holders even for individual standards, sometimes even competing over the same standards and always coexisting with some degree of external SEP licensing.³² The main obstacle is how to get SEP owners together and agree on a formula for the distribution of pool's royalties that is manageable by the pool while accounting for both quantitative and qualitative variables of pool members' SEP portfolios. The pure numerical proportionality approach, whereby pools distribute royalties to members according to the number of contributed SEPs, attracts low-value patents, rewards opportunistic strategies and disincentivises pure upstream technology companies from joining the pool.³³ More complex royalty

sharing formulas would need to be agreed upon for the appropriate qualitative valuation of SEP portfolios, which would incentivise SEP owners to join a pool regardless of their vertical integration into SEP implementing product markets. It remains to be seen whether the IoT sector will bring about greater convergence among SEP owners towards larger pool solutions, possibly sooner than any encouragement by the next Commission technology-transfer guidelines anticipated in 2026.

Until patent pools are established, the EG considered whether a public agency might grant SEP licences. Such a SEP licensing agency would resemble a copyright collective management organisation being mandatory for SEP holders.³⁴ Perhaps, the geopolitical difficulty of implementing a SEP licensing agency in at least the medium term, the scepticism against an additional regulatory layer for already complex standardisation or collective management organisations' many challenges made the proposal one of the least supported by the EG.³⁵

Finally, the EG bore in mind that FRAND licenses are tales of two protagonists, where SEP holders and implementers are not leading and supporting actors, respectively, but rather co-protagonists. In addition to SEP holders' patent pool efforts, implementers should form collective licensing negotiation groups whose licensing determinations should bind participating implementers.³⁶ A single patent pool for all standards applicable to a given IoT product together with a single licensing

³⁰ https://ec.europa.eu/growth/content/webinar-series-standard-essential-patents_en.

³¹ SEPs Expert Group Report, 173-174; J. Baron, "The Possible Benefits of Pool Licensing for the Internet of Things, and the Perils of Proposed Regulatory Interventions," (Winter 2020) 3(2) *CPI Antitrust Chronicle* 51, 54-55.

³² D. Geradin, "SEP Licensing After Two Decades of Legal Wrangling: Some Issues Solved, Many Still to Address," (Winter 2020) 3(2) *CPI Antitrust Chronicle* 24, 37; P. McCutcheon, "Patent Pools and Other Forms of Aggregation," (Winter 2020) 3(2) *CPI Antitrust Chronicle* 39, 45.

³³ A. Layne-Farrar, J. Lerner, 'To Join or Not to Join: Examining Patent Pool Participation and Rent Sharing Rules' (2011) 29 *International Journal of Industrial Organization* 294.

³⁴ SEPs Expert Group Report, 167-168.

³⁵ Such a structural reform is attributable to the expert Fabian Hoffmann, who previously introduced the idea during a 2019 conference at the German patent office in Munich. <https://www.ipdr-forum.org/events/gema-type-frand-agencies/>.

³⁶ SEPs Expert Group Report, 169-171; M. Schneider, "SEP Licensing for the Internet of Things – Challenges for Patent Owners and Implementers," (Winter 2020) 3(2) *CPI Antitrust Chronicle* 46, 49.

negotiation group of all relevant IoT product implementers would bring the benefit of a one-stop-shop for both SEP holders and licensees, minimising overall transaction costs. In this sense, an example exists of a one-to-one transaction between a patent-pool and a group of licensees. Early in 2019, the patent pool administrator Sisvel and the defensive patent aggregator RPX concluded a contract providing a subset of RPX clients with a license for the Wi-Fi patent portfolio managed by Sisvel.³⁷ Again, the next Art. 101 TFEU horizontal cooperation guidelines are a convenient venue to incentivise SEP implementers' collective actions while keeping monopsony risks, in the form of collective patent hold-out, under competition law check.

V. Conclusions and Recommendations

The EG fed the European Commission with valuable yet non-binding proposals for IoT SEP licensing. Although many structural reforms conflict, reflecting the SEP holders

versus implementers debate, the call for more horizontal and vertical SEP licensing coordination transcends the stakeholders' credo. In fact, IoT innovations' fast and pervasive deployment, among those IoT producers who take a license, relies on agreements on aggregate SEP royalties for different IoT products, on an IoT-vertical-specific single supply chain licensing level, and joint SEP licensing platforms. The EU antitrust watchdog faces two golden opportunities of directing such coordination toward innovation diffusion while neutralising its collusion risks. The next Art. 101 TFEU block-exemption regulations and related guidelines for both horizontal and technology-transfer agreements, respectively due for 2023 and 2026, are the perfect chance of clarifying the more permissive approach in the IoT. Hopefully, a balanced solution would be found that will acknowledge the pro-competitive potential of collective industry negotiations in the SEP licensing environment but also guard against collusive threats and buyers' cartels that may harm further innovation.

³⁷ <https://www.sisvel.com/news-events/news/sisvel-and-rpx-conclude-licensing-agreement-for-wi-fi-standard-essential-patents>.