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Rigorous empirical research on intellectual property

The Value of Standard Essential Patents and the Level of Licensing

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Summary

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Highlights

- FRAND-based standards have generated globally successful markets. For example, cellular connectivity has enabled $4.1T in economic value in 2019 where only a small fraction is represented by SEP royalty payments.

- As a matter of economic efficiency, SEP value is dependent on the end-use value but independent of the level of licensing in the value chain.

- The pricing of SEPs has become a contentious issue. The recent controversy regarding the level of licensing is nothing but a discussion about value: those arguing for upstream or component-level licensing ultimately seek to lower the price through reducing the royalty base.

- The determination of the level of licensing requires a holistic analysis of economic, legal, and organizational factors in a specific industry that goes beyond the assessment of basic transaction cost issues, in particular, attention should be paid to collective action problems, market structure, patent exhaustion risks, and traditional industry supply chain norms, etc.

- Two case studies from (1) Optical Storage Standards and the One-Blue licensing platform, and (2) Cellular Standards in Connected Vehicles and the Avanci licensing platform, illustrate market challenges and solutions to the determination of SEP value and level of licensing in practice.

Summary

This paper develops an SEP licensing model that proposes the determination of SEP value should be dependent on the use-case and independent of the level of licensing in the value chain. We show that the value of enabling technologies, such as ICT standards, is best determined in relation to the value it produces to the consumer or end-user, regardless of the licensing level. Independent of SEP value, we then discuss the legal, economic, and organizational factors that can guide market actors to determine the level of licensing through private ordering.

Specifically, this paper provides (1) an introduction to the historical SEP licensing context, and challenges, and proposed solution (2) an overview of hybrid value chains, (3) a discussion on the level of licensing in theory, (4) a discussion on the level of licensing in market practice, (5) a discussion on SEP valuation, and (6) an illustration of the key issues through two SEP licensing case studies.

1. Introduction

This paper revisits the recent controversy on the valuation of standard essential patents (SEPs) and the concomitant issue of the appropriate level of licensing of these patents in a complex, multi-layered value chain. The irony of this paper is that the reason for discussing SEP value and licensing as a market problem is due to the historical success of markets that have been built on SEP-enabled connectivity standards and the anticipated success of new IoT markets.

For example, in mobile communications, the current estimate in 2019 is 8 billion SIM connections and 5.2 billion unique mobile subscribers worldwide, contributing $4.1 trillion to GDP, and employing 30 million people directly or indirectly in the mobile ecosystem.[1] Mobile Internet has grown to 3.8 billion users[2], roughly half of the world population with access rates as

[1] GSMA (2020), The Mobile Economy 2020.
[2] *Id.*

low as $0.26 per GB in India.[3] For the US market, smartphone mobile internet penetration is slightly over 80% and growing.[4] In the automotive industry, nearly all automakers have pledged to install embedded solutions in all of their new vehicles in the near future.[5] IDC (2019) estimates that by 2023 nearly 90% of new vehicles in the United States and 70% of worldwide vehicles will be shipped with embedded connectivity. In total, the current number of IoT connections is approximately 12 billion and forecasted to double to over 24 billion by 2024.[6] Thus, one could argue that the current policy narrative would be better focused on improving a market success instead of solving a market failure.

In economic terms, the success of these markets has generated a tremendous amount of surplus value (for both producers and consumers) that is now being fought over by different producers in the value chain. Without market success, there would be no surplus to fight over, and thus no reason to labor over SEP value and licensing. This begs the question - if these markets have been so successful, then why don't we continue doing what we have already done? We will discuss the main areas of contention below. However, it is crucial to understand that any area of contention should be understood against the backdrop of a large, successful, and growing mobile economy.

Figure 1 below shows that SEP licensing (estimated at $12.4 billion) equated to 2.9% of smartphone revenue in 2016, which is equivalent to 0.43% of total mobile GDP in 2019.[7]

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[3] *See* https://www.forbes.com/sites/niallmccarthy/2019/03/05/the-cost-of-mobile-internet-around-the-world-infographic/#5acca947226e. BCG (2015) reported that the average mobile subscriber cost per megabyte decreased 99 percent between 2005 and 2013, while data-transmission speeds became 12,000 times faster from 2G to 4G.
[4] *See* https://www.statista.com/statistics/201184/percentage-of-mobile-phone-users-who-use-a-smartphone-in-the-us/. https://www.statista.com/statistics/590800/internet-usage-reach-usa/
[5] For example, Ford has pledged to connect all its vehicles by 2019 (https://media.ford.com/content/fordmedia/fna/us/en/news/2018/03/15/ford-readies-north-americas-freshest-lineup-by-2020.html) and Toyota by 2020 for all its Japanese and US vehicles (Toyota Annual Report 2018).
[6] *See* GSMA, *supra* note 1.
[7] Galetovic, A., Haber, S., & Zaretzki, L. (2018). An estimate of the average cumulative royalty yield in the world mobile phone industry: Theory, measurement and results. *Telecommunications Policy*, *42*(3), 263-276.

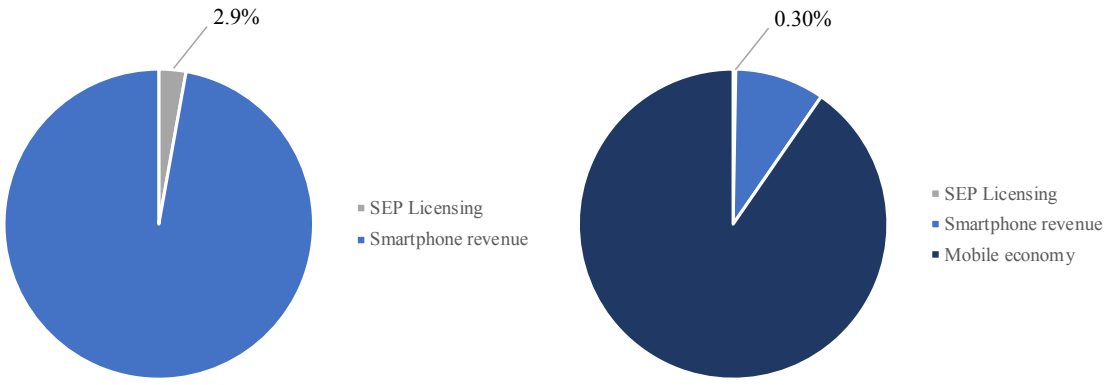

Figure 1. SEP licensing as a percentage of the global smartphone market (left) and total mobile economy (right).

Figure 1 above exemplifies two essential insights. First, the aggregate SEP royalty is much lower in reality than what was predicted by proponents of the patent hold-up and royalty stacking theory.[8] Second, the choice of the royalty base distorts the relative economic impact of SEP licensing in the mobile economy. If one adds consumer surplus to the total value of the smartphone market ($784 billion)[9] and the mobile economy ($6.4 trillion)[10], the percentage of SEP licensing revenue is reduced to 1% and 0.12%, respectively. Thus, one reason why a minuscule 0.17% of the total value of mobile economy has become a significant area of industry and policy contention is not the magnitude of the royalty, but the fact that it is paid by a set of actors at the smartphone or device level of the value chain, which is upstream of the total value generated to consumers by all actors in the ecosystem.[11] In other words, it could be argued that the contention on SEP licensing is based on the fact that the level of licensing is historically too far upstream from the consumer, not too far downstream as proponents of component licensing posit. This exemplifies the essence of the appropriability dilemma for enabling and general-purpose technologies (GPTs).[12]

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[8] Ibid. Calculations are made base on $12.4B in SEP licensing revenue and $425.1B in smartphone revenue in 2016. The mobile economy economic contribution used is 3.6T from GSMA Intelligence for 2017 (https://www.gsmaintelligence.com/videos/mobile-economy-2018/).
[9] Ibid.
[10] BCG (2015) - The Mobile Revolution: How Mobile Technologies Drive a Trillion-Dollar Impact.
[11] Axel Gautier, Nicolas Petit, "Smallest Salable Patent Practicing Unit and Component Licensing: Why 1$ is not 1$", (2019) 15 Journal of Competition Law & Economics 690.
[12] Teece, D. J. (2018). Profiting from innovation in the digital economy: Enabling technologies, standards, and licensing models in the wireless world. *Research Policy*, *47*(8), 1367-1387.

FRAND-based licensing is not new, and neither is SEP licensing in the mobile communication industry, which began over 20 years ago with GSM (i.e., 2G).[13] As a matter of practice, the prevailing market norm for SEP licensing in mobile communications is to license at the end-product level in the value chain.[14] There are several explanations for this, including (1) historical norms linked to cross-licensing among vertically integrated firms in the telecommunication industry, (2) risk management to avoid patent exposure from patent exhaustion for firms that both sell products and license SEPs, (3) value capture, given that downstream actors provide a better market signal for the value of the technology, especially enabling technologies such as mobile standards and (4) transactional efficiency.[15] All these issues have an important impact on SEP value and the level of licensing.[16] Recently, however, a policy debate has emerged regarding whether SEP holders are obligated to offer licenses to all requesting actors in the value chain (referred to as "license-to-all" or LTA) or whether SEP holders are free to choose where to license in the value chain as long as other relevant actors are provided with access (referred to as "access-to-all" or ATA).[17] A recent study of EU law found that "neither general principles of EU

[13] Contreras, J. L. (2015). A Brief History of FRAND: Analyzing Current Debates in Standard Setting and Antitrust Through a Historical Lens. Bekkers, R., Verspagen, B. & Smits, J. (2002). Intellectual property rights and standardization: The case of GSM. In: Telecommunications Policy 26, p. 171-188.
[14] This legality norm was most recently supported by the court in FTC v. Qualcomm Inc., 935 F.3d 752 (9th Cir. 2019) and the DOJ's Business Review Letter in response to the request from Avanci LLC (https://www.justice.gov/atr/page/file/1298626/download).
[15] See Heiden, B., & Andreasson, J. (2016). Reevaluating Patent Damages in the Knowledge Economy: The Intellectual Value Chain and the Royalty Base for Standard-Essential Patents. Criterion J. on Innovation, 1, 229 for a discussion on the evidentiary use of SSPPU to support jury deliberation as opposed to economic principles.
[16] For example, the first two interrelated issues have an important impact on the level of licensing regarding reciprocity in inbound/outbound licensing given that SEP holders operate across the value chain and most SEP holders are also implementers.
[17] See Juan Martinez, FRAND as Access to All versus License to All, Journal of Intellectual Property Law & Practice, Volume 14, Issue 8, August 2019, Pages 642–651; Jean-Sébastien Borghetti et al., "FRAND Licensing Levels under EU Law," February 2020, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3532469.

law nor patent, contract and competition laws requires an LTA approach from SEP owners."[18] However, proponents of LTA have also expressed their opinions.[19]

In marketing, it is said that customers want a two-inch hole, not a two-inch drill (i.e., the ends, not the means). Access and a license are two different phenomena. Access is a goal or value proposition, while a license is a legal instrument to achieve certain goals. SEP holders need to be remunerated for their technological contributions (or they are not incentivized to make them), and SEP implementers need to have access to technology/IP if they are going to implement the relevant standards. These are the ends; licenses and other legal mechanisms are only means to these ends. In our opinion, endless legal positioning and battling over the semantics of the difference between a "license" and "access" will not resolve this controversy, because the level of licensing is primarily a proxy war for the main issue, price. As long as price is viewed as a function of the level of licensing, we will continue down this rabbit hole.

In this paper, we suggest a different path, or better yet, a ladder. We argue that, as regards the determination of the level of licensing, the following three principles should be strictly respected:

- *Principle #1*. The determination of SEP/FRAND royalty payments should be independent of the choice of licensing level but dependent on its value in end-use.[20]

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[18] See Jean-Sébastien Borghetti et al., "FRAND Licensing Levels under EU Law," February 2020, at 46. Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3532469. *See* also DOJ Avanci BRL, *supra* note 23 and Layne-Farrar, Anne and Stark, Richard, License to All or Access to All? A Law and Economics Assessment of Standard Development Organizations' Licensing Rules (May 18, 2020). George Washington Law Review, Forthcoming, Available at SSRN: https://ssrn.com/abstract=3612954 or http://dx.doi.org/10.2139/ssrn.3612954.

[19] See Fair Standards Alliance 2016 position paper on SEP Licenses Available to All at https://fair-standards.org/wp-content/uploads/2016/09/160624_FSA_Position_Paper_-_SEP_licenses_available_to_all.pdf; Rosenbrock, Karl Heinz, Licensing At All Levels Is The Rule Under The ETSI IPR Policy: A Response to Dr. Bertram Huber (Nov. 3, 2017). Available at SSRN: https://ssrn.com/abstract=3064894 or http://dx.doi.org/10.2139/ssrn.3064894; Kattan, Joseph. "The Next FRAND Battle: Why the Royalty Base Matters." Antitrust Chronicle 3 (2015); Grasso, Roberto. "Standard Essential Patents: Royalty Determination in the Supply Chain." Journal of European Competition Law & Practice 8.5 (2017): 283-294; Geradin, Damien, SEP Licensing After two Decades of Legal Wrangling: Some Issues Solved, Many Still to Address, Antitrust Chronicle, March vol., Competition Policy International (2020).

[20] The value of end-use is defined as the value to the end-user(s) in a specific use-case. This is similar to the European Commission's communication regarding the setting of FRAND royalties by reference to the present value-added of the patented technology. See COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE, Setting out the EU approach to Standard Essential Patents, 29.11.2017, Section 2.1.

- *Principle #2*. The choice of licensing level should consider the minimization of transaction costs in relation to other key technical, legal, and market norms. [21] The adoption of this principle is likely to lead to the choice of a single licensing level.

- *Principle #3*. Firms in the value chain located upstream or downstream of the licensing level should be able to sell or buy from licensed firms without risk. This objective may be achieved by different statutory and contractual means: "exhaustion rights," "non-assertions," "covenants not to sue," "covenants to sue last," or "have made rights." Which alternative is preferable will depend on the relevant legal and economic framework.

In short, the determination of SEP value should be independent of the level of licensing in the value chain. This solution allows for the maximization of both dynamic and static efficiency by incentivizing innovation and dissemination of the standard as well as minimizing transaction costs. It also offers greater flexibility for bespoke solutions across multiple industry applications with different market norms.

2. Hybrid Value Chains

While the physical good was the classical value unit from an industrial economic approach, the emerging knowledge economy has created a shift in focus from tangible to intangible resources (i.e., knowledge) as the main operant resource that delivers value.[22] This suggests that the value chain needs to be expanded beyond the MVC to include what we term, an intellectual value

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[21] Transaction costs include search and information costs, bargaining costs, and policing and enforcement costs. See Coase, Ronald H. "The problem of social cost." *Classic papers in natural resource economics*. Palgrave Macmillan, London, 1960. 87-137. In addition, the SEP licensing context contains other transactional costs/challenges related to the risk of patent exposure and indemnification, pre-existing contractual market norms in new industries, and potential collective action problems, which can be more significant in determining the level of licensing than traditional transaction costs.

[22] Stephen L. Vargo & Robert F. Lusch, Evolving to a New Dominant Logic for Marketing, 68 Journal of Marketing 1, 5-12 (2004) (arguing that the distinction between products and services is a social construction based on a historical focus on operand resources such as land and physical goods as opposed to the underlying operant resources. The authors contend that all economic activity is service-based – a fact that has been hidden by the indirect exchange of the market for physical goods – and call for a change in the dominant marketing logic from a focus on goods to service provision as the core to economic exchange. Here service is defined as a value proposition to customers instead of an economic activity where knowledge is the key operant resource).

chain (IVC), that encompasses the previously hidden source of economic value, knowledge.[23] The resulting hybrid value chain, including both the material and intellectual chains, is presented in Figure 2 below.

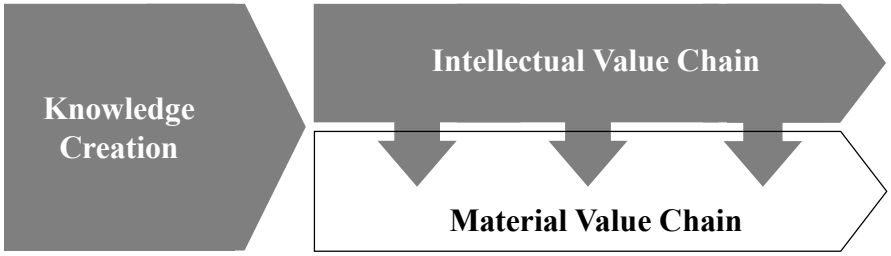

Figure 2. Knowledge as the key operant resource on both the intellectual and material value chains.

In this model, knowledge is highlighted as the key operant resource from which value is created. However, this value can be captured both through its integration into physical products through the MVC or as an independent intellectual value proposition through the IVC, for example, as a technology/patent license. This model unveils the existence of both a visible product market and an often invisible technology market, where the latter is vital for an increased division of innovative labor that drives growth in the knowledge economy.[24] Furthermore, the IVC is depicted as both interrelated but independent from the MVC. In other words, the creation and commercialization of knowledge are not restricted to the traditional, sequential norms that have defined the value chain of physical goods, which opens up for a broader set of norms for determining SEP value and the level of licensing than a traditional MVC model provides.[25]

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[23] The concept of the intellectual value chain (IVC) is based on Ulf Petrusson, Intellectual Property & Entrepreneurship: Creating Wealth in an Intellectual Value Chain, 70-85 (2004).

[24] See Grindley, P., & Teece, D. (1997). Managing Intellectual Capital: Licensing and Cross-Licensing in Semiconductors and Electronics. California Management Review, 39 (2), Winter, 1-34; Arora, A., Fosfuri, A., & Gambardella, A. (2001). Markets for technology and their implications for corporate strategy. Industrial and corporate change, 10(2), 419-451.

[25] One could argue that the term "chain" in the intellectual value chain is inappropriate in the context we have described, but we have chosen this nomenclature as we are discussing the interaction with the MVC. For a purely digital ecosystem, a different conceptual approach may be more appropriate.

Figure 3 below illustrates a generic, connectivity-enabled material and intellectual value chain that includes the production of physical goods (e.g., smartphones, connected vehicles, smart meters, etc.), virtual products and services (e.g., voice and data subscriptions or over-the-top services, such as mobile applications),[26] and technology transfer in the form of SEP licenses. The position of the SEP license in Figure 3 is depicted as a variable across the different levels of the MVC, including the service and customer level, with the end-product level highlighted as the industry norm.[27] This model provides both a basic understanding of how value is created and shared by different producers and customers as well as a canvas upon which industry actors can define SEP value and level of licensing in their industry.

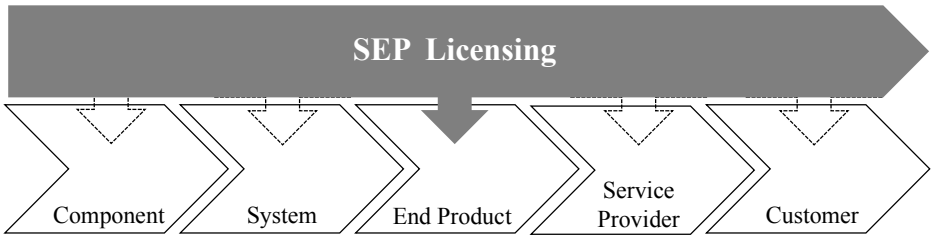

Figure 3. Generic connectivity-enabled material and intellectual value chains.

3. The Level of Licensing: Theory

In complex industries, licensors can, in principle, license their IP at one or another level of the value chain, or they could deal with both midstream and downstream suppliers.[28] Licensors may choose to license different patents at the component and/or end-product levels – see figure 4 below.

[26] Thus, in contrast, traditional MVC services are focused on the repair, maintenance, and disposal of physical goods, while digital services are value propositions that can be both independent and complementary to physical goods.
[27] Operators often sell network access bundled with mobile phones as one service offering, but due to historical norms, licensing in the mobile industry has not taken place at the operator level.
[28] Patent exhaustion considerations may limit or make altogether impossible, the strategy of licensing to both midstream and downstream suppliers.

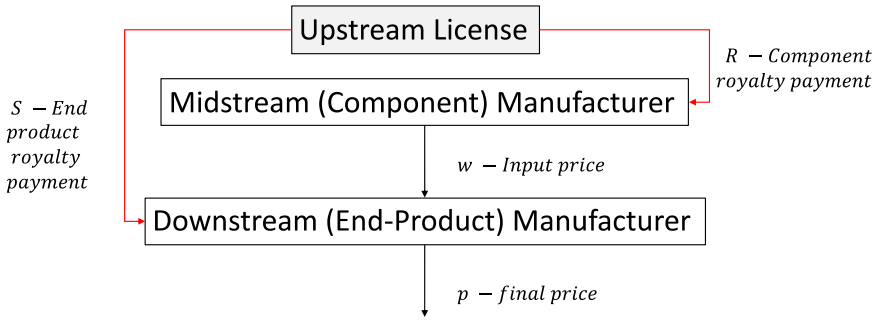

Figure 4. Simple multi-layer value chain with upstream license.

From an economic policy perspective, licensing ought to occur at the level (or levels) of the value chain where (a) the licensor can obtain a reasonable return to investment, (b) the (aggregate) royalty burden does not limit the diffusion of the technology (i.e., does not restrict output), and (c) transaction costs are minimized. However, there are additional transactional challenges related to SEP licensing that must also be considered beyond traditional transaction costs, including:

- Managing patent holdup and holdout risks
- Industry structure, including degree of vertical integration
- Patent exhaustion and exposure risk
- Asymmetric information and price differentiation for multiple use-cases
- Collective action problems
- Royalty models and double marginalization
- Indemnification, including "have made" rights and related contractual agreements

The final choice should be made on an industry-by-industry basis, dependent on the use-case.[29]

[29] The potential that the same industry can implement connectivity solutions through different supply chains, across multiple standards, and for multiple purposes is an added complexity that will be illustrated in the case studies in this paper.

4. The Level of Licensing: Market Practice

The question of the licensing level has not been an issue in SEP licensing for decades. It only became an issue more recently in the mobile phone industry, in particular with respect to the refusal to license its competitors by one major SEP licensor, who is a supplier of components (chips) to the mobile phone industry.[30] It became a more principle controversy after SEP licensors for connectivity standards started to approach car makers as licensing targets. A number of lawsuits between connectivity SEP licensors and a major European carmaker and its suppliers are currently pending in Germany and the US.[31]

Since the early eighties of the last century, many SEP licensing programs have been executed for audio and video technology standards where the licenses were targeted at end-products, mainly consumer products like TV's, STBs, CD/DVD players and later also for mobile phones. It is noted here that also for many audio and video compression technology standards, such as MPEG1/2/4-Video, where all relevant SEPs are used in decoders, SEP licenses were directed to end-products makers incorporating these decoders in the same type of consumer products. In these licensing programs, component makers did not receive any licenses and did not request any licenses. Various approaches have been applied for enabling component makers to sell their components to end-user makers. These include:

- The unregulated approach
- "Have made" rights
- Non-asserts / Covenants-not-sue

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[30] See e.g., *Federal Trade Commission v. Qualcomm Incorporated* District Court, ND. California; the Korean Fair Trade Commission's decision against Qualcomm, English language summary available at http://www.ftc.go.kr/solution/skin/doc.html?fn=50ba93a6149acc5be3cae03dc2f4de97e254681689def7a42b2e4ae6eaaf1924&rs=/fileupload/data/result/BBSMSTR_000000002402/.

[31] Continental Auto. Syst. v. Avanci, et al. Case No. 19-cv-02520-LHK (N.D. Cal., July 2019). *District Court Munich I, file no. 21 O 3889/19; District Court Munich I, file no. 21 O 3891/19; District Court Munich I, file no. 7 O 3890/19*; *District Court Düsseldorf, file no. 4a O 27/19; District Court Düsseldorf, file no. 4a O 26/19; District Court Düsseldorf, file no. 4c O 17/19; District Court Mannheim, file no. 2 O 37/39; District court Mannheim, file no. 2 O 36/19; District Court Mannheim, file no. 2 O 35/19; District court Mannheim, file no. 2 O 34/19.*

5. SEP Valuation

In economics, widely adopted technologies, such as cellular standards, are defined as general-purpose technologies (GPTs)[32] or enabling technologies.[33] Enabling technologies lead to multiple downstream applications that can produce large positive spillovers that are difficult for the technology owner to appropriate, which in turn typically leads to underinvestment in these technologies.[34] This underinvestment in R&D is a market failure in the technology market that, in turn, diminishes dynamic efficiency.[35]

In the context of technology standards, such as cellular, appropriability challenges can be overcome through several existing and proposed appropriability mechanisms that can enhance economic efficiency:

- FRAND licensing
- End-user/consumer-level value determination
- SEP value based on use-case

There is an argument by some actors that market values for SEPs are inappropriate because they incorporate the total value of the standard instead of the incremental value of the underlying technology. This ex ante valuation logic claims that the value of SEPs should be determined prior (i.e., ex ante) to their inclusion in the standard based on their incremental value in relation to other competing technologies at that time. This argument suffers from a number of fundamental flaws of theory and logic:

1. Successful standards do not only enable products and services; they define entire markets.
2. The value of the standard flows to someone (i.e. it does not just disappear).

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[32] Bresnahan, T.F., Trajtenberg, M., 1995. General-purpose technologies: 'engines of growth'? J. Econom. 65 (1), 83–108.
[33] See Teece, *supra* note 12.
[34] *Ibid*.
[35] The policy focus has typically been on the potential for market failure in the product market. However, both potential inefficiencies, static and dynamic, need to be part of the policy equation.

3. The value of the technology that defines the standard cannot be independently separated from the value of the standard.[36]

To overcome the appropriability challenges of enabling technologies and maintain congruence with price theory in mainstream economics, we propose that SEP value should be determined independently of the licensing level but dependent on the value derived by end-users/consumers in different use-cases.

6. Case Studies

- **Optical Storage Standards/One-Blue Patent Platform**

  The innovative One-Blue licensing platform created a novel product patent pool or pool of pools concept combining a significant number of essential patents (in total 8000-9000 patents) for a large number of different standards into a single license offering at a discounted royalty. The licenses for Blu-ray products basically targeted end-product makers as the licensing level in the value chain, such as for Blu-ray players and recorders, except for some Blu-ray products, where the complexities of the value chain made it more efficient to target the licenses at a lower level in the value chain, such as drive manufacturers and software providers for the PC industry and disc pressers for the content industry.

- **Cellular Standards for Connected Vehicles/Avanci Licensing Platform**

  The connected vehicle cases and the Avanci licensing platform provide real world insights into the industry dynamics of SEP licensing in new IoT applications. The Avanci platform has attempted to solve a number of previous issues of contention by providing a one-stop marketplace with fixed, transparent pricing based on the value of connectivity in specific use-cases and determined in market negotiation with both licensors and licensees. While most of the necessary SEP holders are part of the platform and 12% of

[36] See Galetovic, Alexander and Haber, Stephen H., SEP Royalties: What Theory of Value and Distribution Should Courts Apply (Sept. 4, 2019). Available at SSRN: https://ssrn.com/abstract=3447641.

the automotive market is now licensed, SEP licensing challenges still persists due to the convergence of industry norms and the continued debate over the dependency of SEP value on the licensing level. The ability to collaborate between suppliers and OEMs as in the case of the BMW Group license is a positive example.[37] The further willingness of SEP holders to offer Tier 1 licenses has also been reported.[38] However, the complexity of the automotive connectivity supply chain exemplifies the difficulties outlined above in relation to upstream SEP licensing, including increased transaction costs, uncertainty, and patent exhaustion issues as well as a fundamental collective action problem as suppliers under license are put at a competition disadvantage from suppliers that hold-out. Potentially most important, there has been a fundamental difficulty to incorporate SEP licensing norms from the telecommunication industry into the traditions supplier norms of the automotive industry. This is further exacerbated due to the long timeframe of supplier agreements in the automotive industry in relation to the timing of SEP licensing.

[37] https://www.avanci.com/2017/12/01/avanci-announces-patent-license-agreement-bmw-group-becomes-new-licensee-avanci-platform-securing-license-standard-essential-patents-cellular-standards-2/.
[38] https://www.twobirds.com/~/media/pdfs/practice-areas/ip/the-case-for-the-defence.pdf?la=en&hash=A5A88D21EF55BE81B47C5FB16774785FBBD64B12.