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# Access to standard essential patents and competition law

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# Access to Standard Essential Patents and Competition Law

Patent pools, licensing in IoT value chains and dispute resolutions

Maryam Pourrahim

# Access to Standard Essential Patents and Competition Law

## Patent pools, licensing in IoT value chains and dispute resolutions

Proefschrift ter verkrijging van de graad van doctor aan Tilburg University
op gezag van de rector magnificus, prof. dr. W.B.H.J. van de Donk, en Université de Fribourg, op gezag van de rector, prof. dr. A. Epiney in het openbaar te verdedigen
ten overstaan van
een door het college voor promoties aangewezen commissie in de Aula van Tilburg University op woensdag 21 februari 2024 om 14.00 uur
door
Maryam Pourrahim

geboren te Najafabad, Iran

| | |
|---|---|
| Promotores: | prof. dr. G. Monti (Tilburg University)<br>prof. dr. W. Stoffel (Université de Fribourg) |
| leden promotiecommissie: | prof. dr. P. Delimatsis (Tilburg University)<br>prof. dr. L. Hancher (Tilburg University)<br>prof. dr. P. Mavroidis (Columbia Law School)<br>prof. dr. I. Chabloz (Université de Fribourg) |

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*to Woman. Life. Freedom*

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## Acknowledgement

My PhD journey has been a thrilling rollercoaster of discovery. When I first immersed myself in the intricate world of Standard Essential Patents (SEPs), it felt like venturing into a convoluted technical maze. Each twist and turn revealed a new layer of standardizations, SDOs, patent law, and competition law – a puzzle as intricate as assembling Ikea furniture! Right from the start, I sensed that I was plunging into an unknown ocean without knowing how to swim.

I embarked on this path as sparks flew during my LLM competition law course at the University of Lausanne, where I discovered the captivating dance between competition law and patents. This intellectual tango continued during my assistantship at the chair of European law and competition law at the University of Neuchâtel, sealing my fate to plunge even deeper into the realm of SEPs. I initially thought it would be akin to the "75-day hard challenges", but reality hit harder – I felt like I was drowning. Yet, as challenges never come with an RSVP (they just show up uninvited), I found myself equipped with some precious swimming floatation devices. Without them, I could never have survived, let alone learned to swim "adequately" and sometimes "well". Let me categorise these "God's hands" into academic-related and non-academic aids: (Yes, I love categorising everything, even in the acknowledgment).

**Setting the context**

A lost but determined individual searches for an opportunity to join TILEC. From my first presence at a conference in late 2018, I learned that TILEC is the right place, full of astonishing scholars focusing on SEPs, standardisations, and their competition law aspects. My great Greek wing, composed of Professors Mavroidis and Delimatsis, unwaveringly guided and facilitated my path to becoming a member of the esteemed TILEC. In early September 2019, I received official admission. Without hesitation, I began searching for a small studio to spend a few days per week in Tilburg, eager to live and experience all the admirable aspects that TILEC alumni had spoken about. However, finding such a place proved to be no easy task, leading to a couple of short trips to Tilburg to meet and talk to my well-known prestigious supervisor, Prof. Monti.

Meanwhile, another great opportunity unfolded – I gained admission to the University of Fribourg to conduct my research under the supervision of Prof. Stoffel. His reputation precedes him, as great individuals are always known. Creating a joint Ph.D. agreement between the two universities required considerable effort, but I successfully navigated this for the first time (and

hopefully, future Dutch/Swiss students will send me good prayers).

The year 2019 concluded with ambitious resolutions for my academic agenda across two universities. However, early January brought an unexpected turn. I fell extremely ill, spending a literal 24 hours in bed – I prefer not to recall for how long. At that time, the term “Covid” was not yet a part of our vocabulary. (Yes, I might be considered a Covid pioneer in (west) Switzerland.). I hadn't travelled to China, nor had I ventured a mere 40 minutes away from my home to France. It just happened – no, no! I am not always that unfortunate. Thankfully, I recovered, but all the dreams I had of experiencing a student-ish life in Tilburg were abruptly halted. I had eagerly anticipated the dormitory-life experience, but Covid extinguished those plans, affecting not only my life but sadly many others.

In December, Professor Monti kindly suggested that I prepare a paper on “patent pools” to submit to ASCOLA. I took on the challenge, and my work was accepted, preparing me to present it at the greatest gathering of competition law experts. It truly reflects the benefits of having a great supervisor.

Initially, we anticipated that the lockdowns would soon come to an end, but reality did not align with our hopes. Despite the challenges, I moved on to the next project after publishing that chapter—working on arbitration. Putting a technical issue into arbitration posed a significant challenge. During this time, I was not only facing the complexities of arbitration but also the literal challenges of pregnancy. (We've all heard of the pandemic's role in population growth, after all.) Combining the demands of pregnancy with arbitration matters and presenting at Washington DC University online, thanks/damn to Covid, (surely, I would have loved to travel to the US, let's assume they issued me a visa, but with that big belly, where might I fly, I wonder) added an extra layer of complexity.

I vividly remember having my presentation at 5:30 pm while a babysitter took care of my little one, whose crises always seemed to start at that exact time every evening. During my presentation, my dress ended up all wet... Well, let's assume I don't remember the rest.

**Academic aids**

Foremost among my expressions of thanks and gratitude are reserved for my supervisors. **Prof. Giorgio Monti**, whose guidance and wisdom acted as a beacon in my research sea. His expertise in competition law, economics, and EU law made him an “essential” cornerstone of my research. As an external Ph.D. candidate, I must confess that I longed for the moment when I could grab my coffee mug, knock on my supervisor's office door, and share my thoughts or ask my questions. In my

case, there was always a barrier—a thin but dark screen, a window to prolonged expectations. However, whenever, and I emphasise whenever, I had a conversation with Prof. Monti, it felt like a lightning bolt piercing through a long period of darkness. Allow me to convey this sentiment with a touch of Persian perfume: it was indeed like the advent of the sun after a long Yalda night. Prof. Monti, I extend my heartfelt thanks for all your insights and challenging questions that have significantly shaped my work.

A hearty thanks go to **Prof. Walter Stoffel**, whose office became a hub for thought-provoking discussions. His big heart is enough to make anyone lucky for a lifetime. Our one-hour meetings often turned into three-hour symphonies, blending unique perspectives with warmth and camaraderie. I will forever cherish the memory of his unwavering support and the delightful surprise of his attendance at my theatre performance. On the eve of that event, I modestly invited him, and unbelievably, he showed up with his extremely lovely wife. Despite a one-hour drive to reach my city, he made the effort. I am truly touched.

My warmest gratitude extends to my esteemed committee members, **Professors Isabelle Chabloz, Panos Delimatsis, Leigh Hancher, and Petros Mavroidis**, for their invaluable insights and thoughtful comments. Their dedicated time and guidance enriched the depth of my research. Their careful and insightful feedback not only enhanced the manuscript (and its subsequent iterations) but also served as an invaluable wellspring of inspiration.

I extend immense thanks to the following entities and individuals who played pivotal roles in my academic journey:

- **Tilburg University, TILEC,** and **TILT** (I often find myself confused about my official affiliation), you were a distant yet proud pillar of support. Special mentions to **Ms**. **Verdonschot, Ms. Kops**, and **Dr. Aquarius**; your unwavering support was not only constant but also timely. One must be an external student in the pandemic era to truly comprehend the significance of receiving prompt and constant responses and support.

- **University of Fribourg** and **Madame Rappo**: Vous êtes la meilleure directrice académique qui puisse exister sur cette planète. Je n'oublierai jamais l'aide que vous m'avez apportée.

- **Swissuniversities** and **its board committee**, thank you for selecting my research project as interesting and granting the valuable support to my project.

- **ASCOLA and Prof. Gal**, **the Center on International Commercial Arbitration, Prof. Arp, CLEEN conference,** and **Prof. Ganglmair**, your contributions have been invaluable.

- **EUI** and its outstanding academic programs, **University of Geneva** and its digital law school, I express my deepest gratitude.

- **ISDC**, its dedicated staff, and scholars. A special nod to my **table (110),** where I settled for the past two years especially during weekends and holidays. As I arrived around 7 am, turning on the lights for corridors and the underfloor stage, grappling with SEP licensing and wrestling with countless unanswered questions, it was a solitary endeavour. I was confident that all the coldness, darkness, and loneliness would eventually be replaced by the warm glow of good memories when I completed my work. And indeed, it happened.

- **HSbooster EU Project** and **Prof. Mijatovic**: It has been an honour to contribute to your promising project.

Acknowledgments extend to those who have been companions in my doctoral journey, offering lessons that transcend legal realms – lessons in humanity, modesty, and life. **Prof. Hilty**, your mentorship has been more than a scholarly guide. It taught me that true greatness in academia is marked not only by intellectual prowess but also by the ability to respond promptly, swiftly, and with unwavering support, even to those one may never meet in person. **Prof. Cottier**, your humanity and kindness has left a lasting impact, and I deeply appreciate the encouragement you've extended.

**Non-academic aids**

A colossal thank you to:

My strongest Mom. From my childhood to my adulthood (if such a word exists in moms' dictionaries), she stood beside me, offering prayers for each exam, conference, presentation, or any academic occasion, whether important or trivial. Her unwavering support has been a constant source of strength, and I hope she continues to do so until my "endhood."

My kindest Father. Beyond others, he believes in me and is truly a man at my service. Throughout my entire life, I've heard him ask "What can I do for you? And what do you need?" His kindness is beyond measure, and I often regret why we do not live close by.

I know you awaited the end of this academic saga every second, I promise you this PhD marks as my last serious academic pursuit. (But let's be real, who knows what "serious" truly means in academia?)

My unwavering pillar of strength, my husband, deserves a universe of gratitude. From navigating presentations and conferences to being my tech wizard and emotional anchor, he's been the driving force behind this dissertation. It was literally OUR teamwork, and you know what? WE are now done honey with that. Congratulations to you and me!

A heartfelt thanks to my brother (the partner-in-crime for our epic childhood adventures), family, and friends. Your unwavering support, endless patience, and love carried me through stormy chapters and lit up my academic path. You all hold a special place in my heart that transcends any language barriers. I must send special thanks to **Khadijeh khanom, Maryam, Fatemeh, Faezeh, Fatemeh Vahidi, Mr. Damavandi, Christiane, Parvaz, Mana, Amalia, Pantea, Dr. Shaheeza**, my lovely **theatre group**, and in loving memory of **Maman Nahid**, whose kind and smiling eyes remain etched in my heart… you might not be directly involved in my research journey, but you made my moments when the path was not paved. You thought me there are millions important things in life, PhD might be the last one. I love you and I owe you.

To my dearest **Caren**. As I pen down these words, I'm flooded with memories of the incredible journey we shared, my little bundle of inspiration. From the moment I felt your presence in my body, you became the wellspring of my creativity, the driving force behind this wild and wonderful ride. In moments of challenge, your innocent gaze, playful smiles, and the sweet melody of your occasional baby chatter became my guiding lights, leading me back to the path of determination and resilience. I want you to know, my love, that you hold a special place in my heart, and these words are not just a letter but a testament to the dreams I have for you. Life, my Darling! is a journey filled with twists and turns. Sometimes the path may seem daunting but keeps going. Seize the opportunity for your dreams to emerge. Don't be afraid. Don't get tired, don't surrender, don't step back. (Although, frankly, you can do all of these; in fact, it's your right, and who among us hasn't experienced these feelings throughout their life?) Be everything you want, my sweetheart, and experience all these feelings; it is absolutely normal. Be yourself and whatever you wish. Just PLEASE never, never become an EXTERNAL student. Being a distant student means becoming isolated, struggling for a simple answer, and a myriad of other entanglements. Moreover, I wonder if you'll be as fortunate as your mother to have someone like **Olia Kanevskaia** in your life. At the confusion and exhaustion of PhD's journey, she steps in like a superwoman, offering her unwavering support

and guidance. Cherish the possibility of having such a remarkable presence by your side, just as your mother has.

To All Women, Especially My Iranian Comrades, to “Woman. Life. Freedom”

As I stand at the culmination of my academic journey, I am filled with immense gratitude and an overwhelming sense of purpose. This thesis is not just a collection of words and research; it is a tribute to the unwavering strength, resilience, and brilliance that women across the world, and particularly in my homeland of Iran, embody every single day. To my Iranian comrades, who have faced challenges with grace and determination that defy the limits of possibility, this work is dedicated to you. You have been my constant source of inspiration, reminding me that the pursuit of knowledge knows no boundaries. Your tenacity has ignited a fire within me, propelling me forward even when the path seemed arduous. In a world that may sometimes attempt to silence our voices, belittle our dreams, or undermine our capabilities, I offer this thesis as a testament to our unyielding spirit. It is a symbol of our collective strength, a resounding declaration that we are unapologetically taking our place at the forefront of intellectual exploration. As you read these pages, know that each word carries hopes, dreams, and aspirations of women who have dared to challenge norms, break barriers, and rise above expectations. May this work serve as a reminder that no goal is beyond our reach, no ambition too grand, and no dream too audacious.

With a heart full of gratitude and a quiver of newfound knowledge, I look ahead to the next chapter, armed with insights, memories, and a dash of my trademark humour.

With endless curiosity,
Maryam
Lausanne
January 2024

## Academic Summary

Standard-Essential Patents (SEPs) are where technology standards and intellectual property rights meet. These patents are crucial for industry standards set by Standards Developing Organizations (SDOs), ensuring compatibility and flawless functionality amongst diverse technological products. While the concept of SEPs is known, the intricate interplay of patent pools, competition law, SEP licensing, value chain dynamics, and dispute resolution are subjects that merit comprehensive examination.

This research explores SEPs beyond their fundamental role in enabling technology interoperability. Access to SEPs is vital for anyone making technological products that need them. This access happens through different mechanisms including licensing, cross-licensing, or patent pools. The access to the SEPs is such crucial that SEP holders commit to the SDOs that they provide any seeking SEP users with a licence on fair, reasonable and non-discriminatory (FRAND) terms to anyone who asks. If things do not go well in this process, like disagreements about FRAND terms or refusal to license, contract law or competition law may step in, depending on the case.

The methodological approach employed in this research encompasses desk study and a comparative analysis of antitrust legislations. This analytical framework facilitates an in-depth comprehension of the legal and regulatory landscape surrounding SEPs, offering insights into the complexities of their governance and adjudication.

The study delves into the nuanced realm of patent pools, investigating collaborative arrangements among patent holders to facilitate licensing and mitigate potential litigation. Furthermore, it scrutinises how competition law in the EU and the US affect these patent pools, ensuring fairness and competition.

Within the context of SEP licensing, the study investigates the complexities of determining licensing levels and royalty base across multi-tier value chains, with a specific focus on the connected car industry and IoT. The examination of licensing

schemes within this complex ecosystem underscores the necessity for transparent and predictable licensing frameworks that account for the contributions of various stakeholders. This issue is elaborated from different legal perspectives and the study propose a new approach to address both level of licensing and royalty base questions.

Inextricably linked to SEP licensing is the issue of seeking injunctions which is although a patentee's fundamental right to ask to stop others from using their patented technologies, it is frameworked by competition law in the case of FRAND-encumbered SEPs. When and under what circumstances, seeking an injunction would be considered unlawful is discussed.

The study also addressed arbitration challenges when resolving SEP/FRAND-related disputes. The intricacies of arbitration arise not only from the nature of SEPs but also from various types of conflicts spanning patent law, competition law, and the establishment of licensing terms, all contributing to the complexities in resolving such disputes.

The study sheds light on the divergent perspectives and potential friction arising from these issues, reflecting upon the legal, economic, and technological factors that contribute to the complexity of resolving such disputes. The significance of addressing SEP-related litigations is profound, as it encompasses not only the preservation of fair competition but also the facilitation of innovation. The delicate balance struck by SEPs, in harmonising proprietary rights with collaborative standards, underscores their indispensability in modern technological progress.

In addition, central to the discourse is the pivotal role of competition law and the FRAND commitment. These pillars underscore the overarching objective of preventing monopolistic practices, fostering competition, and ensuring equitable access to essential technologies.

At last, the study presents some insight into the SEP-orientated research along with proposing some recommendations for further research in future.

## Academische samenvatting

In standaardessentiële octrooien (SEP's) komen technologische standaarden en intellectuele eigendomsrechten samen. Deze octrooien zijn cruciaal voor industriestandaarden die worden vastgesteld door standaardiseringsorganisaties (SO's), en zorgen voor compatibiliteit en vlekkeloze functionaliteit tussen diverse technologische producten. Hoewel het concept van SEP's bekend is, vergen de complexe interacties tussen octrooipools, mededingingsrecht, SEP-licenties, waardeketendynamiek en geschillenbeslechting aanvullend uitgebreid onderzoek.

Dit onderzoek gaat verder dan het verkennen van de fundamentele rol van SEP's bij het mogelijk maken van technologische interoperabiliteit. Toegang tot SEP's is van vitaal belang voor iedereen die technologische producten maakt die SEP's nodig hebben. Deze toegang wordt verkregen via verschillende mechanismen, waaronder licenties, kruislicenties of octrooipools. De toegang tot de SEP's is zo cruciaal dat SEP-houders zich bij de SO's verbinden om aan iedereen die erom vraagt een licentie te verstrekken op eerlijke, redelijke en niet-discriminerende (FRAND) voorwaarden. Als er iets mis gaat tijdens dit proces, zoals wanneer er meningsverschillen ontstaan over FRAND-voorwaarden of een licentie wordt geweigerd, kan het contractrecht of mededingingsrecht uitkomst bieden, afhankelijk van de zaak.

De methodologische aanpak die in dit onderzoek wordt gebruikt omvat bureauonderzoek en een vergelijkende analyse van mededingingswetgeving. Dit analytisch kader bevordert een diepgaand begrip van het juridische en regelgevende landschap rond SEP's, en biedt inzicht in de complexiteit van hun beheer en rechtspraak.

De studie duikt in het genuanceerde domein van octrooipools en onderzoekt samenwerkingsverbanden tussen octrooihouders om licenties te vergemakkelijken en potentiële rechtsgeschillen te verminderen. Verder onderzoekt het hoe mededingingswetgeving in de EU en de VS deze octrooipools beïnvloedt, waarbij eerlijkheid en concurrentie worden gewaarborgd.

Binnen de context van SEP-licenties onderzoekt deze studie de complexiteit van het bepalen van licentieniveaus en royaltybases binnen meerlaagse waardeketens, met een specifieke focus op de connected car-industrie en het Internet of Things (IoT). Het onderzoek naar licentiestructuren binnen dit complexe ecosysteem benadrukt de noodzaak van transparante en voorspelbare licentiekaders die rekening houden met de bijdragen van verschillende belanghebbenden. Dit vraagstuk wordt belicht vanuit verschillende juridische perspectieven, en de studie stelt een nieuwe aanpak voor om zowel vragen over het licentieniveau als de royaltybasis aan te pakken.

Onlosmakelijk verbonden met SEP-licenties is de kwestie van het uitvaardigen van dwangbevelen. Hoewel het voor een octrooihouder een fundamenteel recht is om anderen te vragen te stoppen met het gebruik van hun geoctrooieerde technologieën, wordt dit gekaderd door het mededingingsrecht in het geval van FRAND-gebonden SEP's. Wanneer en onder welke omstandigheden het uitvaardigen van een dwangbevel als onwettig wordt beschouwd, wordt besproken.

De studie richt zich ook op uitdagingen bij arbitrage bij het oplossen van geschillen met betrekking tot SEP/FRAND. De complexiteit van arbitrage ontstaat niet alleen door de aard van SEP's, maar ook door verschillende soorten conflicten die het octrooirecht, het mededingingsrecht en de vaststelling van licentievoorwaarden omvatten, wat allemaal bijdraagt aan de complexiteit bij het oplossen van dergelijke geschillen.

De studie belicht de uiteenlopende perspectieven en mogelijke wrijving die voortvloeien uit deze kwesties, waarbij wordt gereflecteerd op de juridische, economische en technologische factoren die bijdragen aan de complexiteit van het oplossen van dergelijke geschillen. Het belang van het aanpakken van geschillen met betrekking tot SEP's is zeer aanzienlijk omdat het niet alleen het behoud van eerlijke concurrentie omvat, maar ook de bevordering van innovatie. De delicate balans die SEP's vinden door het harmoniseren van eigendomsrechten met samenwerkingsnormen benadrukt hun onmisbaarheid in de moderne technologische vooruitgang.

Daarnaast draait deze discussie om de cruciale rol van het mededingingsrecht en de FRAND-verbintenis. Deze pijlers hebben als overkoepelend doel het voorkomen van monopolistische praktijken, het bevorderen van concurrentie en het waarborgen van eerlijke toegang tot essentiële technologieën. Tot slot biedt de studie enig inzicht in het onderzoek naar SEP's en doet ze aanbevelingen voor toekomstig onderzoek.

## Abbreviations

| | |
|---|---|
| **3G** | 3rd Generation of Wireless Mobile Telecommunications Technology |
| **3GPP** | 3rd Generation Partnership Project |
| **4G** | 4th Generation of Wireless Mobile Telecommunications Technology |
| **5G** | 5th Generation of Wireless Mobile Telecommunications Technology |
| **ADR** | Alternative Dispute Resolution |
| **AG** | Advocate General |
| **ANSI** | American National Standards Institute |
| **BRL** | Business Review Letter |
| **CDMA** | Code Division Multiple Access |
| **DOJ** | Department of Justice |
| **EC** | European Commission |
| **ECJ** | Court of Justice of the European Union |
| **EP** | European Parliament |
| **ETSI** | European Telecommunications Standards Institute |
| **EU** | European Union |
| **EUIPO** | European Union Intellectual Property Office |
| **FPGA** | Field-Programmable Gate Array |
| **FRAND** | Fair, Reasonable and Non-Discriminatory |
| **FTC** | Federal Trade Commission |
| **GSM** | Global System for Mobile Telecommunication |
| **HAVI** | Home Audio/Video Interoperability |
| **HEVC** | High Efficiency Video Coding |
| **HGs** | Horizontal Guidelines |
| **ICT** | Information and Communications Technology |
| **IEC** | International Electrotechnical Commission |
| **IEEE** | Institute of Electrical and Electronics Engineer |
| **IEEE-SA** | Institute of Electrical and Electronics Engineers Standards Association |
| **IoT** | Internet of Things |
| **IP** | Intellectual Property |
| **IPR** | Intellectual Property Right |
| **ISO** | International Organisation for Standardisation |
| **ITC** | International Trade Commission |
| **ITU** | International Telecommunications Union |
| **JPEG** | Joint Photographic Experts Group |
| **JRC** | Joint Research Centre |
| **LoA** | Letter of Assurance |
| **LTE** | Long-Term Evolution |
| **MFN** | Most Favoured Nation |
| **MPEG** | Moving Picture Experts Group |
| **NAD** | Network Access Device |
| **ND** | Non-discrimination |
| **NDA** | Non-disclosure Agreement |

| | |
|---|---|
| **NPE** | Non-practising Entity |
| **OECD** | Organisation for Economic Co-operation and Development |
| **OEM** | original Equipment Manufacturer |
| **PAE** | Patent Assertion Entity |
| **QoS** | Quality of Service |
| **R&D** | Research and Development |
| **RAND** | Reasonable and Non-discriminatory |
| **RF** | Royalty-free |
| **SDO** | Standards Developing Organisation |
| **SEP** | Standard Essential Patent |
| **SME** | Small and Medium-sized Enterprises |
| **SSO** | Standard-Setting Organisation |
| **SSPPU** | Smallest Saleable Patent Practicing Unit |
| **TCU** | Telematics Control Unit |
| **TFEU** | Treaty of Functioning of the European Union |
| **TRIPS** | Trade-Related Aspects of Intellectual Property |
| **TT Guidelines** | Technology Transfer Guidelines |
| **TTBER** | Technology Transfer Block Exemption Regulation |
| **UK** | United Kingdom |
| **UMTS** | Universal Mobile Telecommunications System |
| **US** | United States |
| **V2X** | Vehicle-to-Everything |
| **VIU** | Value in Use |
| **WiMAX** | Worldwide Interoperability for Microwave Access |
| **WIPO** | World Intellectual Property Organisation |
| **WTO** | World Trade Organisation |

# *Introduction*

## I. Background to the study

Standardisation is a phenomenon which has increasingly shown over years its impact in many fields of technology. The information and communication technologies (ICT) sector is one of the most important areas where the benefits brought by technical standards are remarkably visible. Hundreds of patents may be required to boost complex technologies to be combined and work together effectively. In the ICT sector, standards are often engaged with the technologies which are protected by patents. By definition, a patent which protects the technology essential to a standard is called Standard Essential Patents (SEPs). The use of SEPs is *essential* since adherence to the standard mandates incorporating the patented inventions, they encompass[1].

Technical standards are omnipresent since they are considered as the foundation of *interoperability* amongst computer and communication devices. For instance, computers, mobile phones or any device connecting to the internet via Wi-Fi, Bluetooth or long-term evolution (LTE) use standardised technologies/platforms which are protected by SEPs. It is thereby impossible to manufacture standard-compliant products such as mobile phone or tablet without using technologies covered by one or more SEPs.

To set industry-wide technical standards, companies work together in Standard Developing Organisations (SDOs)[2]. This cooperation under the SDOs' framework

[1] European Commission, Competition Policy Brief, Standard Essential Patents, Issue 8 (2014). [hereinafter: EC, Competition Policy brief, SEPs]. Available at: https://ec.europa.eu/competition/publications/cpb/2014/008_en.pdf.

[2] It is worth mentioning that the term Standard Setting Organisation (SSO) is also widely used in the literature. However, we prefer to use the term SDOs because these organisations do not actually set standards; instead, they serve as venues for developing and creating technical specifications. After this stage, it is up to the market to decide whether the standard will be widely adopted or not.

is of great market benefits, especially in markets with *network effects* where the value of a product increases with the number of consumers using the same product. Standardisation in SDOs can be traced back to the early 20th century when various industries felt the need to develop standards to ensure interoperability, safety, and quality[3]. The International Electrotechnical Commission (IEC) was established in 1906 to develop and promote international standards for electrical and electronic technologies. In the United States (US), the American National Standards Institute (ANSI) was established in 1918 to coordinate and develop national voluntary standards. The development of SEPs began in the telecommunications industry with the development of standards for communication technologies such as GSM (Global System for Mobile Communications) and CDMA (Code Division Multiple Access) in the 1980s and 1990s[4]. Since then, SEPs have become an important part of the standardisation process, and the number of SEPs and their owners have been on the rise. For instance, in mobile connectivity standards alone, over 25,000 patent families have been declared to the European Telecommunication Standardisation Institute (ETSI) by an expanding group of SEP holders[5].

The mobile telecommunications industry accounts for the largest share of royalty payments for SEP licences, generating an estimated 14 to 18 billion EUR per year in patent royalty yield, along with an additional 4 billion EUR in non-monetary benefits from cross-licensing[6]. The EU's share of this is roughly 3 billion EUR per year[7]. It is important to note that a single standard can consist of thousands of technical contributions protected by patents owned by dozens or hundreds of SEP

[3] Roland Wenzlhuemer, 'The History of Standardisation in Europe', *The Institute of European History (IEG)*, 2010 <http://www.ieg-ego.eu/wenzlhuemerr-2010-en>. Para. 29.
[4] *Idem*.
[5] Rudi. Bekkers and others, *Landscape Study of Potentially Essential Patents Disclosed to ETSI*, ed. by Nikolaus Thumm (Luxembourg: Publications Office of the European Union, 2020) <https://doi.org/10.2760/313626>. P. 1.
[6] Alexander Galetovic, Stephen Haber, and Lew Zaretzki, 'An Estimate of the Average Cumulative Royalty Yield in the World Mobile Phone Industry: Theory, Measurement and Results', *Telecommunications Policy*, 42.3 (2018), 263–76 <https://doi.org/10.1016/j.telpol.2018.02.002>. P. 271.
[7] 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. Brussels, 27.4.2023. [hereinafter: Commission Staff Working Document on Proposal on SEP Regulation]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023SC0124&qid=1682711318413. P. 9.

owners. Additionally, a single product, such as a car, can implement multiple standards simultaneously.

Moreover, newly emerging technology standards are increasingly incorporating SEPs. As an example, SEPs play a crucial role in the development of 5G and the Internet of Things (IoT). In the present day, the IoT is revolutionising our lifestyles, work patterns, and interactions with the world. With the advent of advanced communication networks like smart cities, intelligent devices, and autonomous vehicles, the IoT is ushering in a new era of interconnected environments, offering numerous advantages[8]. These IoT innovations not only fuel the growth of emerging industries but also reshape traditional sectors such as automotive, healthcare, and agriculture, opening up fresh avenues for business and profoundly influencing society at large. The seamless connectivity between IoT devices and platforms will largely rely on the fifth generation of cellular networks and related technologies, which are likely to become an increasingly important part of our daily lives, offering unprecedented levels of connectivity and convenience[9].

The licensing of SEPs has become increasingly challenging due to the implementation of various standards across different sectors. To provide some numbers, there are currently around 75,000 declared SEPs worldwide, which has seen a six-fold increase over the past decade[10]. These SEPs are owned by approximately 260 companies worldwide, with the EU and US seeing a decrease in their share of SEPs from 22% to 15% and from 26% to 19%, respectively in the last seven years that implies that in the same period the share of other countries has increased 14%[11]. Chinese companies have witnessed a significant growth in their ownership of SEPs within a span of seven years. They now account for one-third of all SEPs, indicating a doubling of their share. Additionally, Korean and Taiwanese companies have also experienced an increase in their SEP ownership,

[8] OECD, 'The Internet of Things: Seizing the Benefits and Addressing the Challenges', *DSTI/ICCP/*CISP*(2015)3/FINAL*, 2016 <http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP(2015)3/FINAL&docLanguage=En>. Pp. 9-11.
[9] *Idem*.
[10] Commission Staff Working Document on Proposal on SEP Regulation. *Supra fn*. 7. P. 8.
[11] *Ibid.* P. 8.

with respective shares of 19% and 1.2% over the same period[12]. Two companies, Nokia and Ericsson, own around 80% of all SEPs held by EU companies, with the remaining 10% shared by around 27 firms from various sectors including telecoms, engineering firms, and research institutions. The types of SEP held by these companies are diverse, with telecoms accounting for the majority of SEPs, followed by audio/video technology and data storage and exchange technology[13].

Communication standards such as 3G, 4G, 5G, and Wi-Fi, along with audio/video compression and decompression standards such as MPEG and HEVC, and standardised technologies for data storage and exchange, including photo formats like JPEG, and Home Audio/Video Interoperability (HAVi) are widely used by manufacturers of telecommunication equipment, mobile phones, computers, tablets, and TV sets. With the rising adoption of the IoT, which encompasses connected cars, drones, payment terminals, tracking devices, smart meters, and other smart devices, many companies, especially Small and Medium-sized Enterprises (SMEs), are implementing these standards[14]. This great number of newcomers joining a play whose original players have different corporate culture and know-how, can create new challenges for the SEP community.

## II. Setting the context

SEPs combine two opposing elements: *the exclusivity of patents*, which bestows exclusive rights to their owners to limit or prevent the use of that technology and to profit, or not, from it by choosing how and to whom to license/sell patents, whether or not this is for remuneration; and *the public availability of standards*, which is intended to guarantee their collective use, widespread dissemination, compatibility and functionality of technology, as well as interoperability between devices.

The promise of licensing SEPs across an entire industry is a significant motivation for implementing companies to invest in standardisation activities. However, the exclusive rights granted by intellectual property law to inventors could hinder the

[12] *Idem*.
[13] *Idem.*
[14] *Ibid.* P. 4.

goal of making standards available for public use. In addition, during the standardisation process, participants choose one technology amongst those available at the time and exclude the rest. Such a practice is prone to create barrier for competing technologies in entering the market, as once a technology that is protected by patents becomes a part of a standard and investment has been made towards developing products that comply with the standard, it becomes difficult for technology implementers to work around the technology or switch to an alternative without infringing on the patents. Consequently, the SEP owner can become a monopolist or at least an unavoidable trading party for all implementers of the standard-complaint products. Therefore, antitrust authorities scrutinize patentee's behaviour[15] to ensure that it never leads to an abusive behaviour from competition law perspective[16].

Technology implementors have anyway limited options, i.e., either asking the SEP holders for a licence, or design around the patent for not producing/selling infringing products[17].

SEP owners typically license SEPs to implementers either for free or for royalties, depending on the standard and the industry. For example, SEPs related to internet standards are usually licensed royalty-free, while cellular and short-range communication standards, as well as CD/DVD, JPEG, MPEG, AAC, and HEVC technologies, typically require royalty payments[18].

The question of whether to license the entire IoT device or just the component that implements the SEP can be particularly challenging. Additionally, the royalty base for SEP licensing can also be difficult to determine, as it can be based on the price

[15] International Telecommunication Union, *Understanding Patents, Competition & Standardization in an Interconnected World*, 2014 <https://www.itu.int/en/ITU-T/Documents/Manual_Patents_Final_E.pdf>. Available at: https://www.itu.int/en/ITU-T/Documents/Manual_Patents_Final_E.pdf. P. 92.

[16] Case C-322/81 *Michelin vs. Commission,* EU:C:1983:313, para. 57; Case C-209/10 *Post Danmark,* EU:C:2012:172, para. 26; and Case C-170/13 *Huawei Technologies Co. Ltd vs. ZTE Corp.*, EU:C:2015:477. Para. 46.

[17] Jorge L. Contreras, 'The Global Standards Wars: Patent and Competition Disputes in North America, Europe and Asia', *Utah Law Digital Commons*, 2 (2017), 1–30 <https://dc.law.utah.edu/cgi/viewcontent.cgi?article=1193&context=scholarship>. P. 3.

[18] Commission Staff Working Document on Proposal on SEP Regulation. *Supra fn*. 7. Pp. 8-11.

of the end product, or the value of the component that implements the SEP.

While these royalties are negotiated through bilateral arrangements or through joint licensing programs like patent pools[19], standard implementers constantly prefer to use the SEP at little or no cost, but the SEP holders who have invested heavily in their patents seek a beneficial *quid pro quo*. This conflict between the private interests of two businesses competing for greater benefits may extend further and become a matter of public concern and consumer welfare. While disputes currently seem to be most prevalent in the automotive sector, they could potentially arise in other industries as well including health, energy, smart manufacturing, digital, and electronics ecosystems[20]. To ensure device interoperability, which is in the public interest, SEP holders must provide implementers with licensing agreements that comply with competition law.

The fact that manufacturers are locked into standardised technology may increase the bargaining power of SEP holders and allow them to engage in abusive behaviour, such as seeking or threatening to seek injunctions to force manufacturers to accept unfair and unreasonable terms under licensing agreements[21]. SEP holders may also ask for excessive royalties, a phenomenon known as "patent hold-up", which harms competitors, increases prices, and ultimately hampers innovation. In some cases, SEP holders may fully refuse manufacturers' access to the standard. These actions can be targeted by competition authorities as anti-competitive behaviour[22]. The Commission's Horizontal Guidelines state that "*preventing certain companies from obtaining effective access to the results of the standard-setting process (the specification and/or the essential IPR for implementing the*

[19] Pool is a platform for multiple owners of SEPs to offer a consolidated license to multiple licensees. This approach facilitates more efficient licensing and helps streamline the licensing process. See Justus Baron, Damien Geradin, and others, 'Group of Experts on Licensing and Valuation of Standard Essential Patents "SEPs Expert Group" (E03600) Contribution to the Debate on SEPs', January, 2021 <https://ec.europa.eu/docsroom/documents/45217>. Pp. 15-16.
[20] Luke Mcdonagh and Enrico Bonadio, *Standard Essential Patents and the Internet of Things*, 2019 <https://www.europarl.europa.eu/RegData/etudes/IDAN/2019/608854/IPOL_IDA(2019)608854_EN.pdf>. P. 9.
[21] *Ibid.* P. 4.
[22] *Idem*.

*standard*)" leads to anti-competitive results[23].

On the other hand, the standard implementers may carry out "hold-out" practices under which they refuse to enter into licensing negotiations or delay the negotiation process until the patent owner's offer reaches an unreasonably low level. This is often done with the expectation that the patent owner will lower their royalty demands or will be forced to accept lower royalty rates due to the lengthy negotiations[24]. Hold-out can lead to inefficiencies in the market because it creates uncertainty around licensing rates and discourages patent owners from investing in new technologies. It can also make it difficult for standards to be effectively implemented[25].

To address the issue of tension between standard implementers and patent holders, SDOs have established IPR policies. Under these policies, patent holders agree to make their patents available under Fair, Reasonable, and Non-Discriminatory (FRAND) terms if the SDOs make their patent an SEP[26]. The incorporation of patented technology into a standard creates market reliance on that patent and increases its value[27], hence the FRAND commitment is crucial to offsetting the potential anticompetitive effects of standardisation agreements while preserving the procompetitive aspects of standard setting[28]. An empirical study conducted in 2010 found that 78% of the 251 interoperability standards implemented in modern laptops were developed under FRAND terms, while 22% were developed under

[23] European Commission, Guidelines on the applicability of Art. 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements [2011] OJ C11/1. [hereinafter: Horizontal Guidelines]. Para. 268.
[24] Richard A. Epstein and Kayvan B. Noroozi, 'Why Incentives for "Patent Holdout" Threaten to Dismantle FRAND, and Why It Matters', *Berkeley Technology Law Journal*, 32.4 (2017), 1381–1432 <https://www.jstor.org/stable/10.2307/26490239>. P. 1384.
[25] Gerard Llobet and Jorge Padilla, 'A Theory of Socially Inefficient Patent Holdout', *Journal of Economics and Management Strategy*, 32 (2023), 424–49 <https://doi.org/10.1111/jems.12508>.
[26] European Commission, Communication on Intellectual Property Rights and Standardisation, COM (1992) 445 Final, Brussel. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:1992:0445:FIN:EN:PDF.
[27] *In the Matter of Motorola Mobility LLC and Google Inc.,* Analysis of proposed consent order to aid public comment, File No. 121-0120, 2013. P. 2. Available at: https://www.ftc.gov/sites/default/files/documents/cases/2013/01/130103googlemotorolaanalysis.pdf.
[28] *Ibid.*

royalty-free terms[29].

FRAND commitments were encouraged by the Commission in 1992. The Commission stated that "*European standard-making bodies should ensure that all persons wishing to use European standards must be given access to those standards, and standards are available for use on fair, reasonable and non-discriminatory terms*"[30].

In the late 1990s, the ETSI developed a FRAND policy on SEPs. Since then, this approach became widely adopted in other SDOs such as the International Organisation for Standardisation (ISO) and the Institute of Electrical and Electronics Engineers (IEEE). Most SDOs require their participants to make a commitment to license their patented technologies on FRAND terms after their patents are selected and incorporated into the standard. If the patent holder is reluctant to grant a FRAND commitment, their patent must not be selected nor included in the standard[31]. The Commission emphasises on the effective access to standards and requires participants of SDOs to provide an irrevocable commitment in writing to offer to license essential IPR to all third parties on FRAND terms[32].

Aiming at mitigating the risks of patent hold-up and hold-out, the FRAND commitment seeks to balance the interests of both SEP owners and standard implementers by ensuring that SEP owners receive fair and appropriate compensation for their innovations, while also enabling widespread implementation of standards[33]. The FRAND policy helps to prevent anti-competitive behaviour, such as seeking excessive licensing fees or refusing to negotiate licensing terms and promotes a level playing field for all parties involved

[29] Brad Biddle, Andrew White, and Seam Woods, 'How Many Standards in a Laptop? (And Other Empirical Questions)', 2010 <https://doi.org/http://dx.doi.org/10.2139/ssrn.1619440>. P. 1.
[30] European Commission, Communication on Intellectual Property Rights and Standardisation, COM (1992) 445 Final, Brussel, 27.11.1992. Para. 6.2.1.
[31] ITU-T/ITU-R/ISO/IEC, 'Common Patent Policy', *ITU* <https://www.itu.int/en/ITU-T/ipr/Pages/policy.aspx>.
[32] Horizontal Guidelines. *Supra fn*. 23. Para. 285.
[33] Proposal for a Regulation of the European Parliament and of the Council on standard essential patents and amending Regulation (EU)2017/1001, Brussels, 27.4.2023 COM(2023) 232 final. [hereinafter: EC Proposal on SEP Regulation]. Available at: https://single-market-economy.ec.europa.eu/system/files/2023-04/COM_2023_232_1_EN_ACT_part1_v13.pdf. Pp. 20-21.

in the standard-setting process. FRAND commitment help resolve conflicts between standard implementers and patent holders by preventing disputes around the fairness and reasonableness of licensing terms and conditions. The non-discriminatory prong of FRAND can also prevent undue discrimination against standard implementers in their licensing negotiations[34]. Antitrust and competition authorities consider FRAND licensing important[35].

The wide and deep interconnectivity between technologies covered by a patent has led to a wide range of business models and licensing practices, making it increasingly difficult to establish clear FRAND licensing principles. In the smartphone industry, the rise in patent litigation has triggered debates over the implications of FRAND commitment. The fact that licensing takes place after the adoption of a standard has raised specific concerns that FRAND commitment is too loose to effectively prevent SEP owners from unduly leveraging market power once the standard is implemented (hold-up argument[36]) or, on the contrary, that they enable implementers to deliberately avoid seeking licenses for SEPs (hold-out argument). This lack of clarity in FRAND terms has resulted in numerous SEP litigations, and the absence of a specific enforcement mechanism for FRAND commitment is often identified as the root cause of such litigations.

Licensing of SEPs can often become a contentious issue, leading to disputes and legal battles. SEP holders may claim that their patents have been infringed and may seek an injunction to protect their intellectual property rights. However, the legitimacy and availability of seeking an injunction for SEP holders who have made a FRAND commitment is another topic of controversy. The debate around the use of injunctions by SEP holders under FRAND commitment has raised concerns about the potential misuse of market power and the impact on innovation and

[34] Xiaoping Wu, *Interplay between Patents and Standards in the Information and Communication Technology (ICT) Sector and Its Relevance to the Implementation of the WTO Agreements*, WTO Working Paper ERSD-2017-08, 2017 <https://www.wto.org/english/res_e/reser_e/ersd201708_e.htm>. P. 8.
[35] Jorge L. Contreras, 'Global Rate Setting: A Solution for Standards-Essential Patents?', *Washington Law Review*, 94.2 (2019), 701–57 <https://digitalcommons.law.uw.edu/wlr/vol94/iss2/5>. P. 704.
[36] Mark A. Lemley and Carl Shapiro, 'Patent Holdup and Royalty Stacking', *Texas Law Review*, 85.7 (2007), 1991–2049 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=923468>.

competition.

While seeking an injunction is a fundamental right guaranteed under the EU Charter of Fundamental Rights and a statutory remedy available to patent holders for infringement of their patent, in the SEP context, there is a risk of potential abuse which has led to limitations on seeking injunctions to balance the interests of both parties. The European Court of Justice's ruling in 2015 in the *Huawei*[37] case confirmed that in the EU a dominant SEP holder which has given a FRAND commitment would infringe competition law if it sought an injunction in patent litigation against the user of standardised technology and if the user acted in a way consistent with being a *willing licensee*.

SEP litigation can take various forms. Not only on the SEP holders' side, but also from that of the implementers who may go to court, claiming that the SEP holders are breaching their FRAND commitment. As discussed earlier too, antitrust complaints may also arise, with implementers alleging that SEP holders' conduct is anticompetitive, such as refusing to license or offering non-FRAND licenses. Given the significant number of SEP litigations, there have been suggestions that alternative dispute resolution (ADR) could be a more efficient way to resolve disputes[38]. While the arbitration of intellectual property disputes, including patent disputes, is not new, standards-related cases present unique considerations to the arbitration landscape. A growing number of people are advocating for the use of arbitration to settle disputes related to SEPs[39]. Despite this, there is a lack of guidance available for parties, SDOs, and tribunals looking to establish effective

[37] Case C-170/13 *Huawei Technologies Co. Ltd vs. ZTE Corp.*, EU:C:2015:477. [hereinafter: *Huawei*].
[38] Jorge L. Contreras and David L. Newman, 'Developing a Framework for Arbitrating Standards-Essential Patent Disputes', *Journal of Dispute Resolution*, 1, 2014, 23–51 <http://papers.ssrn.com/abstract=2335732>.
[39] See e.g., Mark A. Lemley and Carl Shapiro, 'A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents', *Berkeley Technology Law Journal*, 28.1 (2013), 1135–67 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2243026>; Joseph S Miller, 'Standard Setting, Patents, and Access Lock-In: RAND Licensing and the Theory of the Firm', *Indiana Law Review*, 40 (2007) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=924883>; Mark A Lemley, 'Ten Things to Do about Patent Holdup of Standards (and One Not To)', *Boston College Law Review*, 48.4 (2007), 149–168 <http://heinonlinebackup.com/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/bclr48&section=12>; Contreras and Newman.

arbitration procedures for these complex disputes.

# III. Problem statement

Based on the literature, we can classify SEP-related legal disputes into three levels:

- Level 1: Standardisation process in SDOs.
- Level 2: Access to a standard and negotiation to get a FRAND licence.
- Level 3: Issues raised when parties are unable to reach an agreement (Level 2), thereby opt for resorting to legal measures (court, antitrust authorities, or arbitration).

In this section, these levels are elaborated and their relationship to the thesis subject is shown.

## A. Level 1: Standardisation processes in SDOs

SDOs are responsible for developing and maintaining technical standards that enable the harmonisation of products, services, and systems across industries. The process can, however, raise legal concerns. From a competition law perspective, the main concern is the potential for anti-competitive behaviour including competition restriction, which can take many forms, ranging from the adoption of proprietary technologies to the manipulation of standardisation processes in order to exclude or disadvantage potential competitors.

As a matter of fact, the legal and antitrust aspects of standardisation processes have been well-researched since the early 20th century[40]. The most recent works done on this topic include those carried out in 1990s which tended to focus on the standard-

[40] James E. Abell, 'Setting the Standard: A Fraud-Based Approach to Antitrust Pleading in Standard Development Organization Cases', *University of Chicago Law Review*, 75.4 (2008), 1609–40; Justus Baron, Jorge L. Contreras, and Pierre Larouche, 'Balance and Standardisation: Implications for Competition and Antitrust Analysis', *Antitrust Law Journal*, 84 (2022) <https://doi.org/10.2139/ssrn.4142754>; Herbert Hovenkamp, 'FRAND And Antitrust', *Cornell Law Review, 2020*, 35 (2020), 1683–1744; Jorge L. Contreras, 'Rethinking RAND: SDO-Based Approaches to Patent Licensing Commitments', *ITU PATENT ROUNDTABLE*, October, 2012 <https://ssrn.com/abstract=2159749>; Mark A. Lemley, 'Antitrust and the Internet Standardisation Problem.', *Connecticut Law Review*, 28 (1996), 1041 <https://doi.org/http://dx.doi.org/10.2139/ssrn.44458>.

setting process itself rather than the outcomes of cooperative standard setting[41], including the work of Anton and Yao in 1995 who questioned whether antitrust law should allow the collaboration among competitors in standardisation process. By the beginning of 2000s, several antitrust concerns were identified. Shapiro in 2001 was amongst the pioneers having started to put forward issues including patent thicket and hold-up problem by sharing the idea that to remove antitrust concern, the agreement in question should lead to more competition than would occur without that agreement[42]. The Commission in the Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Cooperation Agreements, published in 2011 (revised in 2023), addresses competition concerns arising from standardisation agreements. It identifies three following practices that have the potential to limit competition, hinder innovation, and result in higher prices for consumers through such agreements[43]:

1. Collusive discussions on pricing within SDOs, either in the upstream or downstream market.
2. Preventing the contribution of new technologies to the standard once it has been developed and the industry is locked-in.
3. Selective licensing that discriminates against certain market players and impedes the implementation of standardised technologies.

## B. Level 2: Access to SEPs for standard implementers

The number of SEP-related disputes has such increased since 2010 that in the literature it is sometimes referred to as a "patent wars". As suggested by Contreras, a distinct change in SEP litigations stream has since taken place in the sense that not only the quantity of them has soared, but also their theme has changed[44]. In this context, one major challenge is the access to SEP for standard implementers, which

[41] James J. Anton and Dennis A Yao, 'Standard Setting Consortia, Antitrust and High-Technology Industries', *Antitrust Law Journal*, 64.1 (1995), 247–65 <https://www.jstor.org/stable/40843322>.
[42] Carl Shapiro, 'Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting', *Innovation Policy and the Economy*, 1.January (2001), 119–50 <https://doi.org/10.2139/ssrn.273550>.
[43] Horizontal Guidelines. *Supra fn*. 23. At Standardisation Agreements section.
[44] Contreras, 'The Global Standards Wars: Patent and Competition Disputes in North America, Europe and Asia'.

can be affected by various practices by the SEP holder, including excessive pricing, anti-competitive behaviour of Non-Practicing Entities (NPEs), competition implications of violating a FRAND commitment, disputes about the meaning and nature of FRAND commitment, the appropriate method for calculating FRAND royalties, and tying problems.

The literature does not agree on whether and how excessive pricing should be applied under Article 102 TFEU. Having considered patent hold-up and excessive pricing as a *per se* violation of Article 102 TFEU, Fuchs and Cary argued that the competition authorities should control excessive prices[45]. By contrast, Geradin though recognising the legal basis for the competition law intervention through Article 102 TFEU, suggests that the competition authorities should not control the level of royalties and should not turn into a price regulator since a wrong decision may end up in detrimental effects on the economy[46]. On the other hand, there is a debate about the role of NPEs and their conduct in the patent market. While some criticise their business conduct because of their incentive to raise competitors' costs and lack of contribution to innovation, others argue that NPEs can increase competition in the upstream market, provide liquidity to the market for patents, and stimulate innovation[47].

The ECJ and the EU Commission along with the Federal Trade Commission (FTC) and the US Department of Justice (DOJ) have so far dealt with a significant number of standards-related issues. However, several issues remain unresolved yet, including the meaning and the nature of FRAND. The literature does not agree on whether a FRAND commitment prohibits exploitative licensing practices, or it only

[45] Andreas Fuchs, 'Patent Ambush Strategies and Article 102 TFEU', in *More Common Ground for International Competition Law?*, ed. by Josef Drexl and others (Edward Elgar Publishing, 2011) <http://classic.austlii.edu.au/au/journals/ELECD/2011/750.html>.

[46] Damien Geradin, 'European Union Competition Law, Intellectual Property Law and Standardisation', *The Cambridge Handbook of Technical Standardisation Law: Competition, Antitrust, and Patents*, 2017, 78–93 <https://doi.org/10.1017/9781316416723.008>.

[47] V Rajkumar, 'The Effect of Patent Trolls on Innovation: A Multi-Jurisdictional Analysis', *Indian Journal of Intellectual Property Law*, 1 (2008), 64 <http://ssrn.com/abstract=1320553>; Richard Schmalensee, 'Standard-Setting, Innovation Specialists and Competition Policy', *Journal of Industrial Economics*, 57.3 (2009), 526–52 <https://doi.org/10.1111/j.1467-6451.2009.00388.x>; Damien Geradin, Anne Layne-farrar, and A. Jorge Padilla, 'Elves or Trolls? The Role of Nonpracticing Patent Owners in the Innovation Economy', *Industrial and Corporate Change*, 21.1 (2012), 73–94 <https://doi.org/10.1093/icc/dtr031>.

prevents exclusionary practices. Regarding the latter, Geradin and Rato maintain that a FRAND commitment is a promise (given by a SEP holder who is ready to engage in good faith negotiations with any company wishing to implement the standard), which does not restrict the level of royalties that the SEP holder can charge[48]. However, some including Carrier, consider FRAND commitment as a tool aiming at preventing both exploitative and exclusionary practices since both can harm competition[49].

In addition, the legal nature of a FRAND commitment is not globally agreed upon yet. While FRAND commitment is seemingly understood to be a contractual obligation in the US at least in the view of the DOJ[50], in the EU (in particular in Germany) the trend seems to be considering it as a competition law obligation[51]. These attitudes lead to different ramifications in terms of SEP disputes since competition law obligations are permanent, but a FRAND commitment as contractual obligation is valid only between the contracting parties[52].

Cross-licensing and patent pools are the two predominant mechanisms used in the field of intellectual property licensing. Cross-licensing allows companies to exchange license for their respective patents. This practice facilitates the adoption

[48] Damien Geradin and Miguel Rato, 'Can Standard-Setting Lead To Exploitative Abuse? A Dissonant View on Patent Hold-Up, Royalty Stacking and the Meaning of Frand', *European Competition Journal*, 3.1 (2015), 101–61 <https://doi.org/10.5235/ecj.v3n1.101>.

[49] Michael A Carrier, 'A Roadmap to the Smartphone Patent Wars and FRAND Licensing', *CPI Antitrust Chronicle*, 2.April (2012) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2050743>.

[50] Makan Delrahim, 'Antitrust Law and Patent Licensing in the New Wild West', 2018 <https://www.justice.gov/opa/speech/file/1095011/download>.

[51] Douglas H. Ginsburg, Joshua D. Wright, and Koren W. Wong-Ervin, 'The Troubling Use of Antitrust to Regulate FRAND Licensing Douglas', *CPI Antitrust Chronicle*, 10.1 (2015), 2–8; Damien Geradin and Miguel Rato, 'FRAND Commitments and EC Competition Law', 2009, 1–42 <https://doi.org/http://dx.doi.org/10.2139/ssrn.1527407>;J. Gregory Sidak; Gregory Sidak, 'The FRAND Contract'.; Renato Nazzini, 'Global Licences under Threat of Injunctions : FRAND Commitments , Competition Law , and Jurisdictional Battles', *Journal of Antitrust Enforcement*, 00 (2023), 1–27.

[52] The obligations under competition law are permanent and their application in all cases does not depend on whether or not the obligations are stated in the agreement adopting the standard or in the SDO IPR policies. It is not thus sufficient for the SDOs to merely include these obligations formally in their policies. See: John Temple Lang, 'Standard Essential Patents and Court Injunctions in the High Tech Sector under EU Law after Huawei', *ERA Forum*, 16.4 (2015), 585–608 <https://doi.org/10.1007/s12027-015-0406-z>. P. 587.

and interoperability of standardised technologies[53]. Patent pools are collaborative agreements in which multiple patent holders license their patents to one another or to third parties[54]. This approach offering some advantages like reducing transaction costs and simplifying licensing negotiations is engaged with concerns regarding potential anti-competitive behaviour. As a result, antitrust authorities closely examine the licensing terms, transparency, and potential anti-competitive effects that may be associated with patent pools[55].

SEP licensing in IoT and in particular in connected car industry proved to be challenging, too. In addition to the technical interoperability complexities, the main legal concern in IoT is to determine the appropriate licensing level and to define a fair basis for the royalty rate. In terms of the former, debates are mostly around whether a device-level licencing should be opted or a component-level one, where the proponents of each attitude argue that their desired level fits better into the complexity of the technology and perturbs less innovation and competition. Similarly, some calculate royalty rate in terms of the component price into which the SEP is integrated, but others suggest a calculation based on the selling price of the final product[56].

Although the above-mentioned issues have drawn attention in academic studies, the legal ambiguities about them still are significant having led so far to different approaches by courts in the two jurisdictions (EU and US) which are studied in this

[53] OECD, 'Licensing of IP Rights and Competition Law', *DAF/COMP(2019)3*, 2019. Available at: https://one.oecd.org/document/DAF/COMP(2019)3/en/pdf. Pp. 24-27.
[54] *Idem*.
[55] Shapiro; Anne Layne-Farrar and Josh Lerner, 'To Join or Not to Join: Examining Patent Pool Participation and Rent Sharing Rules', *International Journal of Industrial Organization*, 29.2 (2011), 294–303 <https://doi.org/10.1016/j.ijindorg.2010.08.006>; Ryan Lampe and Petra Moser, 'Patent Pools, Competition, and Innovation-Evidence from 20 US Industries under the New Deal', *Journal of Law, Economics, and Organization*, 32.1 (2016), 1–36 <https://doi.org/10.1093/jleo/ewv014>; Ryan L Lampe and Petra Moser, *Do Patent Pools Encourage Innovation? Evidence from the 19th-Century Sewing Machine Industry*, *Working Paper 15061*, 2009 <https://doi.org/10.1017/CBO9781107415324.004>; Robert P. Merges and Michael Mattioli, 'Measuring the Costs and Benefits of Patent Pools Robert', *Ohio State Law Journal*, 78 (2017), 281 <https://ssrn.com/abstract=2759027>.
[56] Baron, Geradin, and others. Part. 3.2 and Commission Staff Working Document on Proposal on SEP Regulation. *Supra fn*. 7. Pp. 86-87.

thesis[57].

## C. Level 3: Legal disputes

When SEP holders and standard implementers are unable to reach a license agreement, they typically resort to seeking resolution through third parties, i.e., courts, antitrust authorities, or arbitration.

In litigation, the SEP holder may seek an injunction as a result of infringement, or a standard implementer may file an antitrust complaint with the argument that the SEP holder's conduct is abusive from competition law perspective, or the conduct has breached FRAND commitment from contract law point of view. Such a claimed conduct can include refusal to license, seeking injunctions, excessive pricing, or other behaviours deemed non-FRAND. Alternatively, the parties may go to court, with the standard implementer claiming that the SEP holder is breaching their FRAND commitment and asking the courts to impose a FRAND licence.

The issue of seeking or threatening injunctive relief in cases of patent infringement is still contentious when it involves a SEP bound by a commitment to FRAND licensing. When a patent holder makes such a commitment to a SDO in accordance with its IPR policy, it typically assures that it is ready to offer licenses for its SEPs on FRAND terms to any party implementing the standard. FRAND commitment provides reassurance to implementers who inevitably use technology covered by SEPs, ensuring that reasonable licenses will be available for those rights. This raises the question of whether a SEP owner, who has expressed willingness to license, should be allowed to seek injunctions or exclusion orders against implementers.

The question whether a SEP holder under FRAND commitment is hindered from seeking an injunction proved to be controversial in the literature. Lemley and Shapiro argue that a SEP holder waives implicitly his right to injunction through

[57] District Court Mannheim, decision of 18 August 2020, *Nokia vs. Daimler,* 2 O 34/19; District Court of Munich, judgment of 10 September 2020, *Sharp vs. Daimler*, 7 O 8818/19; US Court of Appeal for the Ninth Circuit, decision of 11 August 2020, *Federal Trade Commission vs. Qualcomm Inc*. (969 F.3d 974, 9th Cir 2020) and US Court of Appeal, *HTC vs. Ericsson* (6:18-vc-00243-JRG, Doc 538 (ED Tex 2019).

giving commitment to license his SEP to all third parties under FRAND terms[58]. Shapiro maintains that enforcing injunctions against SEP implementers would disturb the success of standard's interoperability and would harm competitor's business, even in situations where he was not acting in bad faith[59]. Dolmans also argues that "*owners of essential IPR for de facto or de jure standards (and especially those who have committed to FRAND licensing in order to obtain an exemption under Article 81(3) EC) should limit themselves to suits for damages and refrain from requesting injunctive relief against implementers*"[60]. By contrast, Geradin and Rato are those among who refuse the "waiver theory" arguing that FRAND commitment cannot be deemed to preclude a SEP holder from his fundamental right to seek injunction in case his rights are infringed[61]. Sidak backs this view stating that even under contractual obligation of a FRAND commitment, a SEP holder is yet authorized to seek injunction[62].

Arbitration is becoming more and more popular in resolving SEP/FRAND disputes as it offers a private and potentially faster approach toward settlement compared to litigation. In addition, it allows the parties to choose their own arbitrator and to tailor the process to their specific needs. However, there still exist debates in the SEP community regarding arbitration involvement which prove that the subject requires more investigation[63].

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[58] Lemley and Shapiro, 'Patent Holdup and Royalty Stacking'.
[59] Shapiro.
[60] Maurits Dolmans, 'Standards for Standards', *Fordham International Law Journal*, 26.1 (2002), 163–208 <https://ir.lawnet.fordham.edu/ilj/vol26/iss1/6/>. P. 205.
[61] Geradin and Rato, 'Can Standard-Setting Lead To Exploitative Abuse? A Dissonant View on Patent Hold-Up, Royalty Stacking and the Meaning of Frand'.
[62] Gregory Sidak, *The Meaning of FRAND, Part II: Injunctions*, *Journal of Competition Law and Economics*, 2015, XI <https://doi.org/10.1093/joclec/nhv005>.
[63] Peter Georg Picht and Gaspare Tazio Loderer, 'Arbitration in SEP/FRAND Disputes: Overview and Core Issues', *Journal of International Arbitration*, 36.5 (2019), 575–94 <https://doi.org/10.5167/uzh-181131>; Damien Geradin, 'FRAND Arbitration: The Determination of Fair, Reasonable and Non-Discriminatory Rates for SEPs by Arbitral Tribunals', *TILEC Discussion Paper No. 2016-028,* October, 2016 <https://doi.org/10.2139/ssrn.2833200>; Robert Briner, 'The Arbitrability of Intellectual Property Disputes with Particular Emphasis on the Situation in Switzerland', *Worldwide Forum on the Arbitration of Intellectual Property Disputes*, 1994 <https://www.wipo.int/amc/en/events/conferences/1994/briner.html>; Anne Martin and Mason Derek, 'Arbitration: A Quick and Effective Means for Patent Dispute Resolution', *Les Nouvelles - Journal of the Licensing Executives Society*, 2011 <http://lesnouvelles.lesi.org/lesnouvelles2011/lesNouvellesPDF12-2011/2-Mason R(p.269-

## IV. Research target and methodology

In this research, we focus on the Level 2 and Level 3 problems as the Level 1 has been already explored vastly in the literature that provides us with a basis to tackle the other levels. In the Level 2 context, licensing mechanism in patent pools is examined. In addition, licensing levels in IoT supply chains are studied to discuss the way that royalty basis can be determined. In terms of the Level 3, seeking injunction will be investigated given that it often triggers SEP disputes and is still being debated in legal circles. At last, challenges related to arbitration in SEP/FRAND context will be discussed in response to the recent trend towards arbitration and its impact on the SEP community[64].

This study is performed by means of desk research, involving the review of the relevant case law as well as the relevant legal, economic and technological academic scholarship. This interdisciplinary study needs to explore SEPs in ICT and IoT to understand their dynamics. In addition, comparative analysis of related regulations and decisions taken by courts and competition authorities in Europe and

278).pdf>; M A Smith and others, 'Arbitration of Patent Infringement and Validity Issues Worldwide', *Harvard Journal of Law & Technology*, 19.2 (2006), 299 <https://www.international-arbitration-attorney.com/wp-content/uploads/arbitrationlaw19HarvJLTech2991.pdf>; Contreras and Newman.

[64] The WIPO Arbitration and Mediation Centre has provided tailored model submission agreements that parties may use to refer a dispute concerning the determination of FRAND terms. These model agreements seek to ensure a cost-and time- effective FRAND determination and have been developed further to a series of consultations conducted by the WIPO Centre with leading patent law, standardisation and arbitration experts from several jurisdictions. WIPO, *Arbitration for FRAND Disputes Model Submission Agreement*, 2017 <https://www.wipo.int/amc/en/center/specific-sectors/ict/frand/annex1/>. The WIPO also has offered special guidance for SEP/FRAND ADR which addresses important matters including scope, appointment procedure, procedural schedule, applicable law, confidentiality, interim measures, and appeal. This centre has also expressed interest in contribution to an essentiality assessment scheme. Available at: (https://www.wipo.int/export/sites/www/amc/en/docs/wipofrandadrguidance.pdf). In addition, the Munich IP Dispute Resolution Forum (IPDR) has also provided the FRAND ADR Case Management Guidelines which specifically set out a series of guidelines on FRAND issues and ADR mechanism including arbitration. This forum in Munich aiming at developing and promoting effective methods for dispute resolution in the field of Intellectual Property through a series of discussion events. The Guidelines aim to assist corporate and legal decision makers in designing an efficient and strategic approach to FRAND disputes. They contain some distinctive features, such as assistance in defining the scope of FRAND-ADR proceedings, balancing confidentiality with public policy considerations, and evaluating the possibility to appeal the awards. Munich IP Dispute Resolution Forum, *FRAND ADR Case Management Guidelines*, *IPDR-FORUM*, 2018 <https://www.ipdr-forum.org/wp-content/uploads/2020/06/frand-guidelines_helvetica_rz6_klein_online.pdf>.

in the US is employed whenever it is appropriate and in line with the research targets. This comparative study provides a comprehensive overview of the current situation in terms of the above-mentioned SEP issues through examining (a) the approaches applied by courts and antitrust authorities, and (b) the outcomes of litigations under the EU and the US judicial systems.

For each research question then, the proposed methodology is founded on the analysis of the related regulations, policies and a number of decisions taken by courts and competition authorities beside discussing the relevant literature, that hopefully can provide the reader with a better understanding regarding the SEP litigations.

## V. Jurisdictional scope

All the countries engaged in technology development are involved in SEP, too. Classically, the EU and the US are regarded as the major jurisdictions for SEP-related litigations not only due to their strong legal system, but also as they host a very significant number of technology companies operating in their regions. Asia (Japan, China, India and South Korea) along with Latin America (Brazil) have recently shown their involvement in SEP through the issuance of governmental policies as there the number of important litigations is on rise. However, the EU and US still remain the jurisdictions which demand the most more clarity and research in SEP context, thereby are chosen as the scope for the current research.

In the EU, the European Commission (EC) has been long active in regulating SEP-related disputes through competition law. The Commission issued a set of guidelines on the licensing of SEPs, which provide a framework for determining when and how SEP holders can seek injunctions against potential licensees. They also provide guidance on how to calculate FRAND licensing terms. The following documents (listed in chronological order) has been released by the EC on SEPs:

Proposal for a Regulation of the European Parliament and of the Council on

standard essential patents and amending Regulation[65] and the Commission Staff Working Document on this proposal[66]; 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 [67]; Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, ICT Standardisation Priorities for the Digital Single Market[68]; Communication from the Commission to the Council, the European Parliament, and the European Economic and Social Committee, Towards an increased contribution from standardisation to innovation in Europe[69]; European Commission, Competition Policy Brief, Standard Essential Patents [70], European Commission, Communication on Intellectual Property Rights and Standardisation[71].

In the US, the legal system provides a framework for resolving SEP disputes through both antitrust and patent law, where courts have a major role in setting legal precedents for SEP disputes. In addition, The DOJ and the US Patent and Trademark Office (USPTO) act as policy makers on the SEP issues. They issued a joint policy statement on the enforcement of SEPs in 2013 (updated in 2019), which outlines best practices for patent holders seeking to enforce their SEPs. The 2019

[65] EC Proposal on SEP Regulation. *Supra fn*. 33.
[66] Commission Staff Working Document on Proposal on SEP Regulation. *Supra fn*. 7.
[67] Brussels, 29.11.2017 - COM(2017) 712 final - 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. [hereinafter: EC, setting out the EU approach to SEPs]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0712.
[68] Brussels, 19.4.2016 - COM(2016) 176 final - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, ICT Standardisation Priorities for the Digital Single Market. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0176.
[69] Brussels, 11.3.2008 - COM(2008) 133 final - Communication from the Commission to the Council, the European Parliament, and the European Economic and Social Committee, Towards an increased contribution from standardisation to innovation in Europe. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0133:FIN:en:PDF
[70] EC, Competition Policy brief, SEPs. *Supra fn*. 1.
[71] European Commission, Communication on Intellectual Property Rights and Standardisation, COM (1992) 445 Final, Brussels. [hereinafter: EC, Communication on IPRs and Standardisation]. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:1992:0445:FIN:EN:PDF.

updated policy statement covers the main SEP challenges[72] as it emphasises the importance of transparency in SEP licensing negotiations, providing information on licensing terms, royalty rates, and the patents involved. It also encourages SEP holders to offer licenses on FRAND terms and to avoid seeking injunctions against willing licensees. It also includes guidance on the use of alternative dispute resolution mechanisms, such as arbitration and mediation, as means of resolving SEP-related disputes. It notes that such mechanisms can be faster and less expensive than litigation and can help preserve business relationship between parties[73].

## VI. Research outline

Once a patent becomes SEP as a result of the collaboration amongst technology developers agreeing on certain specifications for a particular product, it must reach the hands of standard implementers in a legal manner in order to allow them to create their interoperable devices. In this doctoral research, we follow this journey from the patent creation to its final point where the implementer incorporates it into their product. As SEPs may reach a patent pool hub at their first stop in their journey, the hubs are studied as the first research topic where we investigate how EU competition law can promote patent pools. Ultimately, SEPs are to be implemented and nowadays implementation is mostly carried out through IoT value chains. Hence, as the second topic, SEP licensing in IoT devices including connected cars is studied.

The reality is that SEPs often face legal battles with claims of infringement. To cover this, the thesis will examine, as the third topic, whether injunction is a

[72] USPTO-DOJ-NIST, Policy Statement on Remedies for Standard Essential Patents Subject to Voluntary F/RAND Commitments December 19, 2019. [hereinafter: US Policy Statement on Remedies for SEPs, 2019]. Available at: https://www.justice.gov/atr/page/file/1228016/download. And its version of 2013. Available at: https://www.justice.gov/atr/page/file/1118381/download.

[73] It is worth noting that on June 8, 2022, the DOJ, USPTO and the National Institute of Standards and Technology (NIST), (the Agencies) announced the withdrawal of the 2019 mentioned Policy Statement. In July 2021, President Biden issued an Executive Order on Promoting Competition in the American Economy. In response to this Executive Order, the Agencies issued a Draft Policy Statement on Licensing Negotiations and Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments and a request for public comments through a Dec. 6, 2021 news release. After a review of those comments, the Agencies announced the withdrawal of the 2019 Statement. Available at: https://www.justice.gov/opa/pr/justice-department-us-patent-and-trademark-office-and-national-institute-standards-and.

legitimate remedy under FRAND commitment. At last, we examine challenges that one may face in using arbitration as a resolution mechanism in FRAND-related disputes.

These four topics which were subject of four separate papers that were published in the course of the doctoral trajectory, are presented in the thesis in two parts: substantive and procedural. The substantive section covers patent pools and SEP licensing in IoT value chains, and the procedural section addresses the seeking injunctions and the resolution of FRAND-related disputes through arbitration. In the following, the thesis structure is more developed in order to explicitly show the questions that each topic attempts to address and the approaches adopted to reach this purpose. At last, the findings are summarised.

## A. Part I: Substantive matters

### 1. Chapter 1: Capacity of the EU competition law to promote patent pools

#### a. Legal challenge

A patent pool is a licensing mechanism under which multiple patent owners offer their patents as a bundle for a predetermined price. Most contemporary pools are based around technical standards. While they can offer benefits such as equal access to licenses, faster access to technology, and the integration of complementary technologies, they may be engaged in anti-competitive effects depending on the pool rules and the members' behaviour. Potential anti-competitive effects include competition restriction between licensors, forceful patent purchases, limiting competition in downstream products, and removing incentives for innovative behaviour[74]. According to competition authorities who have reviewed proposals of

[74] Steven C. Carlson, 'Patent Pools and the Antitrust Dilemma', *Yale Journal on Regulation*, 1.2 (1999), 1–36 <http://digitalcommons.law.yale.edu/yjreg/vol16/iss2/6%0AThis>.Michael Mattioli, 'Power and Governance in Patent Pools', *Harvard Journal of Law & Technology*, 27.2 (2014), 421–65; R Bekkers, E Iversen, and K Blind, 'Patent Pools and Non-Assertion Agreements: Coordination Mechanisms for Multi-Party IPR Holders In', *EASST 2006 Conference*, 2006 <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=12975767088164818072related:mMxECmsvE7QJ>; Shapiro; Robert P. Merges,

patent pools, if specific safeguards and design rules are followed, the pro-competitive effects of pooling could outweigh the anti-competitive effects. Some of these rules include allowing only essential patents in the pool, ensuring pool members that they can license their SEPs independently from the pool, and having an independent mechanism to determine essential patents[75].

Since 2017, the Commission strongly encourages to create patent pools (or other licensing platforms) which fall under the scope of EU competition law, with the emphasis that patent pools can help resolve many of the challenges surrounding SEP licensing by providing better scrutiny of essentiality, more transparency on aggregate licensing fees, and one-stop-shop solutions[76], as they can bring more clarity to licensing conditions of SEP holders, especially for IoT industries and SMEs that have been exposed to SEP licensing disputes recently[77]. Some measures are also recommended to promote pool establishment for key standardised technologies such as facilitating access to pool management offers and technical assistance by SDO[78]. With this in mind, Chapter 1 provides an overview of the patent pool features and their pro-competitive effects specifically the provided solution to the tragedy of anticommons and patent thickets, facilitating technology dissemination, and a one-stop shop for implementers. This chapter provides readers with an understanding of the purposes that led to the establishment of patent pools, as well as the changes that antitrust policies have undergone since their emergence.

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'Institutions for Intellectual Property Transactions: The Case of Patent Pools', *Http://Www. Law.Berkeley.Edu/Files/Pools (1).Pdf*, January 1999, 1999, 1–74; Monica Armillotta, 'Comparative Analysis: US Legal Treatment of Patent Pools – Delineating the Modern Archetype', in *Technology Pooling Licensing Agreements: Promoting Patent Access Through Collaborative IP Mechanisms* (Nomos Verlagsgesellschaft mbH, 2010). Pp. 73–88; Justus Baron and Tim Pohlmann, 'The Effect of Patent Pools on Patenting and Innovation - Evidence from Contemporary Technology Standards', *Cerna - Center for Industrial Economics*, 2015.

[75] For the EU, see paragraph 261 of the EU Commission's Communication, Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements [hereinafter: TT Guidelines], published in the Official Journal of the European Union (OJ C 89, 28.3.2014, p. 3–50). This paragraph lists the conditions of the safe harbour outlined in the Guidelines. Regarding the US, while there is no explicit safe harbour provision for patent pools, the DOJ considers similar conditions when assessing safeguards, as outlined in its Business Review Letters, for e.g., DVD3C Business Review Letter. Pp. 11-12. Available at: https://www.justice.gov/atr/response-hitachi-ltds-matsushita-electric-industrial-co-ltds-mitsubishi-electric-corporations.

[76] EC, setting out the EU approach to SEPs. *Supra fn*. 67. Pp. 7.

[77] Mcdonagh and Bonadio.

[78] EC, setting out the EU approach to SEPs. *Supra fn*. 67. Pp. 7-8

In terms of the purposes, after reviewing the historical development of pools (from early product-based pools to modern standard-based pools), we examine the reasons for which pools were basically created including removing blocking patent positions, avoiding potential litigation and anti-competitive behaviours such as market division among horizontal competitors or naked price fixing. The study then goes through a detailed examination of the procedural and substantive frameworks that regulate patent pools in both the EU and US, although the EU proves to have a poor history in patent pooling compared to the US. As a matter of fact, until 2004 the EU Commission was not as publicly demonstrating its standpoint as the US antitrust agencies were.

The US antitrust law framework, including several DOJ Business Review Letters and Antitrust Guidelines for the licensing of IP are comprehensively investigated and compared to the Technology Transfer Block Exemption Regulation (TTBER) and the Technology Transfer Guidelines (TT Guidelines) of the EU. It should be noted that while the TTBER as such does not cover patent pools, the Guidelines provide a view on how the European competition authorities judge pools in the light of competition rules.

**b. Research question and methodology**

The principal question addressed is how EU competition law can promote patent pools while avoiding anti-competitive practices.

The study shows and explains why the US system treats patent pools more effectively than the EU system does. To this end, the EU competition law and the US antitrust law are analysed to evaluate under what circumstances antitrust concerns such as market foreclosure, price fixing, and tying may raise. For each of the concerns, relevant cases in both systems are examined and the safe harbour conditions set out by the authorities in the two systems are presented. Cases where the systems may diverge and converge are also highlighted.

**c. Key findings and contribution**

Based on the provided analyses, the chapter proposes a number of approaches to

improve the capacity of the EU competition law to promote patent pools. The research findings can not only significantly contribute to the existing body of research and the academia, but also can serve as a valuable legal foundation for policymakers, especially in the EU as it shows that the EU assessment template for patent pools leads to legal uncertainty and troubles firms in their self-assessment. The negative effect of the inaccessibility of the Commission comfort letters is proved to be an important issue that should be eliminated. In the procedural side, the main finding is to highlight the significant shortcoming of the EU system compared to its US counterpart: the lack of transparency. In the substantive side, the analysis reveals that the EU's stricter approach toward inclusion of substitute/non-essential patents into pools lacks reason. It is hence suggested to analyse patent combinations on a case-by-case basis for three reasons: (1) The characterisation of pooled patents is very difficult in practice and founding the practice legality on a varying characterisation makes no sense and can even undermine the legal certainty. (2) This approach does not necessarily create price fixing nor competition foreclosure as shown. (3) It can negatively affect product-based pools as effective mechanisms which satisfy the IoT newcomers' needs, in particular the SMEs, in getting required licences for their products[79].

## 2. Chapter 2: SEP licensing level and royalty base in value chains with emphasis on IoT and connected cars

### a. Legal challenge

The standardisation of technologies often involves the contributions of numerous companies that hold patents for specific technical elements. This is particularly evident in the case of 5G technology where big names in the market like Ericsson, Nokia, Qualcomm, Samsung, Intel, Huawei, and ZTE all own essential patents[80]. In the past, companies did cross-license their SEPs to one another. However, today there are pure SEP owners and users, leading to the rise of patent assertion entities

[79] Commission Staff Working Document on Proposal on SEP Regulation. *Supra fn*. 7. The Commission has estimated that around 33% of EU based firms taking a new license are SMEs. P. 79.
[80] Commission Staff Working Document on Proposal on SEP Regulation. *Supra fn*. 7. P.9.

(PAEs) and a shift in the SEP licensing landscape. With the increasing number of devices utilising connectivity in the IoT sector, we are witnessing more and more disputes in areas like the automotive industry. While high-stakes SEP disputes have traditionally centred in smartphones, IoT sectors are expected to face similar challenges in the future[81]. According to the EU Commission, two major concerns pose challenges to the SEP ecosystem. They include uncertainty and high transaction costs which will impact the behaviour of SEP implementers and owners in different ways[82]. It should be noted that this distinction may not apply in cases where an implementer also owns SEPs, as is often the case in the mobile phone industry. However, with the growth of IoT, the two groups (owners and users) are increasingly becoming separate entities.

The commercial attractiveness of developing SEPs, particularly for cellular standards, is evident given the significant increase in the number of parties declaring 5G SEPs[83] as compared to 2G SEPs[84], There is the same situation in the Wi-Fi industry as despite the royalty cuts for patents essential to the 802.11 Wi-Fi standard in the US, the incentives for innovation has remained strong and contributions to the next generations of Wi-Fi standards are significantly larger[85].

Knowing that the estimated cost per license ranges between 2 million to 11 million euros[86], one may well see why major SEP owners prefer to enter into licensing deals with a limited number of implementers who proves to have sufficiently high volume or value of sale[87]. However, the SEP holder's ability to seek royalties may be challenged in the future given that some phone and IoT manufacturers have adopted

[81] *Ibid.* P. 10.
[82] *Ibid.* P. 11.
[83] IPlytics, 'Who Is Leading the 5G Patent Race?', *IPlytics*, 2019, pp. 1–14 <https://www.iplytics.com/wp-content/uploads/2019/01/Who-Leads-the-5G-Patent-Race_2019.pdf>. P.4.
[84] Rudi Bekkers, Bart Verspagen, and Jan Smits, 'Intellectual Property Rights and Standardisation: The Case of GSM', *Telecommunications Policy*, 26.3–4 (2002), 171–88 <https://doi.org/10.1016/S0308-5961(02)00007-1>.
[85] Raphaël De Coninck and others, 'SEP Royalties, Investment Incentives and Total Welfare', *Charles River Associates*, 2022 <https://fair-standards.org/wp-content/uploads/2023/04/SEP-Royalties-Investment-Incentives-and-Total-Welfare.pdf>. P. 15.
[86] Commission Staff Working Document on Proposal on SEP Regulation. *Supra fn. 7*. P. 13.
[87] Justus Baron, Pere Arque-Castells, and others, *Empirical Assessment of Potential Challenges in SEP Licensing*, 2023 <https://www.iplytics.com/wp-content/uploads/2023/04/Empirical-Assessment-of-Potential-Challenges-in-SEP-Licensing.pdf>. At section 6.2.3.1.

low-cost business models, and the IoT market is highly fragmented and cost-sensitive. Additionally, as many SEP owners are no longer implementers, disagreements about FRAND royalty determination are likely to increase resulting in longer and costlier negotiations.

From the implementers' perspective, there are uncertainties and high costs associated with using standards that can discourage them from adopting new technologies. SEP owners need time to evaluate the value of their technology in standard implementations and to determine to whom should license and how, that can create additional uncertainties for implementers[88]. According to the responses received in the public consultation of the EC, approximately half of the participating companies stated that they had actively pursued licenses for SEPs. Among the reasons cited for seeking a license, the most commonly mentioned factors were avoiding infringement of SEPs, ensuring legal certainty regarding costs, and enabling better planning of business activities[89]. However, some implementers did not obtain licenses due to disagreements over FRAND royalty rates, particularly in new markets where the SEP owner has not yet established a licensing policy and prefers licensing at the end-product level[90].

In the IoT supply chain, standards are commonly used in components that are incorporated into end-products that are sold to consumers. In some cases, the suppliers of these components do not possess the necessary SEP licenses at the time they sell them to the end-product manufacturers. This can lead to a situation where end-product manufacturers are required to obtain SEP licenses. For example, in the automotive industry, component manufacturers obtained licensed chips for 2G and 3G but not for 4G. Instead, SEP owners opted to license car manufacturers for the implementation of the 4G standard, rather than component manufacturers. In addition, component suppliers are unable to bear royalties that are demanded from the OEMs, that results in the cost being passed on to downstream parties. As a consequence, suppliers have to be engaged in legal battles, that made some of them

[88] Commission Staff Working Document on Proposal on SEP Regulation. *Supra fn*. 7. P. 15.
[89] *Ibid.* Annexe 9. Q7.
[90] *Ibid.* Annexe 9. Q10.

decide eventually to leave the European market. This uncertainty creates difficulties in business planning irrespective of the size of the company involved[91].

Obviously, a SEP owner is entitled to demand a royalty from the implementer regardless of the number of SEPs they possess. For example, the 5G standard has up to 200 SEP owners, each with varying numbers of SEPs covering different patented technologies in the standard[92]. However, the number of patents contributed by each owner cannot be considered as an accurate representation of their value, as the value of each patented technology can differ. Additionally, implementers' products often include numerous other features and technologies that contribute to their value, making it even more challenging to determine the worth of the standardised technology. Furthermore, determining the appropriate allocation of royalty to each SEP owner is a complicated process. When an implementer is approached by an SEP owner for royalties, they have the option to either negotiate extensively to determine a FRAND or to simply agree to the requested rate. However, negotiating requires technical expertise, knowledge of patent law and licensing skills, which may be less accessible for smaller companies compared to larger ones. Consequently, SMEs may be more inclined to accept the SEP owner's terms, fearing the potential for an injunction or production stoppage. Additionally, if a company, even a large one, is utilising a third-party supplied component to implement the standard, they are likely unaware of the relevant technology and must seek outside expertise to evaluate the royalty demand. This is in addition to the legal resources necessary to negotiate and finalize a licensing agreement.

### b. Research questions and methodology

This chapter delves into the complexities of licensing SEPs in the IoT era, with a focus on the connected car industry. To this end, the existing approaches in determining licensing level and royalty base are discussed with the purpose of seeking an efficient method that can be free of the shortcomings of the existing approaches. Currently, licencing level and royalty base are determined either

[91] *Ibid.* P. 16.
[92] *Ibid.* P. 19.

component-based (licensing to all) or end-product-based (access to all). Through a vast discussion on these approaches, we examine how ambiguities in addressing the correct licensing level and royalty base can be avoided rather than favouring one level to another. To achieve this purpose, we investigate the following two questions:

- In a supply chain, can have made rights in the SEP licence to the end-product manufacturer safeguard the component supplier from patent infringement actions?
- Under FRAND commitment or competition law, is a SEP holder obliged to licence to component supplier?

To get our answer, we examine the dispute between Nokia (SEP holder), Daimler (car manufacturer) and Daimler's multi-tier suppliers over licensing agreement, that resulted in several legal battles. The crux of the debates centred around who must be responsible for obtaining licences and how much they should pay for them. While Nokia preferred to license directly to Daimler at an end-product royalty rate, Daimler and its suppliers argued for licensing at the Tier 1 supplier and at a component royalty rate. The chapter explores the legal and technical intricacies of these offers and ultimately presents a new proposal for addressing the question of level and rate.

A comprehensive understanding of SEP in IoT landscape demands including the legal and the technical aspects in the discussions all together. As a result, this chapter required not only desk research in the fields of law and economics but also a thorough understanding of the technologies involved. To achieve this, meeting with IoT technical experts were arranged for discussing their viewpoint regarding the research questions.

### c. Key Findings and Contribution

The presented discussion leads to a novel approach that proposes licensing level can be more clearly determined if we admit that licence should be given to those who implement the SEP, i.e., the *designer* of the compound in which the SEP is

integrated, whether it is the component maker or the end-product manufacturer. This proposal stems from the technical facts of today's industrial world where implementation of a technology is nothing but designing a piece in which the technology is used. Once design is accomplished, manufacturing can be easily (technologically speaking not necessarily easy from management or production viewpoint) done by assembling the electronic components available in the market. It is the designer of the component who determines its requirements and capabilities including how much it (and the end-product ultimately) will use the network for data transmission.

In addition, a clear method is proposed for calculating FRAND royalty in terms of the qualified technical characteristics of the designed component and the number of devices produced.

## B. Part II: Procedural matters

### 1. Chapter 3: Injunction in SEP: a fundamental right or an abusive behaviour

#### a. Legal challenge

Where disputes arise between SEP holders and implementers over the terms of licensing agreements, the SEP holder may seek an injunction[93] as a legal remedy to prevent the standard implementer from continuing to use the patented technology without an appropriate license. In the SEP context, an injunction can prohibit the use of the patented technology until the implementer obtains a license from the SEP holder on FRAND terms.

Seeking an injunction is not only considered as an important remedy in IP law at national and international levels, but also guaranteed as a right to an effective remedy and to a fair trial under the Charter of Fundamental Rights of the EU[94]. However, the legitimacy of seeking an injunction is a matter of controversy when

[93] An injunction is a court order that requires a party to either stop a particular activity or take specific action.
[94] Charter of Fundamental Rights of the European Union, OJ C 326, 26.10.2012. p. 391-407

an SEP holder is under FRAND commitment. On the one hand, an injunction can provide an effective means for SEP holders to enforce their patent rights and ensure that they receive appropriate compensation for their patented technology. On the other hand, the threat of an injunction can be used to extract licensing terms that may be unfair or unreasonable and can potentially harm competition and innovation in the market.

Courts and regulators globally have wrestled with injunctions in SEP disputes, leading to diverse approaches. Some jurisdictions have imposed limitations on injunctions, such as requiring notice to the implementer or proof of unwillingness to license on FRAND terms.

The ruling in *Huawei*[95] by the ECJ has brought greater consistency across European jurisdictions. The ruling emphasises the need for good faith in negotiations towards an actual result, rather than just accepting the initial offer of the licensee, and injunctions are no longer automatically granted without considering the conduct of the parties and their bargaining power.

The importance of injunctions in mitigating harm from bargaining failure and patent hold-up is highlighted by the economic analysis of FRAND licensing. In Europe, the ECJ and national courts use injunctive relief to strengthen bilateral negotiations as the main way to determine FRAND licensing terms. Other jurisdictions such as the US have more limited availability of injunctive relief for SEP owners, and the courts play a more active role in determining licensing terms when negotiations reach an impasse, especially in the US, where injunctions are generally seen as inappropriate when a patent owner is committed to licensing their patents[96].

[95] *Huawei. Supra fn. 37.*

[96] However, it must be noted that recent policy changes in the US have put the spotlight on the issue of injunctive relief for SEP holders. As mentioned earlier, in June 2022, the US Agencies withdrew a 2019 policy statement on remedies for SEPs subject to voluntary FRAND commitment, leaving a void in formal policy on injunctive relief. The 2019 policy initially favoured granting injunction to address patent hold-out, replacing the more restrictive stance of the 2013 statement. However, the draft 2021 policy largely reverted to the 2013 approach. With the recent withdrawal of all policies by the government, the issue of injunction is now left in a state of uncertainty and ambiguity. Additionally, the IEEE revised its policies in September 2022, removing limitations on SEP owners' ability to seek injunctions for SEPs like WiFi.

The *Huawei* decision aligns with previous actions by the European Commission in cases involving Samsung[97] and Motorola[98], which aimed to create a "safe harbour" for licensees from SEP injunctions. This means that a licensee can demonstrate their "willingness" to negotiate by agreeing to have a court or arbitrator determine the FRAND terms if bilateral negotiations fail. This protects licensees who act in good faith from dominant SEP holders who may be abusing their position to prevent competition in the market. While the SEP holder still has the right to seek injunctive relief, using it against a willing licensee may be considered an abuse of their dominant position under Article 102 TFEU. However, the ECJ does not provide specific criteria for determining "willingness" in the context of injunctions, and it is up to national courts to decide on a case-by-case basis by examining the conduct of both the SEP holder and the implementer[99].

### b. Research question and methodology

The main question examined in this chapter is whether and to what extent seeking an injunction is considered an abusive behaviour from the perspective of competition law.

To get the answer, in addition to discussing the existing literature, legal analyses are presented to examine under what conditions seeking an injunction is targeted by antitrust authorities in the EU and the US. To this end, primary law including the relevant case law in the US[100] and in the EU is studied. In the EU, we examine thoroughly the ECJ decision in 2015 regarding the *Huawei* case[101], which

[97] Case AT.39939, *Samsung*, C(2014) 2891 final.
[98] Case AT.39985, *Motorola*, C(2014) 2892 final.
[99] The SEP implementer must promptly indicate its willingness to take a patent license upon receiving notice from the patent holder. For e.g., in Germany, the Regional Court Düsseldorf in *Saint Lawrence Communications vs. Vodafone,* Case No. 4a O 73/14, (31 March 2016) ruled that a response five months after receiving the notice was too late. Similarly, the Regional Court Mannheim held in *Saint Lawrence Communications vs. Deutsche Telekom,* Case No. 6 U 44/15, (23 April 2015) ruled that a response after three months would be considered untimely.
[100] The US cases include *In the Matter of Robert Bosch GmbH*, Decision and Order, FTC Apr. 24, 2013, Docket No. C-4377; *In the Matter of Motorola Mobility LLC & Google Inc*., Decision and Order, FTC Jul.24, 2013, Docket No. C-4410; *eBay Inc. vs. MercExchange*, L. L. C., 547 U.S. 388 (2006); *Microsoft Corp. vs. Motorola, Inc*., 795 F.3d 1024, 116 U.S.P.Q.2d (BNA) 1001 (9th Cir. 2015); *Apple vs. Motorola*, 757 F.3d 1286 (Fed. Cir. 2014). P. 1331.
[101] The literature includes Sidak, XI; James Ratliff and Daniel L. Rubinfeld, 'The Use and Threat of Injunctions in the Rand Context', *Journal of Competition Law and Economics*, 9.1 (2013), 1–22

establishes a negotiation framework for licensors and licensees. This framework is discussed mainly through the responsibilities defined for the SEP holder to notify the alleged infringer and providing them with a written offer in case that they express willingness to enter into a license agreement on FRAND terms, and the responsibility of the infringer to respond promptly in good faith to the offer.

Seeking injunction under the US law is analysed under the *eBay* four-factors[102]. The SDO's involvement in availability of injunction is studied too. In this context, the IEEE explicit waiver in the IPR policy of 2015 requiring patent holders to provide a Letter of Assurance (LOA) is discussed[103] and it is shown that waiving their right to seek an injunction did not solve the problem in practice[104].

### c. Key findings and contribution

Although it may initially seem that the legitimacy of seeking injunction in FRAND/SEPs may vary depending on the applicable law, the presented discussions reveal that the judgments' outcomes are not fundamentally different one from another, as court decisions are more based on the involving parties' behaviour and the governing circumstances than the spirit of the applicable law.

In addition, the study suggests that taking an absolute attitude toward seeking injunction in FRAND/SEP context, whether it be fully banning or unconditionally allowing SEP holders to seek injunction, will lead to no sustainable solution. In fact, a right must never be eliminated due to a mere fear of a likely abuse, nor should we be pushed toward hold-out when running away from a potential hold-up.

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<https://doi.org/10.1093/joclec/nhs038>; Nicolas Petit, 'Injunctions for FRAND-Pledged SEPs: The Quest for an Appropriate Test of Abuse Under Article 102 TFEU', *European Competition Journal*, 9.3 (2013), 677–719 <https://doi.org/10.5235/17441056.9.3.677>; Jay Pil Choi, 'FRAND Royalties and Injunctions for Standard Essential Patents', *Global Economic Review*, 45.3 (2016), 233–50 <https://doi.org/10.1080/1226508X.2016.1211809>; Kristian Henningsson, 'Injunctions for Standard Essential Patents Under FRAND Commitment: A Balanced, Royalty-Oriented Approach', *IIC International Review of Intellectual Property and Competition Law*, 47.4 (2016), 438–69 <https://doi.org/10.1007/s40319-016-0474-9>.

[102] *eBay Inc. vs. MercExchange*, L. L. C., 547 U.S. 388 (2006).

[103] § 6.2, IEEE, *IEEE-SA Standards Board Bylaws*, 2022 <https://standards.ieee.org/wp-content/uploads/import/documents/other/sb_bylaws.pdf>.

[104] Some IEEE contributors contested this amendment, arguing that the systematic banning of injunction in FRAND/SEP infringement could potentially promote opportunistic behaviour among implementers.

Furthermore, an unconditional injunction nullifies the specific characteristics of SEPs and the purpose of FRAND commitment. If an injunction is given without justification, the implementer will be shut out of the market. FRAND licensing should be hence regarded as a two-way street which requires good faith of both parties to make it possible to prevent hold-up and hold-out equivalently.

In this context, the paper puts forward a case-by-case analysis as the only valid approach in assessing lawfulness of seeking injunction in FRAND/SEP context when it comes to strike a balance between securing free competition, safeguarding the intellectual property owner's rights, and his right to an effective judicial protection. This assessment should be fulfilled such that the stakeholders' interests are treated equally with no discrimination.

## 2. Chapter 4: Arbitration in FRAND-related disputes

### a. Legal challenge

Arbitration is becoming an increasingly popular method for settling disputes related to FRAND licensing terms for SEPs. The World Intellectual Property Organisation (WIPO) is one organisation that has become involved in the use of arbitration to settle FRAND-related disputes. WIPO has established the WIPO Arbitration and Mediation Center, which provides a platform for parties to resolve such disputes through alternative dispute resolution mechanisms[105]. The use of arbitration in FRAND disputes has been encouraged by policy makers, such as the European Commission. In November 2017, the European Commission encouraged the use of arbitration in FRAND disputes, stating that it could be an effective way to resolve such disputes in a fair, efficient, and cost-effective manner[106].

There are several advantages to using arbitration to settle FRAND-related disputes including that it allows parties to choose an arbitrator with expertise in the relevant technology and industry, which can lead to a more informed and fair decision. In addition, arbitration can be faster and less expensive than traditional litigation,

[105] WIPO, *Arbitration for FRAND Disputes Model Submission Agreement*.
[106] EC, setting out the EU approach to SEPs. *Supra fn*. 67.

which can help to reduce costs for both parties. There exist, however, challenges associated with arbitration including the lack of transparency in the process.

Standards are implemented everywhere by implementers and are used to fabricate products to be traded internationally. Patents, on the other hand, are territorial by nature and are safeguarded by the laws of the jurisdiction where they are issued. This territorial nature of patents provides patentees with a possibility to sue alleged infringers in multiple jurisdictions when patents issued in different jurisdictions, even if they are related to the same set of technology. This international FRAND dispute may lead to contradictory decisions as no substantive law in any jurisdiction provides a clear legal guidance to set FRAND terms, and the international elements combined with multiple proceedings in multiple jurisdictions, each of which has its own *lex fori* with its own classification and connecting factors, makes choice of law uncertain and complicated and may reach conflicting results. Therefore, a court faced with a FRAND litigation must characterise the FRAND issues under its private international law rules, identify the choice-of-law rules, and thus determine the applicable law. In addition, courts may face with multiple FRAND issues in the same case including *enforceability of FRAND commitment*, *negotiation,* and *definition of licensing terms*, each of which may be characterised differently in the three categories of law.

**b. Research question and methodology**

The chapter aims answering which approach (court litigation or arbitration) can be more effective in resolving disputes pertaining to IP-FRAND, competition law-FRAND, and contract-FRAND.

The study goals are achieved by desk research around the existing literature to explore the pros and cons of arbitration in IP, contract and antitrust related disputes.

**c. Key findings and contribution**

With the recent trend of international bodies such as WIPO becoming involved in resolving FRAND-related disputes, the study outlines where and under what circumstances arbitration should be more prominently employed. However, it

highlights that the question of whether arbitration is advantageous compared to courts in FRAND-related disputes is not accurate. Instead, it is crucial to determine the type of the dispute in question.

In terms of antitrust-related disputes, the research shows that both the EU and the US allow antitrust issues to be settled via arbitration. Therefore, the international character of FRAND disputes favours arbitration in antitrust-related disputes, no matter if an antitrust authority files an action or a private party does.

The study shows that arbitration appears more efficient when it comes to setting FRAND royalty rates, since (a) no national law has presented yet a clear basis for FRAND rates, and (b) such a rate should be principally set through comparing similar licensing transactions and empirical economic analysis that may not be necessarily supported by the substantive foundations of the national law. These may convince parties to avoid the system of national law and opt for arbitration mechanism instead, which make it possible to eliminate the question of governing law by referring to neutral non-national standards. In this context, arbitration can appear more efficient due to its single proceeding than multiple proceedings of court litigations in different jurisdictions.

Apart from essentiality assessment, the research shows that in case parties admit the global rate, international arbitration can set it with no territorial limitation nor intervention in national sovereignty, that can avoid potential forum shopping. As a procedural matter at enforcement stage, it demonstrates how competition law can act as a public policy barrier in enforcing arbitral award. The study showed despite the ECJ ruling in *Eco-Swiss*[107], there is no harmonised approach in the EU Member States.

[107] Case C-126/97 *Eco Swiss China Time Ltd. vs. Benetton Int'l N. V.*, EU:C:1999:269.

# *Part I*

# *Substantive matters*

# *Chapter 1*

# *Capacity of EU competition law to promote patent pools: A comparative study*

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# I. Introduction

Patent pools are a recommended tool presented in policy circles to facilitate access to patented technologies in fields ranging from biotechnology, nanotechnology, clean energy technologies to telecommunication and technical standards. They are often regarded as a solution to certain market failures in patent licensing, particularly to the risk of royalty stacking and patent thickets. The economic literature consistently recommends the creation of patent pools to solve these problems[2].

Patent pools are formed when two or more patent holders decide to collectively license their patents to either each other or to third parties. In close connection to standardised technologies, today patent pools are often created when a standardised product requires multiple patented technologies for production[3]. A recent attractive filed of patent pooling is linked to licensing of standard essential patents (SEPs) created in the Internet of Things (IoT) and the Information and Communication Technology (ICT) which are to enable interoperability and communication between multiple devices[4].

Patent pools have advantages such as facilitating equal access to licenses for all potential licensees, speeding up access to technology, integrating complementary/essential technologies, reducing transaction costs, and avoiding costly infringement litigations[5]. According to the EU Commission, many challenges in SEP licensing can be treated through patent pools as they can offer better scrutiny on essentiality, more clarity on aggregate licensing fees and one-stop

[2] A Krattiger and SP Kowalski, 'Facilitating Assembly of and Access to Intellectual Property: Focus on Patent Pools and a Review of Other Mechanisms', in *Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices*, 2007, I, 131–44 <http://www.cabdirect.org/abstracts/20083164057.html>. P. 138.
[3] The US Department of Justice & Federal Trade Commission, Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition (2007). <www.usdoj.gov/atr/public/hearings/ip/222655.pdf>. [hereinafter: Promoting Innovation and Competition].
[4] Mcdonagh and Bonadio.
[5] Bekkers, Iversen, and Blind. P. 13.

shop solutions. However, pooling may create antitrust issues[6].

In this research, patent pools are analysed under EU competition law and US antitrust law to see under which circumstances antitrust concerns may be raised including market foreclosure, price fixing and tying. The principal question that the paper tries to answer is how EU competition law can promote patent pools while avoiding anti-competitive practices. To reach this purpose, a comparative study between the EU and the US systems is carried out.

The paper starts with an overview on patent pools features, their pro-competitive effects and historical development that allow reader to review the purposes which led to their establishment and the changes that antitrust policies have undergone since the emergence of pools. Patent pooling will be then analysed under US antitrust law and EU competition law through procedural and substantive analyses, which identify the differences between the two systems and examine regulatory frameworks under which each system treats the antitrust concerns. Based on these analyses, approaches to improve EU competition law capacity to promote patent pools are proposed.

## II. Overview of patent pools

Patent pools are defined as a licensing arrangement, whereby a group of parties assemble a package of patents to license to the pool contributors and/or to third parties. Patent pools are established in two structures: (a) a group of limited members exclusively cross-license their patents to use mutually, or (b) the group allows a common agent, who can be either one of the patent holders or a third-party administrator who acts as a separate entity to carry out licensing. In the latter structure, assessment is managed by the pool agent that results in a considerable time and expense economy for SEP holders. It should be noted that patent pools managed by one of the patent holders are less favourable because the agent will

[6] Brussels, 29.11.2017 - COM(2017) 712 final - 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. [hereinafter: EC, setting out the EU approach to SEPs]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0712.

gain access to the confidential sales data of other licensors which may lead to the exchange of sensitive information and subsequent anti-competitive behaviours (see section III.B.1.d at page.62.

## A. Pro-competitive advantages

Patent pools can prevent patent disputes between the licensor and licensee while diminishing the possibility of a licensee ending up with costly litigation over unlicensed patents.

In addition, if standard setting activities of industries with patents of interoperable products are owned by multiple holders, pooling can be an effective solution to the tragedy of anticommons[7] and patent thickets. In the former case, a standard with many essential patents suffers from underuse or absence of diffusion because an implementer willing to incorporate the standard into a product needs to access to all essential patents and therefore obtain licenses from all patent holders[8]. In this context, patent pooling lets a standard implementer obtain a single license at a single royalty rate for all patents in the pool, that consequently reduces the transaction costs, controls the total cumulative license fee, and improves access to patents[9].

Pooling can also be helpful in dealing with patent thickets which happens where multiple independent patent holders share a technology. This situation which is common in industries like telecommunication and IT with many overlapping rights, makes implementors go through time and effort consuming negotiations of licensing agreements before manufacturing a product[10]. In this context, pooling has similar positive effects as in the anticommons situation.

Lastly, pooling together complementary patents facilitates technology dissemination and enables widespread use of new technologies[11]. Without pooling,

[7] The tragedy of the anticommons happens where "multiple owners are each endowed with the right to exclude others from a scarce resource, and no one has an effective privilege of use." Michael A. Heller, 'The Tragedy of the Anticommons: Property in the Transition from Marx to Markets', *Harvard Law Review*, 112.3 (1998), 622–87 <https://doi.org/10.2307/1342203>. P. 624.
[8] Mattioli. P. 439.
[9] Bekkers, Iversen, and Blind. P. 6.
[10] Shapiro. Pp.122-123.
[11] Promoting Innovation and Competition. *Supra fn.* 3. Pp. 65-66.

a patent owner could be able to block implementers in manufacturing a new product associated with the patented technology. In contrast, by licensing their pooled patents on a group basis, the owners can offer one-stop shopping to implementers that allows more rapid development of new technologies.

## B. Patent pools development over time

In this section, the early patent pools created in the US by the sewing machine industry and the aircraft manufactures are studied to review various policies that the US adopted in facing patent pools. Since the 1990s, the modern pools have emerged to comply with new standards such as MPEG-2 and DVD, and this is when the EU began to publicly present its assessment on patent pools.

### 1. Early patent pools

In the complete absence of regulations in 1856, one of the first patent pools was established in the US by the sewing machine industry, where the firms chose to pool patents with their competitors based on mutual agreement to mitigate the risk of litigation[12]. In 1890, the Sherman Act sought to prevent monopolies but excluded pooling and licensing due to freedom of contract and the dominancy of patent law over antitrust law in 1900s[13]. Based on a Supreme Court ruling, a patent owner enjoyed absolute freedom to license patents under any conditions decided by a contract between the patentee and the licensee[14]. The Court refused to consider the creation of monopolies and fixed prices which granted the patentees an unrestricted right to practice collusive dealings under the protection of patent law[15].

In 1912, the absolute freedom was ended by a Supreme Court ruling, when it stated that the rights of the patentees had been pushed "to evil consequence" and that the Sherman Act imposed appropriate limits on such abuses[16]. Over the following fifty

[12] Merges. P.18.
[13] Ed Levy and others, 'Patent Pools and Genomic: Navigating a Course to Open Science?', *Boston University Journal of Science and Technology Law*, 16 (2010), 76–103 <https://www.bu.edu/jostl/files/2015/02/Marden_WEB_161.pdf>.
[14] *Bement vs. National Harrow Co*., 186 U.S. 70 (1902). P.70.
[15] Carlson. P. 373.
16 *Standard Sanitary Mfg. Co. vs. United States*, 226 U.S. 20 (1912).

years, the Supreme Court addressed several pools, having approved some while dissolving others based on the competitive effects of each pool[17].

Due to the increasing demand for airplanes in WWI, the National Advisory Committee for Aeronautics proposed to form a patent pool in 1917 encompassing almost all aircraft manufacturers in the US. To access all the patents, they each had to pay a royalty. The Attorney General concluded that the pro-competitive effects of these arrangements outweighed anti-competitive effects[18].

Collective patent licensing reached its peak in the 1930s (with 14 pools in the US) but then curved down until 1990. The relaxing of antitrust scrutiny before WWII and the subsequent tightening after the War are often presented as an explanation for this change[19]. In addition, the Department Of Justice's (DOJs) list of patent licensing practices for *per se* antitrust violations (referred to as the "Nine No-No's") was another issue that made companies overcautious about concluding patent pooling agreements. However, the DOJ acknowledged in 1979 that many of those nine condemned practices had significant efficiency and pro-competitive virtues and thus it rescinded the list[20].

## 2. Modern patent pools

Pool licensing practice started rising again in the 1990s when the DOJ and the Federal Trade Commission (FTC) jointly issued new guidelines[21] for a more "*benevolent scrutiny of patent licensing and placed the analysis of patent pools under the rule-of-reason*"[22]. In 1997 and 1999, the DOJ cleared the MPEG2 and two DVD pools as the first modern patent pools in the ICT standards. In fact, this period is when the EU Commission also started to issue comfort letters for those

[17] Carlson. P. 374.
[18] Armillotta. Pp. 74.-75.
[19] Baron and Pohlmann. P.8.
[20] Ky P. Ewing, Jr., Deputy Assistant Attorney General, Antitrust Div., Department of Justice, Remarks to the San Francisco Patent Law Association (May 5, 1979), reprinted in 4 Trade Reg. Rep. (CCH) ¶ 13,128.
[21] DOJ and FTC, Guidelines for the Licensing of Intellectual Property. Available at: https://www.justice.gov/sites/default/files/atr/legacy/2006/04/27/0558.pdf.
[22] Baron and Pohlmann. Pp. 8-9.

pools and as a result, a new wave of pooling was triggered.

### a. Standard-based pools

By tradition, a pool offers a licence to a standard or a family of standards in one technological field where implementers have to deal with various pools, since different generations of standards stay relevant to a specific application even after a new, more advanced standard is introduced. Each of these standards has its own SEPs and patent pools. For example, most programmes in the fields of video coding, audio coding, and audio compression are standard-based pools.

In 1998, MPEG LA was established to act as an independent technical expert to determine the essentiality of patents to the MPEG-2 standard, to assemble and offer a package of hardware and software licenses to the pool members, and to distribute royalty income among the contributing patent holders on a per patent basis. Both the DOJ[23] and the Commission[24] approved the MPEG pool. In 1999, 3C and 6C DVD pools were formed to provide essential patents for DVD standards where instead of an independent administrator, one of the licensors acted as the common agent on behalf of the other pool members.

In the 2000s, a few licensing firms including Avanci, Sisvel, and Via Licensing started specialising on the administration of patent pools. In parallel, the SSOs have gradually initiated to collaborate with the licensing administrators. In this context, an agreement concluded between Institute of Electrical and Electronics Engineer (IEEE) and Via Licensing in 2008 with the goal of fostering patent pools for IEEE standards and reducing barriers which prevented the rapid adoption of technology standards[25]. Other SSOs established explicit policies to boost the formation of patent pools for their standards[26].

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[23] MPEG-2 Business Review Letter. <https://www.justice.gov/atr/response-trustees-columbia-university-fujitsu-limited-general-instrument-corp-lucent>.

[24] European Commission, Press release, IP/98/1155, Commission approves a patent licensing programme to implement the MPEG-2 standard, Brussels, 18th December 1998. Available at: <https://ec.europa.eu/commission/presscorner/detail/en/IP_98_1155>.

[25] IEEE-SA and Via Licensing collaboration. <https://www.ieee.org/>.

[26] For e.g., see DVB, *Summary of DVB's PR Policy* <https://dvb.org/wp-content/uploads/2020/02/dvb_ipr_policy_summary.pdf>.

### b. Product-based pools

With the emergence of the IoT, interconnectivity and interoperability have become essential in numerous sectors. Wireless, Wi-Fi, Bluetooth and 4G are already implemented in billions of products ranging from remote surgery equipment to connected cars and therefore, a wide range of firms need to get licences from the providers of these technologies. To provide access to them, some SEP holders have incorporated their SEPs into licensing platforms and pools[27]. This evolution led to a new pooling form where pools (e.g., One-Blue) started to offer all the relevant standards related to a very product.

Product-based pools are ideal for implementers wanting to license many patents for a specific application or product in one go. Such pools offer a licence not just for the one technological filed, but for all relevant fields. For example, if a firm wants to produce a Blu-ray recorder, One-Blue pool solves most of a licensee's needs in the field of optical discs.

In this context, Avanci, the first platform for IoT manufacturers[28], has a product-based pooling approach with the aim of licensing out relevant generations of the cellular SEPs of its licensors in each product-related programme. Thus far, it appears attractive to the major SEP holders and to IoT newcomers like BMW[29]. It offers licences to different IoT products for fixed-per-unit royalties to facilitate adoption of the related technology. Users' applications of the standardised technologies vary due to the omnipresence of technologies defined by 2G, 3G and 4G standards. Avanci claims that the best solution is product-based licensing, while adapting the royalty rate in each case to the specific use made of the technologies

[27] Marco Lo Bue, 'Patent Pools in the ERA of the "Internet of Things": A Fine Line Between Collusion, Market Power and Efficiencies', in *The Interplay Between Competition Law and Intellectual Property: An International Perspective*, 2019, pp. 299–316 <https://www.kluweriplaw.com/document/TOC-Muscolo-2018>. P. 300.
[28] Avanci licenses most 2G, 3G and 4G patents in a single agreement. These patents cover wireless technology. Available at: <https://www.avanci.com/>.
[29] Richard Lloyd, 'Deal with BMW Is the First of Many with Auto-Makers , Says Avanci Boss', *IAM*, 2017 <https://www.iam-media.com/article/deal-bmw-the-first-of-many-auto-makers-says-avanci-boss>.

covered by the SEPs[30].

## 3. Takeaway

Patent pools have a long but uneven history. Some scholars divide their history into three periods: "*beginning with deference, shifting to suspicion and per se prohibitions, and reaching a cautious endorsement*"[31]. The ups and downs in their creation and operation as well as their growth and failure were significantly influenced by changes in antitrust enforcement practice and authority evaluations. The more lenient the antitrust policy is, the more patent pools emerge and develop.

As shown, there is no single purpose for creating a patent pool and no single way to manage it. Early pools were associated with monopolies and cartels, then later ones were created in response to US government policy objectives addressing standardisation, biomedical, and agricultural technologies since the 1990s[32]. They were established for a number of reasons ranging from clearing blocking patent positions and avoiding potential litigation, to practicing anti-competitive behaviours such as market division among horizontal competitors or naked price fixing[33].

The modern patent pools were created mostly in connection to standardised technologies and under a more stable institutional environment which is a response to technological and commercial considerations. This evolution continues and today, product-based pools are particularly attracting players in the IoT era as they provide a package from all relevant patents for a product at once. The potential negative impact of the EU competition policy on this type of pools is discussed in section IV.B.3 at page 76.

[30] Harry Rijnen, 'An Insider's Guide to Patent Pools', *IAM*, 2017 <https://www.iam-media.com/article/insiders-guide-patent-pools>.
[31] Mark Miller and David Almeling, 'DoJ, FTC Redefine Antitrust Rules on Patent Pools', *National Law Journal*, 2009 <https://www.law.com/almID/900005494368/>.
[32] David Serafino, 'Survey of Patent Pools Demonstrates Variety of Purposes and Management Structures', *Knowledge Ecology International*, 2007 <https://www.keionline.org/book/survey-of-patent-pools-demonstrates-variety-of-purposes-and-management-structures>. P. 2.
[33] Bekkers, Iversen, and Blind. P. 10.

# III. Comparative analysis of the EU and the US antitrust laws

This section is dedicated to a comparative analysis between the EU and the US systems that examines their competition policies in assessing patent pools to explore the similarities and differences between the two systems.

It should be noted that although the EU has a poor history in patent pools compared to the and despite the fact that before 2004 the EU Commission was not demonstrating its standpoint as publicly as the US antitrust agencies were, the rapid growth in standardisation and IPR arrangements motivated the Commission to take an in-depth look at the patent pools and their interaction with the standardisation agreements.

The methodology adopted here is a comparative analysis between the two, focusing on procedural and substantive issues.

## A. Procedural analysis

As agreements between undertakings, patent pools may restrict competition and potentially fall in the scope of the general competition law prohibition of Article 101 (1) Treaty on the Functioning of the European Union (TFEU). In the US, the antitrust law intervenes if a pool with monopoly power in market causes anticompetitive effects violating Section 1 or Section 2 of the Sherman Act.

### 1. US antitrust law framework

Since 1968, the Antitrust Division of the DOJ has the regulatory task of reviewing different types of business practises proposed by private parties to determine how the Division may respond to proposed business conduct. The issuance of multiple patent pools-related BRLs[34] in the late 1990s shows their effectiveness[35]. Firms

[34] See Business Review Letters of 1997, 1998 and 1999 for the MPEG-2 pool, the 3DVD pool and 6DVD pool respectively and more recently IEEE in 2007, RFID in 2008, IPXI in 2013 and FVLI in 2014. Available at: < https://www.justice.gov/atr/business-review-letters-and-request-letters#page-17>.

[35] Jorge L. Contreras, 'Taking It to the Limit: Shifting U.S. Antitrust Policy Toward Standards Development', *SSRN Electronic Journal*, 2018, 66–81 <https://doi.org/10.2139/ssrn.3218360>.

planning to establish a patent pool inform the DOJ who accordingly comments on the pool's potential effects and announces whether the proposed plan is safe from an antitrust law perspective.

A firm requesting a business review may receive one of the following responses: (a) the DOJ does not presently intend to bring an enforcement action against the proposed conduct; (b) the DOJ declines to state its enforcement intentions and it may or may not file suit if the proposed conduct happens; and (c) the DOJ will sue if the proposed conduct happens. The first response i.e., the "safe" pooling proposal, emphasises that its enforcement intention is changeable, and the Department reserves the right to bring an enforcement action in the future if the actual operation of the proposed conduct proves to be anticompetitive in purpose or effect[36].

The BRLs have long provided a guidepost for private conduct offering safe harbours for business activity which the DOJ, as announced, would not condemn. Over time, they served as a "*template for patent pooling arrangements that should not run afoul of the antitrust laws*"[37]. Firms desiring a favourable business review can attempt to eliminate or reduce the risk of anti-competitive effects through the application of certain safeguards or mechanisms incorporated in the BRLs.

However, some criticise the BRLs arguing that: (a) the validity of enforcement intention is limited to the date of the letter because the DOJ reserves right for future assessment, and (b) publishing all the information submitted by party may endanger its business[38]. Regarding the first criticism, one may counterargue that judiciary systems including courts and competition/antitrust authorities cannot and should not guarantee a future act as they do not make general rules like legislatures. In a limited and narrow manner, they evaluate what one has done or on occasions like business review/comfort letters, they evaluate the firms' declared plans. They do

[36] Introduction to Antitrust Division Business Reviews. Available at: <https://www.justice.gov/sites/default/files/atr/legacy/2011/11/03/276833.pdf>.
[37] Robert J Gilbert, 'Antitrust for Patent Pools: A Century of Policy Evolution', *Stanford Technology Law Review*, 3 (2004), 1–112 <https://www.researchgate.net/publication/239414506_Antitrust_for_Patent_Pools_A_Century_of_Policy_Evolution>. P.3.
[38] Claus D Ehlermann, *The Modernization of EC Antitrust Policy. A Legal and Cultural Revolution*, 2000 <https://cadmus.eui.eu/bitstream/handle/1814/1657/00_17.pdf;sequence=1>. Pp. 138-139.

not provide absolute legal certainty; however, they make a beneficial assessment template for the involved firms and public.

Publishing business information is debatable. What is mostly agreed upon between agencies and the parties when publishing a BRL is striking a balance between business secrets (private interest) and the right to information (public interests). One may advocate for the latter in the digital era because information availability (in the context of the antitrust authorities' assessment) provides more certainty and a better self-assessment possibility for new players, particularly small firms who learn through other firms' BRLs. However, the aim of these non-binding documents issued by the competition/antitrust assessment bodies is mainly to identify the key factors over which they are likely to ground their judgments of pro- vs. anti-competitiveness, and then to analyse the substance and boundaries of these components[39]. For these reasons, a letter serves its purpose by disclosing the method of analysis without needing to include confidential information.

Apart from the BRLs, the DOJ and FTC (the Agencies) issued IP Guidelines in 1995[40] (updated in 2017[41]) through which they clarified their antitrust enforcement position. The Guidelines deal with patent pools and emphasise that every case is evaluated in the light of its own facts to assist firms in assessing the antitrust risk related to their practice. It aims to inquire whether the restraint is likely to have anticompetitive effects and if so, whether the restraint is necessary to achieve pro-competitive benefits that outweigh anticompetitive effects[42]. The firms should, however, seek a BRL if they wish to know about the specific enforcement intentions regarding their particular business practice.

As non-binding law, the guidelines reflect the Agencies' enforcement approach. That is why the IP Guidelines do not propose rigid rules and prohibitions, but instead they apply an effect-based analysis to the licensing mechanisms. They set

[39] Levy and others.
[40] Antitrust Guidelines for the Licensing of Intellectual Property, 1995. <https://www.justice.gov/atr/archived-1995-antitrust-guidelines-licensing-intellectual-property>.
[41] Antitrust Guidelines for the Licensing of Intellectual Property, 2017. <https://www.justice.gov/atr/IPguidelines/download>. [hereinafter: IP Guidelines].
[42] *Ibid*. Pp. 16-17.

out three core principles[43]:

1. The Agencies regard IP as any other form of property in applying the general antitrust analysis. Activities involving IP rights and their exercise are neither free from scrutiny nor suspected of antitrust.
2. There is no presumption that an IP right confers market power. Even if a fact-based analysis proves otherwise, that power is not *per se* illegal[44].
3. The Agencies acknowledge that IP licensing permits firms to combine pro-competitive complementary factors of production.

In addition, the Agencies guidance published in 2007 deals *inter aila* with patent pools and presents further details regarding their efficiency and competitive concerns [45] . Nevertheless, none of these documents create laws or binding regulations. However, they can be regarded as definitive as they actually express the views of the administrative bodies responsible for assessing antitrust issues[46].

## 2. EU competition law framework

Until 2004, the EU Commission procedurally allowed parties to notify agreements to secure a decision on their legality. However, this system proved burdensome, and the Commission frequently issued comfort letters, which were non-binding statements indicating that the Commission found no reason to interfere while providing some legal certainty. Since 2004, the system of notification has been removed and parties are expected to self-assess[47]. To facilitate transactions and, given the uncertainty in the application of Article 101(3), the Commission established Block Exemption Regulations (BER). These provide legal certainty for undertakings entering into certain types of agreements because they render Article 101(1) TFEU automatically inapplicable as BER presume those agreements satisfy

[43] *Ibid*. P. 2.
[44] OECD, 'Licensing of IP Rights and Competition Law – Note by the United States', *DAF/COMP/WD(2019)58*, 2019 <https://one.oecd.org/document/DAF/COMP/WD(2019)58/en/pdf>. P. 8.
[45] Promoting Innovation and Competition. *Supra fn.* 3.
[46] Levy and others.
[47] Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty, OJ L 1, 4.1.2003, p. 1-25. [hereinafter: Council Regulation No 1/2003].

all the conditions laid down in Article 101(3) TFEU. All other agreements require an individual assessment under Article 101 TFEU. Each BER is accompanied by some guidelines that summarise and interpret the related case law to provide practical examples of how to assess the compatibility of certain conduct with competition law rules.

The Technology Transfer Block Exemption Regulation (TTBER) was adopted in 2004 (updated in 2014[48]) as a regulation on technology transfer agreements[49]. The TTBER applies only to bilateral contracts between a licensor and a licensee where the latter manufactures licensed goods, provides licensed services, or has them manufactured or provided for his account.

There are two main agreements in the context of pools. First, are the agreements for establishing patent pools which have been always excluded from the scope of the TTBER[50] for two reasons: (a) according to the council regulation, the commission is not empowered to block exempt technology transfer agreements concluded between more than two parties[51], and(b) licensing programmes involving multiple parties do not permit the production of contract products, a necessary condition for the application of the TTBER. The second agreement is licensing out which is concluded between a pool and a third party. In 2004, the only agreements excluded in the TTBER were those to establish a pool, but the licensing out agreements were covered and benefit from the exemption. In 2014, the Commission narrowed the scope of TTBER (the licensing out agreements were also excluded) and now neither agreements for setting up pools nor licensing out agreements are covered.

The Commission's reasoning was that licensing out from a pool is a multiparty agreement (since contributors of a pool determine the licensing terms and conditions together) which is in contrast with the TTBER as it should principally

[48] Commission Regulation (EU) No 316/2014 of 21 March 2014 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of technology transfer agreements, OJ L 93, 28.3.2014, p. 17–23.
[49] Commission Regulation No 772/2004 of 27 April 2004 on the application of Article 81(3) of the Treaty to categories of technology transfer agreements, OJ L 123, 27.04.2004. This Regulation was regarded as simpler and more flexible than Regulation No 240/96; it broadly adopted the same approach than the Vertical Block Exemption Regulation.
[50] *Ibid.* recital 7.
[51] Council Regulation 19/65, OJ Special Edition Series I 1965-1966. P. 35.

cover only bilateral agreements[52]. This reasoning seems unconvincing because the TTBER was supposed to cover bilateral agreements even in 2004[53]. One may question why those agreements, which were considered bilateral based on the TTBER 2004, are considered multilateral after the regulatory change in 2014. It is not clear whether in 2014 the Commission saw the TTBER 2004 as a mistake, so the 2014 policy change was actually a correction, or it just decided to change the definition for licensing out agreements. Lundqvist found this policy change correct, suggesting that the 2004 TTBER scope was odd and the 2014 change is a return to the right direction for the Commission[54].

In any case, the 2014 policy change seems anti-pooling because licensing out agreements could benefit from the exemption as they were under the scope of the TTBER. This issue makes us believe that the inclusion of licensing out agreements in the TTBER and the consequent high legal certainty could have effectively attracted firms to the pools, as the agreements' parties were sure that their agreements could benefit from the exemption (subject to the TTBER conditions[55]). In this line, the issuance of many comfort letters in the 2000s clearing patent pools can be regarded as an outcome of the legal certainty created by that policy. Alas, as the comfort letters are not in access, the extent of this effect cannot be examined.

The Technology Transfer Guidelines (TT Guidelines)[56], however, deal with patent pools and provide a comprehensive safe harbour for both the pools' creation and

[52] European Commission, Memo, Brussels, 21 March 2014, Antitrust: Commission adopts revised competition regime for technology transfer agreements – frequently asked questions. <https://ec.europa.eu/commission/presscorner/detail/en/MEMO_14_208>.

[53] TT Guidelines, 2004, para. 38: "According to Article 2(1) of the TTBER, the Regulation covers technology transfer agreements between two undertakings. Technology transfer agreements between more than two undertakings are not covered by the TTBER. The decisive factor in terms of distinguishing between agreements between two undertakings and multiparty agreements is whether the agreement in question is concluded between more than two undertakings."

[54] Björn Lundqvist, *Standardisation under EU Competition Rules and US Antitrust Laws: The Rise and Limits of Self-Regulation* (Edward Elgar Publishing Limited, 2014).

[55] According to the TTBER, to benefit from the exemption, the combined market share of competing firms must not exceed 20% and each market share for not competing firms must not exceed 30% on the affected relevant technology and product market. In case of competing firms. Additionally, their agreements must not contain any hardcore restrictions stated at Article. 4.

[56] EU Commission, Communication, 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. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014XC0328%2801%29 [hereinafter: TT Guidelines].

the licensing out agreements. The TT Guidelines safe harbour is a promising progress in the EU, although the Commission guidelines are soft law as they are not rule of law but rule of practice[57]. Through guidelines, the Commission limits its power and is to follow the rules laid down therein because of the creation of legitimate expectation amongst the firms[58]. In fact, the guidelines bind the Commission in its decision but not the pooling parties, and therefore if the parties disagree, the Guidelines act no more than a good practice guidance.

## 3. Takeaway

The comparison of the two systems' procedural frameworks shows that the antitrust authorities assess patent pools through some guidelines which although soft law are helpful since their providers are the assessors of patent pools.

The US has a higher number of guidelines and guidances with very elaborated analyses referring to the US case law. The EU has only the TT Guidelines and since there has been limited case-law they offer less certainty than their US counterparts. However, the US regulatory framework on patent pools is soft law. The EU once provided pools with legal certainty for a decade (2004 - 2014) where licensing out agreements benefit from the binding rules of the TTBER. Although this legal certainty did not last after 2014, it may have significantly impacted the Commission assessments and the issuance of comfort letters for the patent pools at the time.

In the US, patent pools have been treated more stably thanks to the BRLs, while the EU due to its procedural modifications (from individual exemption to self-assessment) could not provide equal stability. The public availability of the US BRLs compared to the inaccessibility of the EU comfort letter is another advantage of the US procedural framework. This issue is further discussed in section IV.A, at

[57] Jonas Tallberg, 'Paths to Compliance: Enforcement, Management, and the European Union', *International Organization*, 56.3 (2002), 609–43 <https://doi.org/10.1162/002081802760199908> P. 615; Oana Andreea Ştefan, 'European Competition Soft Law in European Courts: A Matter of Hard Principles?', *European Law Journal*, 14.6 (2008), 753–72 <https://doi.org/10.1111/j.1468-0386.2008.00443.x>. P. 12.

[58] Regarding the Commission Notice: Case T-31/99, paras. 257-258 and regarding the Commission Guidelines: Case T-23/99. Para. 245.

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## B. Substantive analysis

The main potential anti-competitive risks of pooling include price fixing, market foreclosure, collusion through pooling mechanism to exchange competitively sensitive information, reduction of innovation in the form of standard setting, and foreclosure of alternative technologies and barriers to the entry of new and improved technologies. The presented analysis aims at exploring to what extent the US and the EU share mutual approaches with each subject.

### 1. Antitrust concerns

#### a. Pooled patents

Antitrust risks depend largely on the relationship between the pooled patents and those outside the pool. The pooled patents can be classified as follows:

1. *Complementary* patents which are patents related to the same technology that must be used together to produce a specific output. Bundling these patents in a pool makes them more valuable than being on their own.
2. *Substitute* patents which cover alternative technologies and therefore may potentially compete with each other as they can be used in parallel without infringing each other.

In the context of standardisation, the pooled patents are divided into *essential* and *non-essential.* Patents with substitutes to the covered technology are non-essential while those required to comply with a technical standard are essential. Essential patents are by nature complementary. However, what is essential may vary and each patent pool may define essential patents differently[59].

Both the systems agree that pools consisting of complementary or essential patents can lower prices to consumers as they: do not eliminate competitors, can increase

[59] MPEG-2 Business Review Letter at 5 and DVD6CBusiness Review Letter. At 3 - 5.

efficiency, and are a pro-competitive method for disseminating technology[60]. In addition, they follow similar approaches toward the inclusion of non-essential patents into the pools as they assess the potential antitrust risks of inclusion under the rule-of-reason in the US and under Article 101(3) TFEU in the EU. Nevertheless, the systems diverge in assessing the inclusion of substitute patents, where the EU treats it more strictly than the US. As this difference can have great impacts on pooling antitrust assessment and tying concern, it is studied in detail in section IV.B at page 69.

**b. Validity of patents**

Firms who fear that their patents can get invalidated by litigation may establish a pool to shield the invalid patents. This may be carried out through non-challenge provisions indicated explicitly or implicitly in the pool agreement. In the sewing machine case, the patentees agreed not to bring any infringement action, opposition, nullity or invalidation proceeding[61] against each other.

An invalid patent is considered not to be in a complementary relationship with other patents in the pool. Therefore, pooling such patents serves as a price-fixing mechanism. In addition, it will eliminate competition between substitute technologies outside the pool if it makes licensees accept the invalid patents and pay higher royalties[62].

In the pooling context, both systems consider patent validity critical due to its importance for the public[63], and a licensing scheme premised on invalid patents will not withstand antitrust scrutiny.

In the EU, freedom of parties to challenge the validity is one of the conditions to benefit from the safe harbour provided under the TT Guidelines[64]. In addition, a non-challenge clause in technology transfer agreement between the pool and third

[60] Promoting Innovation and Competition. *Supra fn*. 3. P. 76 and TT Guidelines. Para. 253.
[61] *United States vs. Singer Mfg. Co.,* 374 U.S. 174 (1963). P. 374.
[62] Richard J. Gilbert, 'Ties That Bind: Policies to Promote (Good) Patent Pools', *Antitrust Law Journal*, 77.1 (2010), 1–48 <https://www.jstor.org/stable/23075588>. Pp. 14-15.
[63] *Pope Mfg. Co. vs. Gormully*, 144 U.S. 224 (189 2), p. 144 U. S. 234.
[64] TT Guidelines. *Supra fn*. 56. Para. 261.

parties is likely to fall within Article 101(1) TFEU[65]. While the Commission once ruled that the non-challenge clause is legal (as it is merely ancillary to the technology agreement which included no other clause restricting competition), the ECJ rejected this view stating that such a clause could restrict competition within the meaning of Article 101(1) TFEU[66].

In the US, the FTC dissolved the Summit/VISX pool on the ground of sheltering invalid patents and ordered the firms to cross-license their patents[67]. In RFID BRL, the DOJ stipulates that patents adjudicated as invalid or unenforceable must be removed from the pool and the licensors must promptly report any such finding. In practice, licensors have an incentive to do so when the royalties are allocated based on the number of patents in the pool[68].

One should note that the validity assessment is only carried out by courts if there is a challenge and given that a court ruling can be appealed, it can take years to reach the final decision on a patent validity. Furthermore, although uncertainty about patent validity is a major issue which can create distortion between large portfolio owners and smaller players, reaching certainty that a pool is only constituted by valid patents is rare. As a matter of fact, Giuri showed that only about 5% of a patent portfolio reach the stage of being reviewed by experts with technical, legal, and commercial insights[69].

### c. Individual restraints in licensing agreements

Licensing agreements raise the following four competition issues.

#### i. Exclusivity and non-exclusivity

Both the systems agree that if licensors and licensees are free to grant and obtain a

[65] TT Guidelines. *Supra fn.*56. Para. 272.
[66] C-65/86 - *Bayer vs. Süllhöfer*, 1988.
[67] In *re Summit Tech., Inc. and VISX, Inc*., No. 9286 (FTC filed Mar. 24, 1998). Available at: https://www.ftc.gov/sites/default/files/documents/cases/1999/03/ftc.gov-d09286visx.do_.htm.
[68] RFID Business Review Letter. P. 8. <https://www.justice.gov/sites/default/files/atr/legacy/2008/10/21/238429.pdf>.
[69] Paola Giuri and others, *Report of the Expert Group on Patent Aggregation*, 2015 <https://doi.org/10.2777/96371>. P. 24.

licence outside the pool, this will limit the risk of foreclosure of third-party technologies and ensure that the pool does not limit innovation nor precludes the creation of competing technological solutions[70]. This can also mitigate the effects of potential market power and allows outsiders to invent around the pooled patents to compete with them. By contrast, exclusive licensing can damage innovation as licensors and licensees lack freedom to combine technologies in order to improve and compete with the pooled technologies, and they will not be able to provide products at a lower price.

Under the EU TT Guidelines, a non-exclusive licence is one of the conditions of the safe harbour[71] and if a pool has a dominant position in the market, licences should be non-exclusive, royalties non-excessive and other licensing terms non-discriminatory[72].

In the US, although pool licensors are free to choose between excusive and non-exclusive licensing, BRLs suggest that they often propose granting a non-exclusive licence while reserving the right to license their patents outside the pool[73]. However, the Agencies assess under the rule-of-reason whether such a non-exclusive licence is a concerted conduct to prevent the outsiders from offering a competitive product, particularly in a case where the pool members collectively possess market power in the relevant market[74].

**ii. Partial pool licensing**

Partial pool licensing takes place when a pool licenses its patents not only in one package, but also partially. Proponents of partial licensing argue that this option is needed because, even if a pool were originally planned to include only essential patents, over time some of patents would no longer be essential to all the pool's licensees. In addition, licensees may legitimately desire partial licenses if they

[70] TT Guidelines. *Supra fn*. 56. Para. 270.
[71] TT Guidelines. *Supra fn*. 56. Para. 261.
[72] TT Guidelines. *Supra fn*. 56. Para. 269.
[73] MPEG-2 Business Review Letter. At 4; DVD3CBusiness Review Letter. At 5-6; DVD6CBusiness Review Letter. At 3, 6.
[74] Promoting Innovation and Competition. *Supra fn*. 3. Pp. 79-80.

already have access to some of the pooled patents[75]. Pools offering partial licensing with a proportionate royalty would provide a party with needed patents instead of the whole package including unneeded patents[76].

Opponents argue that partial licence turns the pool into bilateral agreements, puts a burdensome task on the pool, and engages with inconveniences such as high transaction costs and time for multiple negotiations, holders' unwillingness for negotiations, and the probability that the individually negotiated royalties collectively increase above the set package license royalty. One may wonder what happens to the one-stop-shop mechanism as the chief efficiency of pooling, if pools offer a pick-and-choose mechanism requiring multiple transactions and different royalties.

The two systems have adopted different approaches toward partial pool licensing. The Agencies principally show reluctance toward it and do not consider its refusal problematic. Mentioning the drawbacks of this option, the Agencies state that although partial licensing can "cull non-essential patents" from the pool, a more efficient way would be to continuously review the pool to ensure all included patents are essential[77].

The Commission does not explicitly mention partial-pool licensing in the TT Guidelines; however, in the assessment of the pools of non-essential but complementary technologies, it examines whether the pooled technologies are available only as a single package or the licensees have the possibility to partially obtain a licence for a proportional reduction of royalties[78]. It highlights that the latter option may reduce the risk of foreclosure of third-party technologies outside the pool.

Lugard and Hancher advocated this encouraging approach of the EU arguing that some pooled patents may be necessary for marketing compliant products within

[75] Promoting Innovation and Competition. *Supra fn*. 3. Pp. 83-84.
[76] Paul Lugard and Leigh Hancher, *On the Merits: Current Issues in Competition Law and Policy* (Intersentia, 2005).
[77] Promoting Innovation and Competition. *Supra fn*. 3. P. 84.
[78] TT Guidelines. *Supra fn*. 56. Para. 264 (d).

certain Member States while not necessary for licenses which plan to market those products in Member States where the patents in question are not registered[79].

One should note that partial pool licensing weakens the efficiency of pooling mechanism, and it is better not to be encouraged irrespective of circumstances. Anyhow, the following issues should be taken into account:

- Exchange of sensitive information: for example, information on royalty payments can reveal the licensee's unit volumes, revenue, and pricing when licensee and licensor are rivals in a downstream market.
- Partial pooling unreasonably presumes that the licensees are fully aware of the essentiality or non-essentiality each patent. This presumption may not be always the case particularly in the IoT space which involves many unfamiliar licensees.
- Unavailability of partial pool licensing does not necessarily have anticompetitive impacts if the pool lacks market power.
- Partial licensing is a response to the fear of inclusion of substitute patents in pool. The continuous review of patents is an alternative solution as adopted by the US.

### iii. Grantbacks

A grantback is an arrangement under which a licensee agrees to extend to the licensor the right to use the licensee's improvements to the licensed technology[80].

Broad grantbacks which include inventions related to the subject of the licensed patent or even completely unrelated inventions, particularly those that deny the innovator's right to license others, can deter innovation by reducing the returns available to follow-on innovators. Broad grantbacks may cause anticompetitive effects by limiting competition and disincentivising the licensees to engage in R&D[81].

[79] Lugard and Hancher.
[80] IP Guidelines. *supra fn*. 41. § 5.6.
[81] *Ibid.*

Under a non-exclusive grantback, the licensee should not license back exclusively to the licensor. Both systems acknowledge that a non-exclusive grantback allows the pool to feed on and to profit from improvements to the pooled technology[82]. It can also promote competition by allowing licensors to use the licensee's improvements to the licensed technology. This limits the ability of licensees to refuse license improvements and thus allows production of patent-conforming products which promote innovation by rewarding first innovators for enabling follow-on innovation by others and encourages subsequent licensing of innovation results[83].

They agree that to mitigate the grantback concern: (a) the grantback clause should be limited to improvements on the fundamental/essential patent; (b) a royalty fee formula should be set so that newly developed patents receive higher royalties than older ones that make it beneficial for licensors to introduce new essential patents into the pool; and (c) licensees should have option to choose between licensing their own patents through the pool pursuant to the same royalty-allocation rules or licensing them separately on FRAND terms[84].

**iv. Royalties**

How to set royalty for a patent pool is another consideration of antitrust authorities. Some commentators believe that all types of government price control which set licensing royalties can erode the benefits of pricing based on market conditions leading to resource misallocation. They even argue that pools would disappear without the freedom to set royalties[85]. On the other hand, some claim that royalty reasonableness should be checked over time through caps or considering a reasonable percentage of downstream price[86]. By the same token, the two systems have different theories.

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[82] TT Guidelines. *Supra fn.* 56. Para. 271.
[83] *Ibid.*
[84] MPEG-2 Business Review Letter at 12, 13; DVD3CBusiness Review Letter at 8, 14; DVD6CBusiness Review Letter at 8-9, 14-16. Promoting Innovation and Competition, at 81, And European Commission, Press release, IP/03/1152, Brussels, 7th August 2003. <https://ec.europa.eu/commission/presscorner/detail/en/IP_03_1152>.
[85] Promoting Innovation and Competition. *Supra fn.* 3. P. 83.
[86] Promoting Innovation and Competition. *Supra fn.* 3. P. 82.

Although the Agencies generally do not assess pool royalty reasonableness, they consider royalties and their formula as relevant factors when investigating alleged price coordination. If royalties are a small portion of the downstream price, it is unlikely that they are used to coordinate downstream prices[87]. But even royalties that are a great proportion of the downstream price do not necessarily raise competitive concerns[88].

In the EU, the firms building a technological pool compatible with Article 101 TFEU are free to negotiate and fix royalties for a pool package, subject to any commitment given to license on FRAND terms. It may be more efficient in certain circumstances if the pool royalties are agreed before choosing the standard to avoid increasing royalty rates by conferring a significant degree of market power on one or more essential technologies. Nonetheless, licensees must remain free to determine the price of products produced under the licence[89].

While excessive or monopolistic pricing is not a standalone theory of harm under US antitrust law but considered an indication of the free market rewarding innovations by high prices[90], excessive price is principally considered abusive violating Article 102 TFEU, even in the absence of other anticompetitive practices.

This theoretical divergence between the two systems is not influential in pooling practice as both have reached a common approach, that is, licensing on FRAND terms which is one of the safe harbour conditions set by the Commission in TT Guidelines and by the DOJ in the BRLs.

**d. Risk of Collusion, exchange of sensitive information**

Patent pools can harm the market by bringing horizontal competitors together and permitting them to jointly set royalty fees for their own patents. This risk becomes higher when the firms possess competing patents and may lead to monopoly prices

[87] MPEG-2 Business Review Letter. At 11; DVD3CBusiness Review Letter. At 13 and DVD6CBusiness Review Letter. At 14.
[88] Promoting Innovation and Competition. *Supra fn.* 3. P. 83.
[89] TT Guidelines. *Supra fn.* 56. Para. 268.
[90] US Supreme Court, *Verizon Communications Inc. vs. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004), 13 01 2004.

on an otherwise competitive market. Pools may facilitate collusion by their mechanism to exchange competitively sensitive information which could facilitate downstream price coordination, discourage competition in technologies and reduce R&D innovation[91]. Notably, once interested parties participate simultaneously to form pools of competing standards, it may lead to exchange of sensitive information between competing pools[92].

Both systems recognise this risk and require certain safeguards to ensure that sensitive information is not exchanged, or the exchange is limited to what is necessary for the establishment and operation of the pool[93]. The concern is mitigated when the information disseminated is historical, aggregated and published in a format that precludes identifying individual entities and is limited to the quantity, type, place of manufacture and sale of products sold before providing it to the pool. As such, the pool's members are prevented from directly accessing individual licensees' sensitive business information[94]. Adding an independent expert or licensing body is proposed to ensure that output and sales data necessary for the purposes of calculating and verifying royalties, is not disclosed to competing undertakings in affected markets[95]. The transparency of the pool creation process and the extent to which independent experts are involved in its creation and operation are also considered[96].

It is worth mentioning that in the EU, the exchange of information is becoming more relaxed in the digital field. In the last revision of Horizontal Guidelines (HGs), the Commission reformed the information exchange in the digital field emphasising that the HGs should provide clear guidance on information exchange within cooperation models. It also highlights that the revised HGs should explicitly foresee that the Commission will assess the *actual* effects of the information exchange on

[91] Promoting Innovation and Competition. *Supra fn*. 3. Pp. 81-82
[92] TT Guidelines. *Supra fn*. 56. Paras. 259-261.
[93] *Ibid.* Para. 261.
[94] IPXI Business Review Letter.
[95] TT Guidelines. *Supra fn*. 3. Para. 260.
[96] *Ibid.* Para. 248.

competition[97].

## 2. Antitrust safe harbour

While the EU Commission provides a comprehensive safe harbour for technology pools, the US Agencies provides neither *per se* prohibitions nor safe harbours explicitly, as they do not measure a pool against a checklist of safeguards but evaluate the particular facts and circumstances to determine whether the actual conduct is anticompetitive[98]. However, the Agencies identify the following safeguards that patent pools can apply to reduce the risk of competitive harm[99]:

- The patents in the pool must be valid and not expired.
- No aggregation of competitive technologies and setting a single price for them.
- An independent expert should be used to determine the essentiality of patents in the pool.
- Royalties should be reasonable.
- Non-exclusive licences should be available.
- Pool agreement must not disadvantage competitors in downstream product markets.
- Pool participants must not collude on prices outside the scope of the pool including on downstream products.

Notably, the absence of these safeguards does not imply that the pool necessarily harms competition in violation of the antitrust laws. The IP Guidelines, however, state that patent pooling is anti-competitive if any of the following conditions are met:

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[97] Evaluation of Commission Regulation (EU) No 1217/2010 of 14 December 2010 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to certain categories of research and development agreements and of Commission Regulation (EU) No 1218/2010 of 14 December 2010 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to certain categories of specialisation agreements, 07/04/2020. <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=PI_COM:Ares(2020)1972062>.

[98] DVD3C Business Review Letter. At 11; DVD6CBusiness Review Letter. At 12; IP2 Report. At 72–73.

[99] Promoting Innovation and Competition. *Supra fn.* 3. Pp. 74-82.

- The excluded firms cannot effectively compete in the relevant market for the product incorporating the licensed technologies.
- The pool participants collectively possess market power in the market.
- The limitations on participation are not reasonably related to the efficient development and exploitation of the pooled technologies.

While in the EU, the safe harbour of the TT Guidelines covers both pool creation and licensing out agreements. Regardless of the market position of the pool's parties, if the following conditions are met[100], Article 101 (1) will be inapplicable otherwise the pools come within the application of Article 101 (3) TFEU:

- Open participation of all interested IPR owners in the pool creation.
- Insertion of only essential/complementary technologies.
- Inclusion of sufficient safeguards against exchanges of sensitive information.
- Non-exclusive licensing.
- Licensing out to all potential licensees on FRAND terms.
- Freedom of parties to challenge the validity and essentiality of the pooled technologies.
- Freedom of parties to develop competing product and technology.

### 3. Takeaway

The presented substantive analysis of antitrust law described how the two systems apply their competition policies (i.e., the Sherman Act, and Articles 101 and 102 TFEU) to the patent pools assessment through their soft-law regulatory frameworks. This comparative analysis can be summarised as follows:

1. Both systems agree that,
    a. Inclusion of complementary and essential patents into a pool is pro-competitive.
    b. Pooled patents must be valid. However, both seem to ignore that (a) the validity assessment is only carried out by courts if there is a challenge, and (b) reaching certainty that a pool is only constituted

[100] TT Guidelines. *Supra fn*. 56. Para. 261.

by valid patents is rare. That pooling being only made of valid patents is crucial in safeguarding public interest and in setting royalty rates.

c. The Grantback clause should be non-exclusive and limited to the improvements of patents essential to implementing the standard.
d. Exchange of competitively sensitive information is considered anti-competitive and engaging an independent expert is proposed to mitigate the risk of collusion between rivals.

2. Both systems diverge from each other in the following issues:
    a. Assessment of inclusion for substitute/non-essential patents into a pool. Although the US assesses it cautiously, it recognises that it may be pro-competitive and justified under the rule-of-reason. In contrast, the EU considers this inclusion a violation of Article 101(1) TFEU so that the exemption under Article 101(3) TFEU is unlikely fulfilled. This difference in evaluation seems significant and the EU's strict policy seems unnecessary. We discuss this further in section IV.B at page 69.
    b. In the US, partial pool licensing is unwelcome as it turns one pooled package into individual sub-packages. However, its refusal is not regarded as problematic *per se*. In contrast, the EU encourages partial licensing when a pool is composed of non-essential but complementary patents.
    c. In the US, licensors are free to choose between exclusive and non-exclusive licensing. An exclusive licensing can be considered even pro-competitive under the rule-of-reason analysis. A non-exclusive licence is seen in the EU as a condition to benefit from the safe harbour. Although seeming stricter, the EU does not totally rule out exclusive licensing but assesses it on a case-by-case basis.
    d. There is an old divergence between the two systems in terms of royalty rate. While excessive pricing is not a standalone theory of harm under the US antitrust law, it violates the TFEU if carried out by a dominant pool. Nevertheless, the FRAND condition makes this

difference less significant, as in modern patent pools which are in close connection with standardised technologies, SEP holders are typically committed to licencing their patent on FRAND terms whether through patent pools or individual licensing.

# IV. Main points for improvement

The analyses presented in the paper show that EU competition law and US antitrust law share common approaches and policies where both have a policy to facilitate the formation of pools. However, the US system seems more pro-patent pool in two ways, that if adopted by the EU could promote its capacity in regulating patent pools.

## A. Assessment template for patent pools

Since 2003, the Commission has issued no administrative (comfort) letter for patent pools. These letters serve the same purposes as the BRLs do in the US: firms could notify their cooperation agreement to the Commission to receive an individual exemption from the application of Article 101 TFEU.

The reason for this is that Regulation 1/2003[101] stated that the responsibility for the assessment of agreements shifted from the Commission, in the form of individual exemption, to firms which rely on soft law and precedents for self-assessing the legality and compatibility of their agreements with Article 101 TFEU[102]. The central feature of the Regulation is the direct application of Article 101(3) TFEU, meaning that agreements, decisions, or conducts fulfilling the conditions of this Article are valid and enforceable without a prior administrative decision by a competition authority. Accordingly, there is no longer formal exemption decisions

[101] Council Regulation No 1/2003. *Supra fn*. 47.
[102] Giorgio Monti, 'Business Cooperation in Times of Emergency : The Role of Competition Law', *CPI Competition Policy International*, 1.May (2020), 1–10 <https://www.pymnts.com/cpi_posts/business-cooperation-in-times-of-emergency-the-role-of-competition-law/>. Pp. 5-6

nor new comfort letters[103].

To complete the Regulation 1/2003, the Commission through the "Modernisation Package" adopted six notices among which the Notice[104] on informal guidance related to novel questions concerning Articles 81 and 82 EC Treaty (current Articles 101 and 102 TFEU) is to compensate the absence of a notification system. It provides a legal framework under which firms can request a guidance letter before the Commission. Through this request, firms demand interpretation for questions raised by their actual or potential agreement which could fall within the scope of Article 101 and 102 TFEU[105].

Guidance letters are not Commission decisions to be binding for Member States' competition authorities nor competent courts. However, they aid firms with informed assessments of their agreements, particularly because they will be publicly available where parties agree on a public version[106]. The Commission has never (at least publicly) issued guidance letters[107]. It is not clear whether any firm has asked for them or the Commission has refused to issue them[108].

In addition, the few comfort letters on patent pools issued before the coming into force of Regulation 1/2003 have not been made publicly available. Therefore, the EU lacks reports presenting the Commission's assessments of patent pools that can be used by firms in their self-assessment.

Unlike the EU, the US gives a particular weight to predictability as a promoting factor for firms in today's fast changing world. The publication of the BRLs in the US creates a good degree of legal certainty as the DOJ's analyses presented within

[103] Céline Gauer and others, 'Regulation 1/2003 and the Modernisation Package Fully Applicable since 1 May 2004', *Competition Policy Newsletter*, 2004 <https://ec.europa.eu/competition/publications/cpn/2004_2_1.pdf>.
[104] European Commission, Commission Notice on informal guidance relating to novel questions concerning Articles 81 and 82 of the EC Treaty that arise in individual cases [hereinafter: guidance letters]. <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52004XC0427(05)>.
[105] *Ibid.* Para. 11.
[106] *Ibid.* Paras. 22-25.
[107] Monti, 'Business Cooperation in Times of Emergency : The Role of Competition Law'.
[108] The Commission highlights the primary objective of the Regulation 1/2003, which is to ensure effective enforcement and stipulates that the Commission may only provide informal guidance if this is compatible with its enforcement priorities. Commission Notice. Para. 7. Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52004XC0427(05)>

provide guidance for both the firms and public regarding the scope, interpretation, and application of antitrust law. The US Agencies have created a template for patent pools through the BRLs which, having led to the establishment of dozens of patent pools over time, describes the structure of modern patent pools.

The fact that the comfort letters are inaccessible in the EU is not defendable nor helpful. This legal uncertainty and the lack of assessment template for patent pools should be eliminated. Promisingly, the EU resumed paying attention to predictability as the recent Horizontal Guidelines revision shows a particular focus on legal certainty[109] as the contributors advise that the Guidelines should provide a higher degree of legal certainty to participants of cooperation in digital markets[110]. This expectation is truly in line with the spirit of EU law where legal certainty is considered a general principle of jurisprudence of the ECJ and a guiding idea of most legal systems of Member States[111]. Legal certainty defined as "*maximum predictability of officials' behaviour*"[112] is safeguarded when validly made laws are publicly declared. In this way, subjects can rely on the law and foresee application of state power[113].

## B. Inclusion of substitute/non-essential patents into pool

Both systems agree that pools with complementary patents are assessed with greater confidence than those containing substitute patents.

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[109] Evaluation of Commission Regulation (EU) No 1217/2010 of 14 December 2010 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to certain categories of research and development agreements and of Commission Regulation (EU) No 1218/2010 of 14 December 2010 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to certain categories of specialisation agreements, 07/04/2020. <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=PI_COM:Ares(2020)1972062>.

[110] Main Theses on Reform of Horizontal Guidelines (HGL), Specialisation Block Exemption Regulation (SBER) & Research & Development Block Exemption Regulation (R&D BER), Ref. Ares(2020)917048 - 12/02/2020. Available at: https://competition-policy.ec.europa.eu/public-consultations/2019-hbers_en.

[111] Juha Raitio, *The Principle of Legal Certainty in EC Law*, *Springer*, 2003 <https://doi.org/10.4337/9781783478958.00010>. P. 125.

[112] Erik Claes, *Facing the Limits of the Law*, ed. by Wouter Devroe and Bert Keirsbilck, *Springer*, 2009 <https://doi.org/10.1007/978-3-540-79856-9>. P. 92.

[113] James R. Maxeiner, 'Legal Certainty and Legal Methods : A European Alternative to American Legal Indeterminacy ?', *Tul. J. Int'l & Comp. L.*, 15 (2007), 541–605 <https://scholarworks.law.ubalt.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1407&context=all_fac>. P. 546.

Inclusion of only essential technologies in a pool (which are complements by necessity) safeguards it from antitrust scrutiny in both systems. In the EU, such a pool falls outside Article 101(1) TFEU irrespective of the parties' market position[114]. Limiting a pool to essential patents ensures that rivalry is neither foreclosed among patents within the pool nor between patents in the pool and patents outside it[115].

The EU and the US also recognise that the inclusion of non-essential patents may unreasonably foreclose the non-included competing patents from use by manufacturers. In this situation, the manufacturers may be forced to pay for unneeded technology that leads to collective bundling[116]. However, both the EU and US acknowledge that these restrictive agreements may result in pro-competitive efficiencies. Hence, they must be analysed under Article 101(3) and rule-of-reason and be balanced against the negative effects on competition. In the EU, the conditions of Article 101(3) are likely to be fulfilled if a pool including non-essential patents: (a) fulfils all the criteria of the safe harbour, (b) proves pro-competitive effects, and (c) lets licensees have the possibility of obtaining a licence for only part of the package with a corresponding reduction of royalties[117].

The EU and the US also recognise that pools composed of pure substitute patents are more likely to harm social welfare and to raise antitrust concerns. This inclusion would risk turning the pool into a price-fixing mechanism and increase the total royalty rate. However, the EU Commission more strictly assesses this inclusion than the US, as it considers it a violation of Article 101(1) and states that the fulfilment of the conditions provided in Article 101(3) is unlikely to be obtained[118]. In fact, the EU totally rules out the inclusion of substitute patents.

In contrast, the DOJ states that it would not challenge the inclusion of substitute patents in a pool without considering whether it produces significant efficiencies[119].

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[114] TT Guidelines. *Supra fn*. 56. Para. 262.
[115] DVD6C Business Review Letter. At 12.
[116] TT Guidelines. *Supra fn.* 56. Para. 262.
[117] *Ibid.* Para. 265.
[118] *Ibid.* Para. 255.
[119] DVD6C Business Review Letter. At 12.

It considers it reasonable to include substitute patents in a pool if their inclusion does not enhance market power or if the pool creates significant efficiencies that outweigh the risks of competitive harm. Such inclusion, therefore, is not seen unlawful *per se* and the competitive costs and benefits of such a pool is analysed under its fact, context, and the rule-of-reason[120].

The following section provides a discussion on why we believe that the US approach in this regard is more reasonable and in contrast why the EU counterpart is not necessary nor pro-pooling.

## 1. Difficulty in distinction

Despite having effect on antitrust assessment, the distinction between complementary/substitute and essential/non-essential patents is unclear and requires an on-going assessment. As a matter of fact, certain non-essential patents may become essential as technology evolves and certain technologies can be partly complementary and substitute.

Additionally, the essentiality test does not work well for patent pools outside standards and even in the case of standard-related pools, this concept is inherently ambiguous[121]. Neither system defines essential patents clearly as what is essential may vary from one patent pool to another[122]. Some pools define an essential patent in a technical context as one that is essential to manufacture a product in accordance with standard specifications. While some others, once a patent is commercially necessary based on consumers' demand, regard it as essential in assessing the potential threats on competition in by the pool creation. In this context, the definition of essentiality encompasses not only patents that are necessarily essential to the standard, but also those essential to the standard as a practical matter because there are no economically viable substitutes for that patent[123]. We believe that the determination of commercially essential patents is impossible as it requires proving

[120] IPXI Business Review Letter and Promoting Innovation and Competition. P. 78.
[121] Hans Ulrich, 'Patent Pools - Policy and Problems', in *Research Handbook on Intellectual Property and Competition Law*, ed. by Josef Drexl (Edward Elgar Publishing Limited, 2008), pp. 139–62 <https://doi.org/10.4337/9781848443853.00014>. P. 152.
[122] MPEG-2 Business Review Letter. At 5 and DVD6C Business Review Letter. At 3-5.
[123] RFID Business Review Letter.

the absence of real alternatives known as devil's proof, i.e., impossible proof of nonexistence[124].

Perhaps that is why the US IP Guidelines avoid explicitly mentioning the distinction between complementary and substitute patents, nor give any reference to their essentiality. They assess the inclusion of non-essential/substitute patents under the rule-of-reason and consider it possible, reasonable, and even efficient under some circumstances. Oddly, although the Commission highlights that the distinction between substitute and complementary is unclear[125], it makes explicit distinctions between them and accordingly specifies principles to assess competitive characteristics of each type. In addition, the Commission expresses that the essentiality examination is time dependent, as a patent essential at one point may later become non-essential or substitute due to the emergence of new third-party technologies[126].

One may conclude that when a distinction is not clear nor absolute, the EU, instead of taking a strict position, is better to adopt the US approach through assessing patent combinations on a case-by-case basis.

## 2. Uncertainties related to price fixing and competition foreclosure

Tying prevents licensees from switching to substitute technologies[127]. Once substitute technology is bundled in the pool and licensed as a part of the package, and the royalty paid for the package covers already a substitute technology, then licensees are less likely to license a competing technology outside the pool[128]. However, this does not always lead to price fixing and competition foreclosure. As far as price fixing is concerned, the pool is unlikely to enable collusion among licensors and create price fixing if: (a) the royalty rate is charged per-unit

[124] Nobuyuki Hamanaka, 'Distinction between Complementary and Substitute Patents as a Matter of Competition Law; Observations from Comparative Perspective' (Munich Intelectual Property Law Center (MIPLC), 2011) <http://www.miplc.de/research/>. P.52.
[125] TT Guidelines. *Supra fn*. 56. Para. 254.
[126] TT Guidelines. *Supra fn*. 56. Para. 263.
[127] *Ibid.* Para. 223.
[128] *Ibid*. para. 262.

irrespective of patents number and type (as it was the case in the 3C DVD pool[129]), and (b) the royalty is sufficiently small compared to the total costs of manufacture[130].

In the EU, there is no decision that addresses tying in the context of licensing agreements and as such, this article studies the US *Philip* case to see under what circumstances tying and competition foreclosure may happen.

**US *Philip* case**

The International Trade Commission (ITC) ruled that Philips' licensing arrangement comprising of essential and non-essential patents for CD products was a tying arrangement and constituted patent misuse. The ITC decided that the anti-competitive effects of this inclusion outweighed its pro-competitive effects as it could foreclose alternative technologies and harm competitors seeking to license alternative technologies to parties who needed to obtain licenses to Philips's essential patents[131].

Philips then appealed and the Court of Appeal overturned the ITC's decision based on distinguishing between "patent-to-product" and "patent-to-patent" tying arrangements. According to the ruling, in patent-to-product tying, the patentee uses the market power conferred by the patent to force customers to purchase a product in a separate market that the customer might otherwise purchase from a competitor. Hence, the patentee can use its market power to foreclose competition in the market for the product[132].

However, patent-to-patent tying (which is what was discussed in *Philips* case) is different as the package licensing including both essential and non-essential patents does not: impose any requirement on the licensee; prevent the licensee from using any alternative technology that may be offered by a competitor of the licensor; and

[129] 3C DVD Business Review Letter.
[130] *Ibid.*
[131] *U.S. Philips corp. vs. ITC*, 424 F.3d 1179, 1193 (Fed. Cir. 2005). P.1184.
[132] *Ibid.* P. 1189.

foreclose the competitor from licensing their alternative technology[133].

The Court also stipulated that Philips gave its licensees the option of using any of the patents in the package at the licensee's option and charged a uniform licensing fee regardless of which or how many of the patents in the package the licensee chooses to use in its manufacturing process[134]. The royalty fee neither increased nor decreased regardless of number of patents chosen by the licensee, and inclusion of non-essential patents avoided increasing the royalty rate[135].

The Court conclusion was that bundling essential and non-essential patents in the form of patent-to-patent arrangements is unlikely to create anti-competitive effects and is not considered an unlawful practice,

- if licensees are not forced to take from a licensor anything unwanted (i.e., tied product). In this context, to create tying there should be evidence that licensee or potential licensee asked them to remove any of non-essential patents from the package and the patentee refused to do so[136];
- if licensee is not restricted from obtaining licenses from other sources to produce the relevant technology. The Court stated that patents within a package can be regarded as non-essential only if there are commercially feasible alternatives to those patents. If it is not the case, packaging those non-essential together with essential patents can have no anti-competitive effect in the market because no competition for a viable alternative product is foreclosed. In fact, in such patent packaging there is no two separate products to fulfil tying condition[137];
- if the royalty is set on a per-unit basis and it does not vary depending on whether the licensee uses only the essential patents or all of the patents in the package. The Court highlighted that package licence agreements in which the royalty was based on the number of units produced but not the number of patents used to produce them, can resolve all potential patent disputes in

[133] *Ibid.* P. 1180.
[134] *Ibid.* P. 1188.
[135] *Idem.*
[136] *Ibid.* P. 1195.
[137] *Ibid.* P. 1194.

> advance between the licensor and the licensee. Whereas licensing patent rights on a patent-by-patent basis can result in continuing disputes over whether the licensee's technology infringes certain ancillary patents owned by the licensor that are not part of the group elected by the licensee[138].

A nonessential patent is valueless. The Court explained that the value of any patent package is largely (if not entirely) based on the essential patents. It found it rational for a patentee who has essential and non-essential patents to charge what the market will bear for the essential and to offer the others for free. Because if the patentee allocates royalty fees between its essential and non-essential patents, he runs the risk that licensees will take a license to only the essential ones and thereby, he will not be able to obtain the full royalty value of the essential patent[139].

The court also referred to the fact that the line between competitive and complementary patents is very difficult to draw. It also added that an agreement that was perfectly lawful when executed could be challenged as *per se* patent misuse due to developments in the technology of which the patentees are unaware or which have just become commercially viable. Such a rule would make patents subject to being declared unenforceable due to developments that occurred after execution of the licence or were unknown to the parties at the time of licensing. Not only would such a rule render a licence subject to invalidation on unknown grounds at the time of licensing but it would also provide a strong incentive to litigation by any licensee since the reward for showing that even a single licence in a package was non-essential would render all the entire package unenforceable[140].

The case analysis shows that the anti-competitive effects of tying practice which result from the inclusion of non-essential patents into the pool is much doubtful. Therefore, the tying practice should be examined on a case-by-case basis given the fact that the inclusion may lead to pro-competitive effects, since:

- it could reduce transaction costs including costs associated with determining

[138] *Ibid.* Pp. 1190-1191.
[139] *Idem.*
[140] *Ibid.* Pp. 1196-1197.

individual patent-by-patent royalty and monitoring of non-essential patents;

- pooling non-essential patents can create efficiency because the combination of essential and non-essential technical elements allows the technology as a whole to be exploited more efficiently than otherwise, particularly in the case of implementation patents;
- this inclusion may ensure that the production under the licence conforms to quality standards; and
- it may encourage third parties to develop technology which is not essential but necessary or useful for putting the essential technology into practice.

### 3. Negative effects of EU approach on product-based pooling

The EU's strict approach toward inclusion of non-essential/substitute patents into a pool may also affect the product-based pools as a recent form of pooling discussed in section II.B.2 at page 46. This type of pooling offers all patents necessary for a product which may consist of essential and non-essential/substitute patents. Such pooling has attracted several licensing providers including One-Blue and Avanci where they can provide their licensees with as many patents as possible for a specific application or product all at once. This also can attract newcomers in the IoT era.

This approach can, therefore, prevent the promotion of such pools and their significant role in the EU's economy. The 23 million European SMEs, as the lifeblood of Europe's economy, accounting for 98 percent of businesses[141] are often behind large firms in standardisation due to the technological complexity and/or the huge investment required to develop a competitive technological platform. They, however, can enhance their competitiveness and reputation by implementing standards in their products [142]. Nevertheless, as pure implementers, SMEs mostly

[141] EU Commission, Thinking Big for Small Businesses What the EU does for SMEs, Ref. Ares(2014)73428 - 15/01/2014. Available at: https://ec.europa.eu/docsroom/documents/874/attachments/1/translations/en/renditions/pdf.
[142] Henk J De Vries and others, *SME Access to European Standardisation Enabling Small and Medium-Sized Enterprises to Achieve Greater Benefit from Standards and from Involvement in Standardisation* (Rotterdam School of Management, Erasmus University, Rotterdam, the Netherlands, 2009)

lack the skills necessary to identify the key players in the field. Or if they identify them, they lack the means to contact them or to identify the essential patents because large licensors mainly conclude their deals within each other. Thus, providing them with one package of necessary technologies tested by an independent agent along with the cost benefit and other advantages of patent pools can be very beneficial for such a large chunk of the European economy[143].

The discussion presented in this section shows that the EU's approach toward inclusion of substitute/essential patents into pools is not reasonable. Hence, we propose to analyse patent combinations on a case-by-case basis for three reasons. First, the characterisation of pooled patents is very difficult in practice and founding the legality of a practice on a varying characterisation makes no sense and undermines legal certainty. Second, this inclusion does not necessarily create price fixing nor competition foreclosure as shown. Third, this approach can negatively affect product-based pools as effective mechanisms which satisfy the IoT newcomers' needs in getting required licences for their products.

## V. Conclusion

This study showed how competition law impacted the creation and the operation of patent pools: the more relaxed antitrust policy, the further the growth of patent pools. In the pooling promotion context, the goal should be to help patent pools develop in compliance with competition law. This will yield to innovation, FRAND access to SEPs, and consumer welfare. The pro-competitive effects of patent pools are so significant that it is worth paying great attention to the policies which apply to them. However, some EU policies have anti-pooling effects and decelerate its regulatory framework development with respect to pooling and the progress of the cutting-edge technologies.

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<https://www.researchgate.net/publication/259005422_SME_access_to_European_standardisation_Enabling_small_and_medium-sized_enterprises_to_achieve_greater_benefit_from_standards_and_from_involvement_in_standardisation>.

[143] Harris Tsilikas and Claudia Tapia, 'SMEs And Standard Essential Patents: Licensing Efficiently In The Internet Of Things', *Les Nouvelles - Journal of the Licensing Executives Society*, LII.4 (2017), 170–76 <ssrn: https://ssrn.com/abstract=3009039>.

Notably, there are factors beyond competition law which can have influence on patent pools. For example, firms' business models can shape their tendency or reluctance to establish or join pools. Some empirical analyses have shown that vertically integrated firms have higher pool participation rates, while pure innovators are often unwilling to join pools[144]. These factors are beyond the scope of the present paper.

[144] Reiko Aoki and Sadao Nagaoka, *Coalition Formation for a Consortium Standard Through a Standard Body and a Patent Pool: Theory and Evidence from MPEG2, DVD and 3G*, 2005 <https://econpapers.repec.org/paper/hitiirwps/05-01.htm>. Pp. 7-9.

# *Chapter 2*

# *SEP licensing level and royalty base in value chains with emphasis on IoT and connected cars*[1]

[1] This chapter was accepted for presentation at the Competition Law and Economics European Network (CLEEN) conference on May 26, 2023.

# I. Introduction

Standard Essential Patents (SEPs) are important in IoT and specially in the automotive industry, where the use of connectivity standards is increasingly becoming prevalent. As cars become more connected, they require access to a range of different communication protocols and technologies, and this has led to a rise in the number of lawsuits related to SEP licensing in the automotive industry.

The emergence of connected vehicles has the potential to revolutionise the automotive industry and can provide benefits to manufacturers, consumers, and society as a whole. According to McKinsey, advanced industries, on-demand mobility and data-driven services could generate up to $2 trillion in revenue by 2030, with data connectivity services accounting for a significant portion of this amount, ranging between $450 to $750 billion per year[2]. Moreover, in a McKinsey global survey, 40% of respondents would like to switch car brands for better connectivity services, indicating the significant demand for this technology[3]. The growth of connected vehicles has been enabled by mobile telecommunication standards, particularly cellular standards, which provide the necessary infrastructure for new connectivity-based products and services to emerge in the automotive industry. However, as new sources of value are created by connected vehicles, the issue of how to monetize them and who should benefit from them becomes critical. This transformation is disrupting traditional value chains and leading to new business models in the industry[4].

In addition, the value of royalty and determination of licensing level for SEPs present challenges in the automotive industry. Original Equipment Manufacturers (OEMs) in car industry typically expect their suppliers to manage any necessary IP licenses related to their products and provide indemnification against third-party

2 McKinsey Center for Future Mobility, From Buzz to Bucks – Automotive Players on the Highway to Car Data Monetization, McKinsey & Company, 2018 <https://www.mckinsey.com/~/media/mckinsey/industries/automotive and assembly/our insights/accelerating the car data monetization journey/from-buzz-to-bucks-automotive-players-on-the-highway-to-car-data-monetization-web-final.pdf>. P. 4.
3 Idem.
4 Bowman Heiden, 'The Value of Connectivity in the Automotive Sector – a First Look', SSRN Electronic Journal, 2019, 1–46 <https://doi.org/10.2139/ssrn.3521488>. P. 1.

rights. However, navigating upstream licensing for connected vehicles is complex and challenging, as more and more devices become connected to the internet, and the number of SEPs required to implement the necessary communication protocols is in rise. In addition, it is a matter of debate if the royalty should be based on the value of the entire vehicle or the component that integrates the SEP.

Despite these challenges, the use of connectivity standards in the automotive industry is expected to continue to grow. As such, it is crucial that the issues related to SEP licensing are addressed in a way that ensures fair and reasonable access to these important technologies.

## A. Connected car history

In the past, automotive companies have had limited licensing in the industry, as they typically developed their own automotive-specific technologies like transmissions, braking systems, on-board diagnostics, and fuel systems. Proprietary software-based technologies were also created by individual car companies, rather than following standards. However, with the emergence of the connected vehicle in 1996, starting with General Motors' introduction of the OnStar system, and the subsequent integration of 3G/4G functionality, there has been a shift towards standards-based frameworks[5]. Connectivity has become increasingly essential to the development of various applications, such as navigation, infotainment, and over-the-air updates[6]. As V2X (vehicle-to-everything) and autonomous vehicle functionality become more prevalent, connectivity is becoming a ubiquitous and fundamental technology that underpins vehicle operations and the delivery of services that shape the consumer mobility experience. As a result, beyond traditional OEMs, more companies in automotive industry are becoming involved, where component suppliers are approached by them to handle licensing issues for their components.

There are three primary types of connectivity solutions that have been utilized in

[5] Sankul Nagpal, 'History Of Connected Car Technology | The Genesis Saga', *GoMachanic*, 2021 <https://gomechanic.in/blog/history-of-connected-car-tech/>.
[6] Romain Juillet, 'Introduction to Automotive Software Development', *Bocasay*, 2022 <https://www.bocasay.com/introduction-to-automotive-software-development/>.

the past to enable automotive services, namely embedded solutions, tethered solutions, and integrated/mirrored solutions [7]. Most car manufacturers have recognized the importance of controlling the connection with their customers to generate revenue from automotive connectivity. As a result, nearly all manufacturers are to incorporate embedded solutions in all their new vehicles in near future. IDC predicts that by 2023, almost 90% of new vehicles sold in the US and 70% worldwide will be equipped with embedded connectivity[8]. In Europe, an EU mandate requiring the inclusion of eCall technology in all new vehicles sold from April of 2018 has facilitated the use of embedded solutions[9].

As a result, the car is quickly emerging as the next significant digital platform, leading to fierce competition between the new vehicle ecosystem based on embedded connectivity and the existing mobile ecosystem based on smartphone connectivity and application platforms, such as iOS and Android, and their associated third-party developer networks. While certain applications, such as ride-sharing services, are better suited for smartphones, other emerging services such as safety, security, over-the-air updates, and tolling, among others, favour embedded solutions. For example, advanced navigation applications can be provided through either a vehicle service subscription (e.g., GM Onstar) or a smartphone application (e.g., Waze) through Apple/Android platforms[10].

Automobile companies may need to shift their approach to licensing and become more directly involved in order to take advantage of new software-based technologies and offer the latest advancements to customers. This shift has already led to new relationships between traditional car companies and technology companies, with licensing agreements being made between established car

[7] Heiden. Pp. 8-9.

[8] 'Worldwide Connected Vehicle Forecast', *IDC*, 2023 <https://blogs.idc.com/?s=Worldwide+Connected+Vehicle+Forecast>.

[9] Regulation (EU) 2015/758 of the European Parliament and of the Council of 29 April 2015 concerning type- approval requirements for the deployment of the eCall in-vehicle system based on the 112 service and amending Directive 2007/46/EC. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R0758.

[10] Natalie Leh Hanlon and Natalie Pous, 'What To Expect In Licensing And Litigation As The Internet Of Things Comes To The Automotive Industry', *Bloomberg Law*, 2018 <https://news.bloomberglaw.com/ip-law/insight-what-to-expect-in-licensing-and-litigation-as-the-internet-of-things-comes-to-the-automotive-industry-1>.

companies and small software companies developing standardised IoT features[11]. It also has created opportunities for licensing agreements between large established car companies and small software companies that develop standardised IoT features. These smaller companies, being more agile and creative, may be able to formulate licensing plans and strategies more effectively to incorporate their technologies into cars.

The price differential between cars and other types of consumer devices that typically implement standardised technologies means that a percentage-based model for licensing fees may not be feasible. As a result, some licensors, such as Avanci[12] offer a flat-rate licensing model for cars rather than percentage-based models that many of its members advocate for smartphones[13]. This discourse holds significance for the determination of FRAND rates concerning standards essential patents linked to IoT in automotive applications.

## B. Problem statement

This chapter deals specifically with the question of *licensing level* and *royalty base*, as the former is to determine who should be given a licence for the SEP, and the latter is about how much that licence should cost. SEP holders ideally prefer to grant a licence to the end-product manufacturer, based on the value of the end-product, but the end-product manufacturer may disagree not only with the royalty base, but also with the mere taking of the licence. He may argue that the rightful licensee is actually the component supplier who provides him with the SEP-integrated

[11] 'Rewiring Car Electronics and Software Architecture for the 'Roaring 2020s', *McKinsey & Company*, 2021 <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/rewiring-car-electronics-and-software-architecture-for-the-roaring-2020s#/>.

[12] The creation of Avanci, a one-stop licensing platform, emerged from negotiations between SEP holders, automakers, and suppliers. Launched in September 2016, Avanci focused on streamlining licensing for cellular SEPs in the automotive and smart meter sectors. Major SEP holders like Ericsson, Qualcomm, InterDigital, KPN, ZTE joined the platform. Avanci's unique royalty structure is based on usage context, involving factors such as wide-area connectivity, usage volume, and required bandwidth. See 'Avanci Launches One-Stop Licensing Platform to Accelerate Wireless Connectivity for the Internet of Things', *Avanci*, 2016 <https://www.avanci.com/2016/09/14/avanci-launches-one-stop-licensing-platform-accelerate-wireless-connectivity-internet-things/>.

[13] Bowman Heiden, Jorge Padilla, and Ruud Peters, 'The Value of Standard Essential Patents and the Level of Licensing', *SSRN Electronic Journal*, 2020, 1–34 <https://doi.org/10.2139/ssrn.3717570>. Pp. 30-31.

component, and the appropriate royalty base is the component price itself.

On the other hand, the component suppliers, who are often of different tiers, may consider themselves entitled to a licence, not just for the sake of legally providing the 4G component for the end-product manufacture, but in fact in order to be able to innovate and develop freely, and sell independently to other potential customers[14]. However, they unlikely agree to pay royalty at end-product base.

But legally why is that SEP holders are not willing to license at component makers' level? The answer should be sought in the *first sale* doctrine (also known as *patent exhaustion*), which acts as a defence against a claim of patent infringement in value chains[15]. Under this doctrine, once a patentee grants licence to some tier in a value chain, he cannot succeed on a claim that a subsequent user or purchaser of the article infringes the patent. It is because a patentee can license only *once* in the production chain *per* patent either to component or to end-product manufacturer[16]. The first licensed sale of patented products exhaust patent rights. Therefore, if a SEP holder gives licences to a component maker, he will be prevented from future attempts to extract royalties from downstream purchasers of the component including the end-product manufacturer who is economically a more interesting client for the SEP holder[17].

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[14] This was the case in the *Nokia vs. Daimler*, where several tier 1 suppliers asked for a licence. See Florian Mueller, 'Game Changer in Automotive Patent Wars? Huawei Brought Antitrust Complaint against Nokia in German Court to Get Exhaustive Module-Level SEP License', *FOSS PATENTS*, 2019 <http://www.fosspatents.com/2019/10/game-changer-in-automotive-patent-wars.html>.

[15] *Quanta Computer, Inc. vs. LG Electronics,* Inc., 553 U.S. 617 (2008). The court stated that *"[t]he longstanding doctrine of patent exhaustion provides that the initial authorized sale of a patented item terminates all patent rights to that item*".

[16] Anne Layne-Farrar and Richard J. Stark, 'License to All or Access to All? A Law and Economics Assessment of Standard Development Organizations' Licensing Rules', *George Washington Law Review*, 88.6 (2020), 101–42 <https://doi.org/10.2139/ssrn.3612954>. P. 114. From an economic stance, patent exhaustion seeks to limit intellectual property holders' control over the distribution of patented goods, once they have lawfully sold them in a market. See also Borghetti, Nikolic, and Petit. P. 17.

[17] One may wonder could one prevent patent exhaustion if the SEP holder grant royalty free licence to the component maker and a licence to end-product manufacturer with the argument that by this the patentee's right will not be exhausted. (See Baron, Geradin, and others. P. 92). The answer is negative as this argument was once repelled by the US Supreme Court in LifeScan Scotland, Ltd. vs. Shasta Technologies as the Court held that patent exhaustion principles apply to all authorised transfer whether it be by sale or as a gift, and that in the case of an authorised and unconditional transfer of title, absence of consideration is no barrier to the application of patent exhaustion

## C. Research objective and approach

The main objective in this chapter is to see whether any related branch of law can provide some legal base to define a certain level of licensing in value chain or to definitely exclude a certain level. Obviously, the problem of licensing does not stem from the mere legal concerns, but it is certainly the financial aspects of the problem that are much more important. In fact, the licencing level is a matter of debate because it is directly or indirectly related to the royalty rate.

In practice, three primary licensing options are possible. The first option is a licence to the end-product manufacturer at an end-product rate, which is mostly the SEP holders' preference. The second is a licence to component suppliers at a component-based rate, which is mostly the end-product manufacturer's preference. And the third is a licence to the component manufacturer at an end-product rate which is also demanded by SEP holders.

These options were exactly the principal offers and counteroffers exchanged in the *Nokia vs. Daimler* case [18] (*Daimler*). By focusing on this case and through investigating different branches of law, we aim at examining the problem of licencing level and royalty base in multi-tier value chains. This objective is met through exploring those parts in any branch of law that can somehow help resolve the level definition problem either in a positive (affirmative) or negative manner. That is to say that whether and which legal source may suggest or exclude one level (either component or end-product).

It should be noted that the provided study is driven such that any borderless and lengthy discussion is avoided, and for this, we fix our scope within the boundary of the three main offers exchanged between the parties and the three judgements[19] provided in the *Daimler case*. This way by staying in the practical context, we will be able to step by step create a base for our *functionalistic* approach that will be presented at last. We propose a potential solution to contribute to the ongoing

principles. (See *LifeScan Scotland, Ltd. v. Shasta Technologies*, LLC, 734 F.3d 1361 (Fed. Cir. 2013). At 1375 and 1376).

[18] See below the footnotes 20 to 24.

[19] See below the footnotes 20 to 24.

discussion and facilitate a mutually beneficial resolution to the current dispute. By doing so, we aim to provide insights and guidance to the parties involved in SEP licensing negotiations, as well as to policymakers, scholars, and practitioners in the field.

This study falls within the purview of European jurisdiction, with the primary focus directed towards European law, encompassing both EU law and national law. In instances where there is no relevant EU law, such as when interpreting the ETSI contract, reference is made to the provisions of national law, exemplified by the French Civil Code.

However, in certain specific contexts, particularly when exploring aspects related to have-made rights and SSPPU, the study incorporates insights from US jurisprudence. This inclusion is motivated by the advanced and diverse nature of US legal precedents, as well as their prominent status in the literature. Omitting reference to US case law would render the discussions incomplete, given its substantial relevance and contribution to the overall understanding of the subject matter. We, however, believe that the findings drawn from US case law are also applicable to the EU context.

As the *Daimler case* constitutes the foundations of the discussions provided in this chapter, in the following section, this case is briefly explained and the licensing negotiations between the parties is reviewed.

## II. Nokia vs. Daimler

The factual circumstances about *Daimler* are primarily established by three judgments rendered by German courts: the Mannheim Regional Court's second Civil Chamber on 18 August 2020 (Decision 2 O 34/19[20]), the Munich I Regional Court's 7th Civil Chamber on 30 October 2020 (Decision 21 O 3891/19[21]) and the

[20] Available at: http://eplaw.org/wp-content/uploads/2020/10/DE-2-O-34_19-URT-Allgemeines-Urteil-FINAL_ANONYMISIERT.pdf. [hereinafter: Mannheim judgment].

[21] Available at: https://dejure.org/dienste/vernetzung/rechtsprechung?Gericht=LG%20M%FCnchen%20I&Datum=30.10.2020&Aktenzeichen=21%20O%203891%2F19. [hereinafter: Munich judgment].

Düsseldorf District Court on 26 November 2020 (Decision 4c O 17/19[22]), where in the latter, the District Court of Düsseldorf decided to stay the proceedings and requested further guidance from the ECJ[23].

It is worth noting that the request for a preliminary ruling was removed from the register[24], as Nokia and Daimler concluded a licensing agreement for the use of Nokia's mobile patents by the German car manufacturer. The terms of this agreement remain confidential as agreed between the parties.

## A. Case description

Nokia filed a lawsuit against Daimler for alleged patent infringement. The patent in question is related to a crucial method for transmitting data in a telecommunications system that is essential for LTE, the fourth-generation mobile communications standard that was standardised by the 3rd Generation Partnership Project (3GPP)[25], of which ETSI is a member. In 2014, Nokia notified ETSI of its application for the patent and emphasised that it was essential for the LTE standard. Furthermore, Nokia issued a FRAND declaration to ETSI, in which it committed to offering licenses to third parties on FRAND terms, emphasising its dedication to fair and reasonable practices.

Daimler, the renowned German manufacturer of passenger cars, offers various

[22] Available at: https://www.justiz.nrw.de/nrwe/lgs/duesseldorf/lg_duesseldorf/j2020/4c_O_17_19_Beschluss_20201126.html. The case number before the ECJ is C-182/21. [hereinafter: Düsseldorf judgement].

[23] *Nokia Technologies Oy vs. Daimler AG* (Case C-182/21), Request for a preliminary ruling from the Landgericht Düsseldorf (Germany), lodged on 23 March 2021. Available at: https://curia.europa.eu/juris/document/document.jsf;jsessionid=380BD291C5D9D971330D7A64BE50965A?text=&docid=243511&pageIndex=0&doclang=en&mode=doc&dir=&occ=first&cid=620502. [hereinafter: *Nokia vs. Daimler*, Request for a preliminary ruling]. For an English translation of the referral decision. See: https://curia.europa.eu/juris/showPdf.jsf?text=&docid=240963&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=3837153.

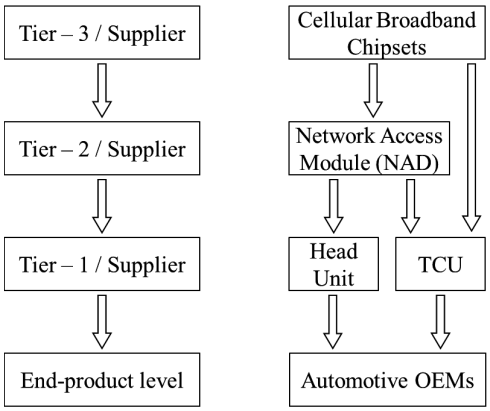
[24] ECLI:EU:C:2021:575: Available at: https://curia.europa.eu/juris/liste.jsf?lgrec=fr&td=%253BALL&language=en&num=C-182/21&jur=C

[25] 3GPP is a collaboration between telecommunications standards organizations to develop specifications for the next generation of mobile networks. The 3GPP was established in 1998 and is made up of various standard-setting organizations including ETSI. The Universal Mobile Telecommunications System (UMTS), Long Term Evolution (LTE), and 5G are some of the key technologies developed by the 3GPP.

mobility and financial services to its customers, including the vehicles equipped with Telematics Control Units (TCU), which allow them to connect to the internet via the LTE network. This technology empowers the users to enjoy internet-based services such as satellite navigation, music and data streaming, as well as receive over-the-air updates from Daimler without the need to visit a workshop or dealership. The TCU is essential for registering and operating the vehicles, as it enables the legally required emergency call system (eCall) to function seamlessly[26]. With this advanced technology, Daimler is committed to enhancing the driving experience and safety of its customers.

## B. Value chain structure

The TCUs are not manufactured by Daimler itself, but as shown below, in a multi-tier production chain. Daimler obtains the TCUs from its direct suppliers (Tier 1 suppliers). The Tier 1 suppliers, for their part, obtain the NADs (Network Access Devices) required for the production of the TCUs from other suppliers (Tier 2 suppliers). The Tier 2 suppliers in turn receive the chips they need for the NADs from Tier 3 suppliers. After the Tier 1 supplier provides the TCU to the OEM, it is integrated into the vehicle. The broadband chipset enables cellular communications, while downstream equipment handles other functions beyond cellular standards.




*Theoretical value chain structure (left) and chain structure in connected car industry (right)*

[26] eCall system is required by the EU Regulation. S*upra fn*. 9.

The litigation between Nokia and Daimler began in 2019 following a failure in the initial negotiations between the car manufacturer and the mobile company. Daimler and some of its suppliers including Continental, Huawei, Burry, and TomTom, complained to the European Commission that Nokia was exploiting its market power with its SEPs[27]. Nokia initiated a counter-offensive, suing Daimler for infringement of several patents at the regional courts of Mannheim, Munich and Düsseldorf. Then invalidity suits against Nokia patents were brought at the European Patent Office and the German Federal Patent Court. Daimler and its suppliers had emphasised that not the car manufacturer, but rather its Tier 1 and Tier 2 suppliers should take the Nokia patents licence, while Nokia had long refused this[28].

While Germany's competition authority, the Bundeskartellamt, had recommended in June 2020 for the Mannheim Court to pause the proceedings and seek guidance from the ECJ regarding the appropriate level of licensing for SEPs, it did not occur[29] until March 2021 when the Düsseldorf Court referred the case to the ECJ. The referral sought clarification on ten detailed questions, with the main one being: *"[i]s there an obligation to license suppliers on a priority basis?*"[30]. That was a great chance to see the ECJ's judgment on this delicate issue, however, it was failed as

[27] See: Foo Yun Chee, 'Daimler Asks EU Antitrust Regulators to Probe Nokia Patents', *REUTERS* <https://www.reuters.com/article/us-eu-daimler-nokia-patents/daimler-asks-eu-antitrust-regulators-to-probe-nokia-patents-idUSKCN1RA2KF>.

[28] In the course of negotiations Nokia was relatively flexible with regard to licensing level, as it once offered a limited license to the tier 1 suppliers (see *supra fn*. 23). However, it could not resolve the problem as Nokia were insisting on an end-product royalty base that was rejected by Daimler and its suppliers (Daimler argued for a licence to its suppliers and based on the average purchase price of TCUs. See: Mannheim judgment. *Supra fn*. 20. In July 2019, Nokia presented the Connected Vehicle Value Chain Licensing Model (CVVL) as a supplement to the tier 1 Model. Under this model, suppliers would be granted a limited license for research and development and for the production of a connected car. They would also provide a license to their customers, who would be entitled to produce a TCU via a have-made right provided at upstream. Following a hearing at the Düsseldorf court in 2020, Nokia made another licensing offer known as the Automotive Licence Agreement (ALA) to several tier 1 suppliers, including Continental, Bosch, Bury, TomTom, Peiker, Renault, Harman, Fico Mirrors, and Huawei. The offer provided unrestricted licenses to manufacture and distribute TCUs, as well as licenses for the car manufacturer's customers and any other customers of the suppliers. However, the tier 2 supplier Sierra Wireless, which had applied for a license, was not offered by Nokia (See *supra fn*. 23).

[29] See: Mathieu Klos, 'Federal Cartel Office Issues Opinion in Connected Cars Case', *JUVE*, 2020 <https://www.juve-patent.com/cases/federal-cartel-office-issues-opinion-in-connected-cars-case/>.

[30] *Nokia vs. Daimler*, Request for a preliminary ruling. S*upra fn*. 23. P. 2.

the parties were able to conclude a licensing agreement.

## III. Level of licencing problem

In this section the question of level of licencing is treated through examining it from the perspective of patent law, FRAND commitment, and competition law. These are the three legal domains that can apply to address this question.

In each topic, we collect those parts that are related to this question. Such a relation can be whether in an affirmative manner, where any above-mentioned legal sources designate a certain level as the right licensee, or in a negative manner where they exclude a level from the right or possibility of having licence. In some topics such as patent claims and exhaustion, the findings may only suggest an efficient level rather than imposing a legal duty. In anyway, we will try to stay around the offers made by the parties in *Daimler* and the courts' judgments in this very case, as justified earlier.

### A. Patent law

Patent law is not directly concerned with licensing since a patent confers a negative right to exclude others from practicing the invention, rather than an affirmative right to practice it. However, we examine patent law to determine if the key principles derived from it could help address the issue of level of licensing. For this purpose, we start with investigating the capacity of have-made right in determining the licencing level. Then, we discuss if patent claim and patent exhaustion can suggest an appropriate tier of value chain as a true licensee.

#### 1. Have-made right

Nokia's offer to only license Daimler and not its suppliers was based on the legal justification that licencing to the end-product manufacturer along with have-made rights can be sufficient to protect Daimler's suppliers from any patent infringement claim. Due to its importance in *Daimler*, and its capacity in responding to our question about licensing level, have-made rights will be discussed in detail in this

section to let understand its conditions and limitations, and to see whether it can be an effective means for protecting component suppliers against possible infringement[31].

### a. Definition of have-made right

The concept of have-made rights shares similarities with the German legal concept known as the *extended workbench*. Under the extended workbench concept, a licensed manufacturer can have components of the licensed product produced by a third party under its directions. In this study, we primarily rely on US cases due to their greater number, diversity, and development. However, it is important to note that a similar approach would likely apply in the EU as well. Analysing have-made rights provides a foundational understanding of how the concept of the extended workbench can be interpreted in the European context.

According to the US case law[32], a licensed party who has the right to "have products made", can exercise his right by requesting an unlicensed third party to manufacture the product but return it *solely* to the licensee who can either use it for his purpose or sell it out in the market[33]. The unlicensed party is protected under this arrangement, but the licensee is only permitted to have the product made for himself

[31] When it comes to evaluating the essence of a license agreement, the assessment ultimately depends on the applicable law in each jurisdiction. However, regardless of the jurisdiction, what matters most is how licensing is carried out in practice, especially in the context of a complex value chain.

[32]Under the US case law there are two factual circumstances where unlicensed parties can attain rights that shield their actions from infringement. The first scenario is have made right. The second which is called foundry suggests that an unlicensed third party can give his design (in the form of technical drawings, plans, etc.) to a licensee and ask him to use his rights to manufacture the product, then either sell it out directly in the market under his licence or sell it back to the third party for that he resells it to his customers. Once the product was made and sold by the licensee to the third party, the doctrine of patent exhaustion precluded the SEP holder from suing the unlicenced third party. The *Intel Corp. vs. ULSI Sys. Tech., Inc.*, 995 F.2d 1566 (Fed. Cir. 1993) is an example of this scenario where HP was given a license by Intel to be a foundry for certain computer chips, to manufacture and sell them to third parties. Another company, ULSI, designed its own, similar chip, and asked HP to manufacture it. HP did so, at this point Intel sued ULSI for infringing Intel's patents, as ULSI had obtained no license from Intel. The Court held that because HP had manufactured the chips, and because at the time it did so it held a license to the patents, therefore it was a legitimate source of the chips, no infringement had occurred and every sale of ULSI chips were lawful and thus exhausted those patents.

[33] *Cyrix Corp. vs. SGS-Thomson Microelectronics*, 77 F.3d 1381 (Fed. Cir. 1996). At 1387-88.

though he can sell it later[34]. The US courts articulate that a have-made right is derived from the term "to make" set forth in 35 U.S.C § 271 (a), that provides that a licensee with have made rights possesses the right to request an unlicensed third-party to manufacture a licensed good for the licensee[35].

The relatively recent decision of *TCL vs. Ericsson* precisely explains the necessary conditions when a have-made right can be granted: (a) the licenced party owns and supplies the *designs*, *specifications and working drawings* supplied to the third party; (b) such designs, specifications and working drawings are complete and sufficient so that no substantial additional design, specification and working drawings are needed by the third party; and (c) the third party is not allowed to sell such product to other third parties[36]. It then concludes that as long as the *design* is carried out fully by the licensee, the manufacture can be fulfilled by any third-party including tier 1, tier 2 and so on.

In this context, the distinction between *design* and *manufacture* is of essential importance. What have-made rights mean is, in fact, to have the third party manufacture the product not to have him both design and manufacture. In some cases, like those related to metal production, design (method) and manufacture are not separable[37] but, in most cases including telecommunication technology they are two separate processes. This is also the case in connected car.

**b. Evaluation of have-made rights**

After having provided a definition for have-made right and its fulfilment conditions,

[34] The *Cyrix* case is the example of this scenario where the third-party (ST-Italy) manufactured microprocessors under ST's have-made rights, and ST then properly sold the products to a different entity, Cyrix. The two agreements, one permitting ST-Italy to manufacture microprocessors for ST and the other providing for ST's sale of microprocessors to Cyrix, were separate business transactions. The court found that ST was using both its own facility and ST-Italy's to satisfy its obligation to provide microprocessors to Cyrix. The products manufactured by ST-Italy were made for ST. Therefore, the arrangements among ST, ST-Italy, and Cyrix were a valid exercise of ST's have-made rights under its agreement with Intel.

[35] For e.g., see *Cyrix Corp. vs. Intel Corp*., 77 F.3d 1381 (1996) and *Intel Corp. vs. Broadcom Corp*., 173 F. Supp. 2d 201 (D. Del. 2001).

[36] *TCL Commc'n Tech. Holdings, Ltd. vs. Telefonaktiebolaget LM Ericsson*, CASE NO: SACV 14-341 JVS(DFMx) (C.D. Cal. Mar. 9, 2018).

[37] In the *Carey* case, the patented process of manufacturing titanium was licensed, and the licensee had titanium "manufactured" by a third party. *Carey vs. United States*, 326 F.2d 975 (Fed. Cir. 1964).

we need to know if it can work well and effectively in practice. To get this purpose, we examine it critically through the existing literature and case law.

### i. Scope

Geradin criticises the effectiveness of the have-made right approach arguing that it does not allow component makers to have some components manufactured by suppliers higher in the supply chain (tier-2 or tier-3)[38]. However, US case law holds a different perspective. In *Carey*, the court ruled that the have-made rights permit the licensee to engage *others* to do all the work connected with the production of the licensed article for him[39]. A licence to produce, use, and sell is not restricted to production by the licensee personally or use by him personally or sales by him personally, it permits licensee to employ others to assist him in the production, and in the use and in the sale of the invention. Nor need he take any personal part in the production[40]. The court explained that the legal effect of have-made rights flow from the licensor to the licensees and down to the third-party manufacturer before the third party engages in any of those otherwise infringing acts. In this context, it is more reasonable to believe that the manufacturer is not limited only to the upstream operator immediately above the end-product manufacturer, but any third-party suppliers (tier 1 to 3) are included provided that the principal condition emphasised in *TCL vs. Ericsson* case are met.

### ii. Explicit or implicit

In the US, case law indicates that have-made rights are one among the exclusionary rights outlined in the patent statute. However, unless otherwise stated in the grant clause, the right to make, use and sell a licensed product inherently includes the implied right to have those licensed products made by a third party[41]. In the *Star* case, for example, Star used third-party contractors to manufacture licensed

[38] He argues that component makers are excluded from extended workbench since they are not considered part of the extended bench of the licensed OEM/end -product manufacturer. Damien Geradin, 'SEP Licensing After Two Decades of Legal Wrangling: Some Issues Solved, Many Still to Address', *TILEC Discussion Paper*, DP 2020-04.March (2020) <https://doi.org/http://dx.doi.org/10.2139/>.
[39] *Carey vs. United States*, 326 F.2d 975 (Fed. Cir. 1964). At 979.
[40] *Idem.*
[41] *Core Brace LLC vs. Star Seismic LLC*, Case No. 2008-1502 (Fed. Cir. 2009).

products for its own use. CoreBrace (the patentee) argued that such use of third parties was a violation of the licence agreement, as Star (licensee) did not have the right to have a third party make products for them[42]. The court, however, ruled that Star did not breach the licence agreement by using third-party contractors to make the licensed products[43]. The court reasoned that even when a licence agreement prohibits sublicensing, have-made rights are still granted unless they are expressly prohibited[44]. The court explained that a licence to produce, use, and sell a product inherently includes the right to have it made by a third party, and have-made rights are implicit in the right to make, use, and sell, unless there is a clear and explicit contrary intent[45].

It is worth mentioning that the have-made right is explicitly included in the ETSI IPR policy. Therefore, there is no doubt regarding its applicability in the context of *Daimler*.

### iii. Legal certainty

Have-made rights may not provide component makers with adequate legal certainty as they indirectly protect them, i.e., their legal position is dependent of that of the licensed end-product manufacturers, meaning that if the latter lose their licence, the component makers could be susceptible of infringement claims. However, we recognize that such uncertainty is almost inevitable in a multi-tier supply chain, as there is only one licence per patent for the entire chain[46]. Thus, both end-product manufacturers and component makers may feel such an uncertainty.

### iv. Innovation and R&D concerns

By limiting the activity of component makers to only manufacturing at the direction of end-product manufacturers, the scope for their independent research and development may be restricted. This could result in a reduced ability for the component makers to invest in new technologies, innovate and offer new improved

[42] *Corebrace LLC vs. Star Seismic LLC*, 566 F.3d 1069 (Fed. Cir. 2009).
43 *Ibid.* At 1071.
[44] *Idem*.
[45] *Ibid.* At. 1073.
[46] See discussions provided later for patent exhaustion.

products to the market. However, many countries have research exceptions in their patent rules[47]. These exceptions exist at the international level, too[48].

It must be noted that although the availability of research exceptions can provide some relief to component makers in short term, in the long run their usefulness may be limited. For example, if a tier 1 supplier finds an alternative use for a patented technology, they may eventually need a licence to exploit it. Moreover, the availability of research exceptions may not be sufficient to encourage component makers to invest in long-term research. Patent holders may still have significant leverage over them, and the threat of patent infringement litigation may deter component makers from investing in new technologies and innovations.

### v. Competition concern and commercial freedom on open market

If have-made right becomes the norm, it may lead to concerns about competition, since suppliers are only able to manufacture components for the end-product manufacturer but are not legally allowed to develop, manufacture, and distribute the components independently.

In the *Daimler* case, the Munich and Düsseldorf courts did not share the same view

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[47] Most the EU Member States have adopted statutory exceptions. Article 27(b) of the Community Patent Convention (CPC) states that: "*[T]he rights conferred by a Community patent shall not extend to… [the] acts done for experimental purposes relating to the subject-matter of the patented invention*". German case law shows that the research exemption is not limited to pure scientific research and can also cover the development of new consumer products. Siebrasse and Culver refer to the Clinical Trials I and II (Klinische Versuche [1997] RPC 623 (Bundesgerichtshof and [1998] R.P.C 423) where the court ruled that "*Since the provision makes no limit, either qualitative or quantitive on the experimental acts, it cannot matter ... whether they are employed for wider purposes, such as commercial interests. And, of course, on the facts, the use found to be experimental was aimed ultimately at the commercial purpose of developing and marketing a new indication for the drug in question"*. Similarly, in Clinical Trials II, the court stated (at 433) that "*the purpose that the experiment is intended to serve does not at all have to be of a purely scientific nature. According to this, the commercial orientation does not from the outset turn the experimental activity into an impermissible patent infringement*.". Siebrasse, Norman & Culver, Keith. (2006). The Experimental-Use Defence to Patent Infringement: A Comparative Assessment. University of Toronto Law Journal. 56. 333-369. 10.1353/tlj.2006.0016. Norman Siebrasse and Keith Culver, 'The Experimental Use Defence to Patent Infringement : A Comparative Assessment', *The University of Toronto Law Journal*, 56.4 (2006), 333–69 <https://www.jstor.org/stable/4491699>.

[48] For example, article 30 of the TRIPS Agreement allows for research exceptions stating that "*Members may provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties."*

on competition concerns stemming from the have-made right solution. The Munich court observed that the suppliers without their own licence are not completely without rights, they do have a right to legally secure access to the standardised technology. It ruled that Daimler is easily able to have LTE standard-compliant supplier parts manufactured by its suppliers in the future by means of extended workbench and thus grant them legally secure access to the technology licensed by Daimler[49]. On the contrary, the Düsseldorf court placed significant emphasis on the challenge faced by component makers operating under the extended workbench without a comprehensive licence. The court contended that such a limitation could hinder their economic activity, curtail their ability to explore new markets, and potentially lead to higher prices that eventually will reduce consumers' choice. the issuance of a licence must extend beyond mere access to the standardised market. Instead, a licence should encompass the provision of opportunities for the licensee to engage fully in standardised technology. This must enable them to compete unrestrictedly across all product markets, both current and future[50].

It is noteworthy to reference the EU Commission Notice on the assessment of subcontracting agreements[51]. This Notice affirms the legality of the extended workbench concept under EU competition law. Specifically, it states that any extended workbench agreement and its restrictive clauses between the contractor (in our case, Daimler) and the subcontractor (Daimler's suppliers) do not fall under the scope of Article 101(1) TFEU. In essence, this notice supports the argument that if the conditions for have-made rights are met, a licensor is not obligated to license component makers, as it is considered legally permissible under competition law.

## 2. Patent claim

The other patent law element that has potential of indication in terms of the licencing level is the subject of patent claim.

[49] See Munich judgement, *supra fn*. 21.
[50] See Düsseldorf judgement. S*upra fn*. 22.
[51] European Commission, Commission notice of 18 December 1978 concerning its assessment of certain subcontracting agreements in relation to Article 85 (1) of the EEC Treaty. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31979Y0103(01)>.

By definition, the protection of patents shall be determined by the terms of the claims[52]. Here a helpful indication is that if *all* the elements of a patent claim are shown to exist in a component with no even one single element missing[53], the claim is said to be infringed[54]. This condition is a sufficient condition in the sense that if in addition to having all the patent elements, the component has also some extra elements which are not related to the patent, the patent is still considered infringed[55].

But how can this help determine the licensing level? To get the answer, it will make sense if we believe that one way for a component maker to insist on getting a licence (or for the end-product manufacturer to insist on refusing the licence offer) is to show that the component in question involves all the elements of the SEP's claim. In such a case, the component maker can show himself as the right licensee. On the other hand, if the SEP's claim is so broad that it applies to a combination of multiple components of the end-product, then the SEP holder has a legitimate reason to want to grant license to the end-product manufacturer[56].

It should be noted that SEPs are often licensed as a portfolio, consisting of hundreds or even thousands of patent families. Additionally, a single SEP may cover multiple technologies, which can lead to overlap between the patents used by different suppliers. As a result, the SEP holder would need to ensure that all suppliers are licensed to use only the relevant patents for their specific component and that no unlicensed patents are being used. Therefore, the licensing process can be complex and require lengthy negotiations between the patent holder and the potential

[52] European Patent Convention (EPC 1973), Article. 69.
[53] *TIP Systems, LLC vs. Phillips & Brooks/Gladwin, Inc.,* 529 F.3d 1364 (Fed. Cir. 2008). At. 1377.
[54] *Markman vs. Westview Instruments, Inc.,* 517 U.S. 370, 373 (1996). At 373-374.
[55] *A.B. Dick Co. vs. Burroughs Corp*., 617 F. Supp. 1382 (N.D. Ill. 1985). At. 1398. In a simple example, for claim of the widget X composed of the elements 1, 2, and 3, a widget with elements 1, 2, and 3 would infringe, as would a widget with elements 1, 2, 3, and 4. On the other hand, a widget with elements 1 and 3, but lacking 2, would not infringe.
[56] Now if an infringement occurs at the component level, the SEP holder has still the option to license the patents or consent to infringement without seeking to enforce his rights. If he decides to offer licence, he is free to set the terms and conditions as he sees fit. (see: *McCoy vs. Mitsuboshi Cutlery, Inc*., 67 F.3d 917, 920 (Fed. Cir. 1995). At. 922. However, the FRAND commitment restricts options available to him since he has agreed to make his patents accessible to standard users and offer licenses on FRAND terms. As a result, he cannot exclusively reserve implementation rights for himself.

licensees to determine which patents are essential to the standard and the appropriate licensing terms and conditions.

This finding is important for our study on the licensing level as it suggests that in complex standards such as cellular, there may be many SEPs involved that may not be reduced to a single component[57]. Therefore, these SEPs would not be infringed until when all the components sharing them are incorporated at the end-product level. In other words, a component can indirectly infringe the SEPs once it is inserted to the end-product and puts the SEPs into effect. In this case, making use of patent claim to identify the licensing level yields to the SEP holder's favourite choice, i.e., suggesting the end-product manufacturer as the right licensee. It is worth saying these complex situations apply specifically to cellular standards and the smartphone industry. The situation may vary in other standards and industries. Therefore, a thorough case-by-case analysis of each standard and SEP is required to determine whether infringement occurs at the component or at the end-product level, and to be able to suggest one level as licensee.

It must be noted that this finding is not a legal basis for requiring granting licence at one level or another, however, it makes clear which level may be more efficient and reduce transaction costs.

### 3. Patent exhaustion

Typically, and as seen in *Daimler* case, the end-product manufacturers try to place the licence at the component supplier level to make it possible for everyone down in the chain including the end-product manufacturer (Daimler) to use the components (TCU) free from any patent rights. Conversely, the patentee (Nokia) who prefers to licence at the end-product level, is very attentive not to licence at

[57] In a study by Putnam and Williams, they analysed Ericsson's SEPs portfolio for 2G/3G and 4G standards and found that the claims of Ericsson's SEPs portfolio read on many components alone, components in combination, complete handsets alone, and/or complete handsets in networks. Their analysis showed that around 71% of Ericsson's patents claimed some aspect of user equipment, either alone or in combination with claims to the network, while none of them claimed only the baseband chip. See: Jonathan D. Putnam and Tim A. Williams, 'The Smallest Salable Patent-Practicing Unit (SSPPU): Theory and Evidence', *SSRN Electronic Journal*, 20166 <https://doi.org/10.2139/ssrn.2835617>. Pp. 41-43.

any level above the end-product. Patent exhaustion[58] further reinforces this preference, as it is a one-way road downward in the supply chain, and not upward meaning that if the patent holder licenses the end manufacturer, the component maker would still need a separate licence to make and sell the patented component to other manufacturers or end users.

Against this background, one may conclude that patent exhaustion can suggest the component maker level as the right licensing level, since such a choice makes licensing more efficient as by adopting it there would be no need for further licensing downstream[59]. Although, this could be an option in simple-structured value chains, in complex chains including those related to the cellular, the outcome goes in the opposite direction as licensing the end-product manufacturer can be there more efficient. Because in an SEP portfolio with multiple patents, if a component supplier receives a licence, it will only exhaust the relevant part of the SEP portfolio, and the end-product manufacturers may still require a licence for the remaining patents that read on the downstream products[60]. This split licensing would be difficult and therefore it appears that having only one licence at the end-product level is much more efficient as in that level most of the patents in the portfolio are infringed and exhausted by the sale of the licensed product[61].

However, licensing only at the end-product level raises the question of what would happen to the component makers without a licence, as they would still be infringers. Borghetti et al., argue that if the patent owner chooses not to pursue component makers in this case, it implies that the owner is not willing to exercise its

58 As discussed previously, the first sale doctrine also known as patent exhaustion acts as a defence against claim of patent infringement in value chains. Once a patentee gives license to some tier in a value chain, he cannot succeed on a claim that a subsequent user or purchaser of the article infringes the patent.

59 Damien Geradin and Dimitrios Katsifis, 'End-Product- vs. Component-Level Licensing of Standard Essential Patents in the Internet of Things Context', SSRN Electronic Journal, 2021, 1–34 <https://doi.org/10.2139/ssrn.3848532>. at p. 11 share the same view arguing that if the majority (or possibly all) of SEPs are implemented for the first time at an earlier stage (such as the chipset level), licensing at this level would not lead to additional transaction cost and would not involve multiple levels of licensing. This is due to the principle of patent exhaustion, which would provide immunity to operators further down the chain.

60 Jean-sébastien Borghetti, Igor Nikolic, and Nicolas Petit, 'FRAND Licensing Levels under EU Law', European Competition Journal, 2020, 1–48 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3532469>. P. 17.

61 *Ibid*. P. 18.

exclusionary right against them, and have made rights safeguard them against patent infringement[62].

### 4. Takeaway

Determining the appropriate licensee within a multi-tier value chain is beyond the scope of patent law. Patent law primarily defines the rights held by a patent holder and outlines actions that require authorisation. It does not, however, dictate which parties must engage in licensing agreements or under what circumstances. Nonetheless, it may offer guidance or recommendation for efficient licensing levels. In fact, patent law's role is primarily suggestive, rather than prescriptive when it comes to defining licensing levels.

To summarise this section, we can draw the following conclusions:

- If its conditions are fulfilled, most importantly that the end-product manufacturer is the body who completely performs the design of the IoT component, the have-made right serves as a tool that can suggest end-product level as the right licensing level.
- In industries related to cellular, since a single component often exhausts a SEP portfolio partially, attempt for making use of patent claim as a tool in order to define licensing level may lead to the recognition of end-product manufacturer as licensee.
- Since a licence relevant to a part of an SEP portfolio only exhausts that part, licensing at component maker level may lead to licensing split. Therefore, licensing at this level is not efficient.

## B. FRAND commitment

As a contractual obligation, FRAND commitment should be examined by reference to the wording of each SDOs' IPR policies under which the commitment has been made. However, the current policies are not in harmony with each other, and there is an absolute lack of consensus regarding their interpretation. The IEEE mandates

[62] *Idem*.

SEP holders to license their SEPs to all parties including component suppliers[63]. The situation with the ETSI is less clear, as some interpret the ETSI IPR policy as requiring SEP holders to license their patents to component suppliers, while others disagree[64]. The lack of specific case law on this issue has further complicated the debate, with proponents of each approach interpreting the SDOs' policies to suit their arguments.

This section evaluates the legality and the feasibility of Daimler's counteroffer to Nokia which suggested a direct licencing to the tier 1 suppliers. We want to examine if SEP holders are obliged, based on their FRAND commitment to carry out such a licencing agreement rather than giving licence to the end-product manufacturer. To get the answer, we examine the ETSI's IPR policy including its FRAND commitment to check if there exists any technical reason[65] for SEP holders to prefer one tier of the value chain over the others. It is worth saying that in our research, we focus solely on the analysis of the ETSI IPR policy as it serves as the basis for the FRAND commitment in the majority of SEP litigations including our *Daimler* case[66].

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[63] IEEE.

[64] In favour of the "licence to all" approach, see e.g., Karl Heinz Rosenbrock, 'Why the ETSI IPR Policy Requires Licensing to All', 2017.; Damien Geradin and Dimitrios Katsifis, 'End-Product- vs. Component-Level Licensing of Standard Essential Patents in the Internet of Things Context', SSRN Electronic Journal, 2021, 1–34 <https://doi.org/10.2139/ssrn.3848532>; Roberto Grasso, 'Standard Essential Patents: Royalty Determination in the Supply Chain', Journal of European Competition Law and Practice, 8.5 (2017), 283–94 <https://doi.org/10.1093/jeclap/lpw089>; Tim W. Dornis, 'Standard-Essential Patents and FRAND Licensing-at the Crossroads of Economic Theory and Legal Practice', Journal of European Competition Law and Practice, 11.10 (2020), 575–91 <https://doi.org/10.1093/jeclap/lpaa047>; In favour of the "access to all" approach see e.g., Bertram Huber, 'Why the ETSI IPR Policy Does Not and Has Never Required Compulsory License to Alll: A Rebuttal to Karl Heinz Rosenbrock', SSRN Electronic Journal, 2017, 1–12 <https://doi.org/10.2139/ssrn.3038447>; Jean Sébastien Borghetti, Igor Nikolic, and Nicolas Petit, 'FRAND Licensing Levels under EU Law', European Competition Journal, 17.2 (2021), 205–68 <https://doi.org/10.1080/17441056.2020.1862542>; Anne Layne-Farrar and Richard J. Stark, 'License to All or Access to All? A Law and Economics Assessment of Standard Development Organizations' Licensing Rules', George Washington Law Review, 88.6 (2020), 101–42 <https://doi.org/10.2139/ssrn.3612954>; Marvin Blecker, Tom Sanchez, and Eric Stasik, 'An Experience-Based Look At The Licensing Practices That Drive The Cellular Communicatinos Industry: Whole Portfolio/Whole Device Licensing', Les Nouvelles - Journal of the Licensing Executives Society, LI.4 (2016) <ssrn: https://ssrn.com/abstract=2855078>.

65 By technical reason, we refer to all technical aspects of the patent and its implementation, and the way those aspects may affect the licensing process for different tiers of the value chain.

[66] The number of SEPs reported to ETSI surpasses all those declared to any other SDOs, see: Chryssoula Pentheroudakis and Justus A Baron, *Licensing Terms of Standard Essential Patents. A Comprehensive Analysis of Cases*, 2017 <https://doi.org/10.2791/32230>. P.31.

## 1. ETSI IPR policy, Annexe 6, Article 3

Adopted in 1994, ETSI policy in Article 3 provides,

> *"[…] STANDARDS and TECHNICAL SPECIFICATIONS [should] be available to potential users in accordance with the general principles of standardisation"*[67].

If one recognises licensing as the *only way* to make SEP available to a potential user (i.e., a component maker), then of course this article is requiring the SEP holder not to refuse the supplier's request for licence. However, the dispute lies in the interpretation of the word *availability* with some arguing that it can only be achieved through licensing, while others contend that it refers to accessibility in general that is not limited to mere licensing[68].

To unlock the situation, the French law as the governing law of the ETSI IPR Policy[69] must be made use of to interpret any of its vague contractual terms[70]. The French Civil Code's Article 1190[71] states that "*in case of doubt, an agreement shall be interpreted against the one who has stipulated, and in favour of the one who has contracted the obligation*". In this context, SEP holder is the one who has committed to the obligation, and he may believe that accessibility favours him rather than licensing[72]. Hence, attempts to oblige the SEP holder to license the

[67] Article 3 of ETSI states that: "the ETSI IPR POLICY seeks to reduce the risk to ETSI, MEMBERS, and others applying ETSI STANDARDS and TECHNICAL SPECIFICATIONS, that investment in the preparation, adoption and application of STANDARDS could be wasted as a result of an ESSENTIAL IPR for a STANDARD or TECHNICAL SPECIFICATION being unavailable."
[68] See the list of literature at *supra fn. 64*.
[69] Article 12, ANNEX 6:ETSI, *ETSI Intellectual Property Rights Policy*, 2022 <https://www.etsi.org/images/files/ipr/etsi-ipr-policy.pdf>.
[70] ETSI as an *association* (a non-profit organisation) under French law is a type of contract governed by French contract law and according to the reform of 2016 is governed by the old code civil as it has concluded before 1st October 2016. See, *ordonnance n° 2016-131 du 10 février 2016 portant réforme du droit des contrats, du régime général et de la preuve des obligations*. Available at: https://www.legifrance.gouv.fr/loda/id/JORFTEXT000032004939.
[71] Available at: https://www.trans-lex.org/601101/_/french-civil-code-2016/.
[72] Where an IPR holder gives a commitment under Clause 6.1 of the ETSI IPR Policy, the IPR holder is the "promisor"; and ETSI is the "stipulator/ promisee". A person wishing to implement the standard is the "beneficiary". The primary effect of the declaration is to create a contract between the promisor (the IPR holder) and the stipulator (ETSI), the terms of which require the promisor to grant a right (a licence on FRAND terms) to the beneficiaries (the implementers of the standard). According to Judge Briss, ETSI's blank form constitutes an offer, and a properly filled form acts as acceptance, specifying the chosen pre-defined options in line with

component make based on this article fails.

## 2. ETSI IPR policy, Annex 6, Article 6

According to Article 6 of Annex 6, in case of essential IPR related to a particular standard or technical specification, the IPR owner should provide the following.

> *[A]n irrevocable undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and non-discriminatory ("FRAND") terms and conditions under such IPR to at least the following extent:*
> *MANUFACTURE, including the right to make or have made customized components and sub-systems to the licensee's own design for use in manufacture; sell, lease, or otherwise dispose of EQUIPMENT so manufactured, repair, use, or operate EQUIPMENT, and use METHODS.*[73]

The policy then defines the meaning of the term *manufacture* as the production of *equipment* and the latter as "any system, or device fully conforming to a standard". However, *device* and *system* have not been defined. The uncertainty is about if the term *equipment* implies the mere end-product device, or it includes components as well. As discussed above, based on our interpretation of the French Civil Code, Article 3 will let the SEP holder interpret the vague terms including equipment here in his favour. And he will opt for a choice which favours him the most, i.e., licensing the end-product manufacturer based on the end-product price. In addition, the use of the words *at least* and *including* is not convincing to believe that the ETSI text includes component suppliers.

However, if one wants to go farther, he may utilise Article 1188 of the French Civil Code that suggests contracts are to be interpreted according to the common intent

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ETSI's offer. The form explicitly references Clause 6.1 of the ETSI IPR Policy for future contracts, ensuring that such contracts will adhere to FRAND terms. Courts can objectively determine whether terms are FRAND in a given context, making the commitment legally enforceable. Judge Briss also highlighted that the FRAND commitment, sought by ETSI when patentees declare their patents as essential to an ETSI standard, benefits third parties. As a result, the "stipulation pour autrui" doctrine makes the FRAND commitment enforceable by third parties. See: [2017] EWHC 711 (Pat). Paras. 134-140. Available at: https://www.judiciary.uk/wp-content/uploads/2017/04/unwired-planet-v-huawei-20170405.pdf.

[73] ANNEX 6: Intellectual Property Rights, ETSI, *ETSI Intellectual Property Rights Policy*.

of the parties, rather than the literal meaning of the terms. If such an intent cannot be ascertained, the contract should be interpreted in accordance with the meaning that a *reasonable person* in the same situation would give to it. Identifying the common intent of the ETSI members at the time of adopting the policy back in 1994 appears to be challenging[74]. For example, in 2017, Rosenbrock, the former Director-General of ETSI, stated that the common intention was a general commitment to license any SEP user whether component maker or end-product manufacturer. He argued that this view is aligned with ETSI's objective of making ETSI standards available to members and other stakeholders[75]. But another former member of the ETIS IPR committee, Huber, countered Rosenbrock's argument by suggesting that the common intention of ETSI policy drafters was based on the prevailing industry practice of granting licences to end-product manufacturers[76]. This shows well how attempts to reveal the then-common intent of the ETSI members fails.

The last attempt in this direction would be to determine the interpretation of a *reasonable person*. Such person should have adequate knowledge of the telecommunications industry in the 1990s allowing him to interpret the term *equipment* in the context of the ETSI IPR policy. This approach leads to an impasse too as there is no consensus over the common industry practices in the ETSI[77]. Therefore, wording of ETSI does not limit the beneficiaries of the licence, nor limits the SEP holders' freedom in choosing their licensees in a supply chain.

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[74] The absence of a shared understanding among the drafters at the time has reflected in the policy's voting base as it was determined by a majority vote rather than by a consensus.

[75] Rosenbrock. Pp. 3-4.

[76] Huber. Pp. 4-5 and 8. Huber also argues that an IPR Policy mandating that SEP owners grant licenses to component markets would be legally and practically unworkable, in that (a) it would be impossible to grant the same license to the same technology to companies operating at different levels by reason of patent exhaustion; (b) such a system would be inefficient and unfair, and would make it hard to account for the full economic value that the patented technology confers on the end-product; and (c) such a system would hinder the ability of IPR holders to fully obtain the benefits of the "reciprocity" condition in the ETSI IPR Policy.

[77] While Huber. argues that at the time the ETSI IPR Policy was adopted, the prevailing industry practice was to license at the device level, and Becker et al. at p. 230 and Borghetti et al. at p. 30 share the same view arguing that whole-device licensing is an efficient and universally accepted norm in the cellular communications industry; Rosenbrock refer to the examples of Qualcomm and Ericsson granting licenses at the chipset level, arguing that the description of end-product licensing as the prevailing industry practice is not correct nor consistent with the author's own experience of discussions in ETSI.

### 3. Discussion on SDOs' role

With the rise of IoT and the increasing use of ETSI connectivity standards in various sectors, an official policy clarification from ETSI can help determine if the SEP holder under the ETSI FRAND commitment is obliged to licence component make.

For example, the IEEE's revised patent policy in 2015 resolves this ambiguity for their standard users. Under the IEEE revised policy, the FRAND commitment explicitly states that the licensor must provide an unrestricted licence to an unlimited number of applicants including component makers for essential patent claims. This licence allows the licensees to make, use, sell, offer to sell, or import any compliant implementation conforming to the IEEE standard. A *Compliant Implementation* refers to any product or service that adheres to any mandatory or optional part of an IEEE standard, including *components*[78]. Thus, the SEP holder who made the FRAND commitment at IEEE cannot decline to license its patents to component manufacturers when they request.[79]

ETSI in contrast, does not provide an official policy clarification with regard to this issue. As a result, the ambiguity surrounding ETSI's licensing policies allows for more clashes in the literature. Borghetti et al. refer to an ETSI Director General's speech[80] expressing that "*specific licensing terms and negotiations are commercial matters between the companies and shall not be addressed within ETSI*"[81]. Meanwhile, Huber[82], referring to ETSI's General Assembly meeting, reports that ETSI's Director of Legal Affairs states that ETSI's IPR policy does not require essential patent owners to grant licences at the "smallest saleable unit", leading some to argue that ETSI is clearly refusing the requirement to license to component

[78] See: § 6 IEEE.
[79] According to the Clause 6 of the IEEE Standards Board Bylaws, an Accepted Letter of Assurance is intended to be binding upon any and all assignees and transferees of any Essential Patent Claim covered by such LOA.
[80] Borghetti, Nikolic, and Petit. P. 24.
[81] Sophia Antipolis, *ETSI's Director General Issues Public Statement on IPR Policy*, 2018 <https://www.etsi.org/newsroom/news/1458-etsi-s-director-general-issues-public-statement-on-ipr-policy>.
[82] Huber. P.6.

suppliers[83]. On the other hand, Geradin and Katsifis argue that ETSI aims to balance the interests of IPR owners and standardisation requirements through FRAND licences. This aim is attained only through a direct licence to component makers, the ETSI policy does not consider *access* as distinct from licensing, and its alternatives (including have- made right) may not provide legal certainty or support the objective of ETSI Policy[84].

In summary, the ETSI IPR policy being vague, it opens the door for contradictory interpretations. In our view, a clear policy such as that of the IEEE, even if it may be criticised[85], is better than a vague one.

## C. Competition law

In this section, we explore whether SEP holders are obliged under the EU competition law to grant a licence to component suppliers rather than to end-product manufacturers. Our goal is to determine if Nokia's refusal to grant licences to Daimler's suppliers can be deemed an abuse under Article 102 TFEU.

There is currently no formal view or decision from the ECJ nor the EU Commission regarding FRAND licencing in multi-tier value chains, and in fact, it was just in the *Daimler* case that the Düsseldorf court asked the ECJ for a preliminary ruling on the level of licensing and any obligation to prioritise licenses for suppliers[86]. However, the case got closed following the parties' agreement before the ECJ's ruling [87]. We then analyse this question under the most recent ruling of the ECJ on the SEPs: the *Huawei* case[88], where *indispensability condition* and *legitimate*

[83] ETSI/GA(15)65_030r2, ETSI, 'Draft Minutes from the ETSI General Assembly', 2015 <https://portal.etsi.org/ngppapp/ContributionSearchForm.aspx?tbid=&SubTB=&Param=&MeetingId=15538>.
[84] Geradin and Katsifis. Pp. 25-26.
[85] See some critics regarding the revised IEEE Policy: 'Will IEEE Finally Admit the Errors of Its 2015 Patent Policy Changes?', *IP Europe*, 2021 <https://ipeurope.org/blog/will-ieee-finally-admit-the-errors-of-its-2015-patent-policy-changes/>; Keith Mallinson, 'Development of Innovative New Standards Jeopardised by IEEE Patent Policy', *4iP Council*, September, 2017 <https://www.4ipcouncil.com/application/files/6015/0479/2147/Mallinson_IEEE_LOA_report.pdf>.
[86] *Nokia vs. Daimler*, Preliminary Ruling. *Supra fn.* 23.
[87] ECLI:EU:C:2021:575. See *supra fn.* 24.
[88] Case C-170/13 *Huawei Technologies Co. Ltd vs. ZTE Corp.*, EU:C:2015:477. (hereinafter: *Huawei*)

*expectation* were addressed. In this context, the question we will try to examine is whether the *Huawei* doctrine could apply to the *Daimler* context. This subject has been already tried by some scholars[89]. Nevertheless, our contribution addresses the problem from novel perspectives that can enhance the literature particularly in the sections of legitimate expectation and licence denial as an exclusionary abuse. Additionally, we examine this question under the non-discrimination principle, and also explore any potential guidance that can be provided by the Commission Horizontal Guidelines.

## 1. Huawei doctrine

Freedom to deal or not to deal is a foundation of freedom of trade. Companies are free to choose with whom they want to do business and to dispose their property including IPR[90]. These freedoms as fundamental rights are guaranteed by the EU Charter of Fundamental Rights[91]. As a matter of fact, the exercise of a statutory right cannot, in itself, constitute an abuse of a dominant position[92]. In this context, the SEP holder is free to choose his business partner to grant a FRAND licence. However, according to settled case law[93], the exercise of a statutory right may, in *exceptional circumstances*, involve abusive conduct for the purposes of Article 102 TFEU. In *Volvo*, *Magill*, *IMS Health*, and *Microsoft* the court had established conditions for identifying exceptional circumstances where a *refusal* to deal would be deemed abusive[94].This subject was then discussed by the ECJ in 2015

[89] See for e.g., Borghetti, Nikolic, and Petit. Pp. 6-11 and pp. 35-40

[90] Opinion of AG Jacobs in Case C-7/97 *Oscar Bronner GmbH & Co. KG vs. Mediaprint*, EU:C:1998:264. Para. 56.

[91] Charter of Fundamental Rights of the European Union, OJ C 326, 26.10.2012. p. 391-407. Article 16 and 17.

[92] *Huawei* judgement. *Supra fn*. 88. Para. 38.

[93] Judgment of the Court of 5 October 1988, *AB Volvo vs. Erik Veng* (UK) Ltd, Case 238/87, ECLI:EU:C:1988:477 (hereinafter: *Volvo*);Judgment of the Court of 6 April 1995, *Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) vs. Commission of the European Communities,* joined cases C-241/91 P and C-242/91 P, ECLI:EU:C:1995:98 (hereinafter: *Magill*); and Judgment of the Court (Fifth Chamber) of 29 April 2004, IMS *Health GmbH & Co. OHG vs. NDC Health GmbH & Co. KG*, C-418/01, ECLI:EU:C:2004:257 (hereinafter: *IMS Health*); Judgment of the Court of First Instance (Grand Chamber) of 17 September 2007.*Microsoft Corp. vs. Commission of the European Communities,* T-201/04, ECLI:EU:T:2007:289 (hereinafter: *Microsoft*).

[94] While these conditions are challenging to categorise, generally, it was determined that a dominant company's refusal to supply could be considered abusive if: 1-The product or service in question is

specifically in the context of SEP. The ECJ in fact, established a shortcut analysis for identifying exceptional circumstances in the SEP context where refusal to license could be considered abusive. Thanks to the *Huawei* ruling, it is no longer necessary to scrutinise all the conditions outlined in *Volvo*, *Magill*, *IMS Health*, and *Microsoft.* Instead*,* the Court in *Huawei* ruled that an SEP is *indispensable* to the manufacturer of a standard-compliant product, and, in addition, the FRAND commitment creates *legitimate expectations* for every SEP implementer[95].

Therefore, in our analysis of *Daimler* under the *Huawei* doctrine, we will demonstrate how the conditions of indispensability and legitimate expectations can be applied concerning the refusal to grant licenses to component manufacturers. However, as we will discuss later, the *Huawei* conditions are necessary but not sufficient, and therefor, an additional step is required to assess if the denial of licence could be an abusive practice in the case of *Daimler*. Ultimately, we will propose a policy change that imposes an obligation to grant licence to component manufacturers.

### a. Indispensability Condition

There is no distinction between the indispensability of SEPs at the component level and at the end-product level. SEPs are equally essential to component manufacturers for producing and selling components as they are to end-product manufacturers for integrating the component into their final product and selling it[96]. The ECJ in the *Huawei* emphasised that the user of an IPR, "*if he is not the proprietor, is required to obtain a licence prior to any use*"[97]. Without a licence, the SEP users will be under the constant threat of an infringement claim, an injunction, or the recall of products from the market. As component makers cannot operate *lawfully* without a licence, this makes the use of SEP indispensable to every

indispensable to operate in the relevant market; 2-There is no viable alternative to the product or service; 3-The refusal is likely to eliminate all competition in the relevant market; 4-The refusal would eliminate all competition in the market for the new product; 5-The refusal to license IPRs prevents the appearance of a new product for which there is a potential consumer demand; 6-The refusal to license is not objectively justified .

[95] *Huawei* judgement. *Supra fn*. 88. Paras. 49 and 53.

[96] Renato Nazzini, 'Level Discrimination and FRAND Commitments under EU Competition Law', *World Competition*, 40.2 (2017), 213–39 <https://doi.org/10.54648/woco2017015>. Pp. 229-230.

[97] *Huawei*. *Supra fn.* 88. Para. 58.

SEP implementer including component maker. Thus, the indispensability condition is undoubtedly fulfilled in *Daimler*.

**b. Principle of Legitimate Expectations**

The ECJ in *Huawei* ruled that commitment to grant licence on FRAND terms creates legitimate expectations on the part of third parties that the SEP holder will in fact grant licences on such terms[98]. Given that the principle of legitimate expectations has been always referred to in cases where one party is a public authority[99], we need to examine if based on the *Huawei* such an expectation could be still proved legitimate when the parties involved are private entities. What can help us in this direction is that the ECJ in *Huawei* expressed legitimate expectations without any reference to the previous cases. If we can believe that it was intentional, it can certainly represent a new application for this principle between the private entities.

Borghetti *et al*. do not believe in such an intention[100]. They argue that according to the EU settled case law (i.e., those actually were not referred to by the ECJ in the *Huawei*), the principle of legitimate expectation as a general principle of EU law[101] is limited to the sectors where the EU exerts a significant degree of regulatory control to protect economic agents against the State[102], and even in those cases, the principle has been rarely invoked successfully[103].

In addition, they argue that this principle could have been established if the basis

[98] Huawei. *Supra fn*. 88. Para. 53.
[99] Borghetti, Nikolic, and Petit. Pp. 6-7.
[100] They argue that reference to the protection of legitimate expectations in a private setting in Huawei is decorative, but not dispositive. Borghetti, Nikolic, and Petit. Pp. 6-8.
[101] They refer to the *Schenker & Co and Others*, C-681/11, ECLI:EU:C:2013:404, which concerned the legal advice of a lawyer arguing that previous cases refuse the idea that the private entities can create legitimate expectations *vis-a-vis* other private entities. Borghetti, Nikolic, and Petit. Pp. 10 and 38.
[102] Eleanor Sharpston, 'European Community Law And The Doctrine Of Legitimate Expectations : How Legitimate , And For Whom?', *Northwestern Journal of International Law & Business*, 11.1 (1990), 87–103 <https://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=1312&context=njilb>. P. 90.
[103] Borghetti, Nikolic, and Petit. P. 7.

for the expectation had been adequately *specific* and *precise*[104]. For them, any expectation of third party should be assessed based on the SDOs' IPR policy and the specific FRAND commitment thereof. For example, if an SDO in its policy states that FRAND means royalty-free or pricing based on the Smallest Saleable Patent Practicing Unit (SSPPU), then any licensing offer deviating from these terms could disappoint a potential licensee that expects a licensing based on those terms[105]. But if the SDO's policy does not require any specific licensing condition, as it is the case in the ETSI's policy, a FRAND commitment cannot be regarded as a *reliable source*[106] to create legitimate expectation[107].

Against Borghetti et al., we consider SDOs, their IPR policies, and FRAND commitment thereof as reliable sources that serve as a basis for members to determine how to develop standards[108]. We also distinguish a mere expectation to obtain a licence from the expectation to obtain it on specific FRAND terms. We believe that what the ECJ ruling safeguards in *Huawei* is the former, and for that end the Court set a detailed framework to guarantee access to licence for any willing licensee. In other words, obtaining a FRAND licence is a legitimate expectation of SEP implementer, but the specific terms of such a licence can be established later

[104] *Ibid*. P. 9. They refer to the case *Citymo vs. Commission* (T-271/04, EU:T:2007:128, §138), where the General Court stated that only "*precise, unconditional and consistent information"* can lead third parties to entertain legitimate expectations.
[105] *Ibid*. P. 10.
[106] In the *Branco vs. Commission* case, the Court ruled that three conditions must be satisfied in order to claim entitlement to the protection of legitimate expectations: "*precise, unconditional and consistent assurances originating from authorized and reliable sources*" must have been given to the person claiming to have a legitimate expectation, which "*give rise to a legitimate expectation on the part of the person to whom they are addressed*". Case T-347/03 *Branco vs. Commission*, ECLI:EU:T:2005:265. Para. 102.
[107] Borghetti, Nikolic, and Petit. P. 10. For the opposite view, see Geradin and Katsifis. P. 33.
[108] Borghetti et al., argue that previous cases within the realm of competition law appeared to reject the notion that private entities could establish legitimate expectations in relation to other private organisations. They refer to the Court ruling in *Schenker* (*supra fn.* 101) where it stated that "*legal advice given by a lawyer cannot, in any event, form the basis of a legitimate expectation on the part of an undertaking that its conduct does not infringe Article 101 TFEU or will not give rise to the imposition of a fine*". Nonetheless, we disagree with this comparison and share the idea of Geradin and Katsifis emphasising the fact that any comparison between a legal advice provided by a lawyer to a client and the FRAND commitment made by members of a SDO is not accurate. The FRAND commitment serves as a basis for members to determine how to develop the standard and cannot be equated with individual legal advice given by a lawyer to a client. See: Geradin and Katsifis. Pp. 33-34.

through parties' negotiations or by third parties[109].

We believe that in *Huawei* the ECJ dispositively applied the principle of legitimate expectation to a case involving two private entities,[110] as the Court did explicitly refer to it twice which cannot be interpreted *decorative* at all[111]:

> *"53 In those circumstances, and having regard to the fact that an undertaking to grant licences on FRAND terms creates legitimate expectations on the part of third parties that the proprietor of the SEP will in fact grant licences on such terms, a refusal by the proprietor of the SEP to grant a licence on those terms may, in principle, constitute an abuse within the meaning of Article 102 TFEU.*
>
> *54 It follows that, having regard to the legitimate expectations created, the abusive nature of such a refusal may, in principle, be raised in defence to actions for a prohibitory injunction or for the recall of products. However, under Article 102 TFEU, the proprietor of the patent is obliged only to grant a licence on FRAND terms. In the case in the main proceedings, the parties are not in agreement as to what is required by FRAND terms in the circumstances of that case."*

In addition, this application seems not bizarre nor unprecedent. The Commission also referred to this principle in the *Rambus*[112] and the *Motorola*[113], where the EC

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[109] We believe that this is what the ECJ ruled and not an expectation about a detailed FRAND licence. That is why, the Court ruled that if parties cannot reach an agreement on FRAND terms, third parties may intervene. The ruling mandates SEP holders to provide a written offer for a FRAND licence, and potential licensees to respond to that offer in good faith. If the parties cannot come to an agreement, they may seek the intervention of a court or an arbitration panel to determine the specific FRAND terms.

[110] Just because there has not been any prior case law on legitimate expectation in the private sector does not mean that there could or should not be. Case law is established as a result of factual circumstances and not vice versa.

[111] Borghetti, Nikolic, and Petit. at p. 8 argue that the protection of legitimate expectations in a private setting in *Huawei* is decorative, but not dispositive.

[112] *Rambus* [2010] OJ L30/14. [hereinafter: *Rambus*]. Para. 38.

113 The Commission in para. 417 of the Motorola states that "In view of the standardisation process that led to the adoption of the GPRS standard and Motorola's voluntary commitment to license the Cudak SEP on FRAND terms and conditions, implementers of the GPRS standard have a legitimate expectation that Motorola will grant them a licence over that SEP, provided they are not unwilling to enter into a licence on FRAND terms and conditions"; in para 521 also states that: "Apple and other manufacturers of GPRS-compliant products that are not unwilling to enter into a licence on FRAND terms and conditions should therefore be able to rely on the legitimate expectation that Motorola will honour its commitment to license the Cudak GPRS SEP on FRAND terms and conditions. The seeking and enforcement of an injunction by Motorola against Apple in Germany on the basis of the Cudak GPRS SEP runs counter to that commitment". Case AT.39985 – Motorola, 29 April 2014, C(2014) 2892 final.[hereinafter: Motorola]

stated that given the standardisation process resulted in the GPRS standard, and Motorola's voluntary commitment to license the Cudak SEP on FRAND terms, those implementing the GPRS standard have a legitimate expectation that Motorola offers them a licence for that SEP, as long as they are willing to agree to FRAND terms and conditions.

Furthermore, to ensure effective access to the standard, the Commission in the revised Horizontal Guidelines refers to the legitimate expectations of the standard implementers laid out in *Huawei* and *Motorola*[114].

Based on *Huawei* ruling, we believe that FRAND commitment creates two legitimate expectations[115]. First, the SEP holder's FRAND commitment creates *substantive* legitimate expectations for potential licensees, who anticipate obtaining a licence on FRAND terms. If the SEP holder, then refuses to license, it can be viewed a violation of those legitimate expectations, especially when the potential licensee has relied on that expectation when making his business decisions. Secondly, there are *procedural* legitimate expectations for him, as he expects fair negotiations, access to information, and the right to present his case before a neutral third party if a dispute arises. The ECJ has provided a framework for FRAND negotiations to ensure fairness and balance[116]. Failure to meet these expectations may be seen violation.

In line with us, Geradin and Katsifis claims that as the reference of the ECJ to legitimate expectations on the part of third parties is phrased indiscriminately to the benefit of *any* third party, it could be read as a basis for the proponent of imposing

[114] 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, C/2022/1159, OJ C 164, 19.4.2022, p. 1–121. [hereinafter: revised Horizontal Guidelines 2022]. Para. 482.
[115] In the literature there is no agreement whether FRAND has procedural or substantive meaning. Borghetti, Nikolic, and Petit. at p.9. argue that the ECJ does convey a procedural understanding of FRAND and the procedural legitimate expectations. They argue that the FRAND framework is a comity device that creates mutual obligations of fair play between both the patent owner and potential licensees. Lundqvist describes these obligations as "*good governance procedural rules*", which suggests that they promote ethical and transparent practices in patent licensing. Björn Lundqvist, 'The Interface between EU Competition Law and Standard Essential Patents–from Orange-Book-Standard to the Huawei Case', *European Competition Journal*, 11.2–3 (2015), 367–401 <https://doi.org/10.1080/17441056.2015.1123455>. P. 389.
[116] *Huawei*. *Supra fn.* 88. Para. 55.

licensing at component maker level[117].

We therefore conclude that component makers have a legitimate expectation to obtain a licence from SEP holders, as long as they comply with the procedural framework outlined by the Court. With this in mind, we still need to move one step forward and examine whether the refusal to grant licences to component makers could be considered an abuse under Article 102 TFEU. The reason for this further examination lays in the difference between the facts of *Huawei* and *Daimler*. In the case of a vertically integrated SEP holder, as in *Huawei,* the risk of harm per Article 102 TFEU may be evident (exclusion of competing implementers), but how about the *Daimler* context, where the SEP holder is a non-vertically integrated entity, i.e., if it is only active in the licensing of technology and not in the manufacture of end-products at the market at issue? This question, studied below, makes more sense as one may argue that the fulfilment of the conditions mentioned in *Huawei* may be *necessary* but not *sufficient* to justify a competition law duty to license (rather than a contract law duty). If this is the case, contract law would be the right vehicle to address the refusal of the SEP holder in breach of its FRAND commitment[118].

**c. Licence denial as an exclusionary abuse**

In *Huawei*, whenever the Court referred to the liability of the SEP holder, it considered him as vertically intergraded in the market who could by refusal to licence keep the production of the product for himself. In paragraph 52 of *Huawei*, the Court highlighted that by preventing products manufactured by *competitors* from appearing or remaining on the market, the SEP holder can *reserve to himself* the manufacture of the products in question. The Court then concluded that "*in those circumstances*", the conduct may in principle constitute an abuse[119].Therefore, the refusal to grant a FRAND licence was viewed as an *exclusionary* abuse, thereby a violation of Article 102 TFEU.

But in the *Daimler* case, the SEP holder is not vertically integrated in the market.

[117] Geradin and Katsifis. Pp. 32-33.
[118] *Idem*.
[119] *Huawei*. *Supra fn. 88*. Para. 53.

This is worth mentioning because in *Huawei* (*Motorola*[120] and *Samsung*[121], as well), the possibility of the foreclosure of the market was evident as the dispute occurred between downstream market rivals. In addition, in *Daimler* the conflict stems from the preference of the SEP holder in licensing the end-product manufacturer instead of the suppliers. But in *Huawei*, the Court did not address the issue of level of licensing explicitly, instead, what it determined was that under what circumstances seeking an injunction by an SEP holder under FRAND commitment could be considered abusive within the meaning of Article 102 TFEU.

In this section, we examine if the *Huawei* ruling, despite these differences, can still be applied to the level of licensing disputes as in *Daimler*. In other words, we want to know if the fulfilment of the conditions defined in *Huawei* with respect to indispensability and legitimate expectation is *sufficient* to say that the refusal of a non-vertically integrated SEP holder (like Nokia) to license a component maker will lead to antitrust harm within the meaning of Article 102 TFEU?

If Nokia was vertically integrated in the automotive market, its refusal to license the component suppliers would be deemed an abuse, and no future discussion would be required. But it is not.

The following discussion shows that it is possible that conduct is an abuse even if the conduct does not reserve the downstream market to the dominant firm, and such an abuse would happen in the form of exclusionary[122].

First, the refusal by a non-vertically integrated SEP holder to license component makers can potentially lead to adverse consequences, including limiting production, markets, and technical development, which ultimately harm consumers. This type

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[120] *Motorola*. *Supra fn*. 113. The Commission noted that Motorola is a competitor in the downstream market for mobile telephones that implement relevant telecommunication standards, including GRPS, and competes against other implementers.

[121] Case No. AT.39939 Samsung – Enforcement of UMTS Standard Essential Patents, C(2014) 2891 final. (hereinafter: *Samsung*). The Commission took a preliminary view that the conduct under review could potentially exclude Apple, a rival manufacturer of UMTS-compliant mobile devices, from the market.

[122] In contrast, Nazzini argues that since no competitors of the dominant SEP holder are foreclosed in Daimler context, the abuse is not exclusionary but exploitative. Renato Nazzini, *The Foundations of European Union Competition Law The Objective and Principles of Article 102* (Oxford OUP, 2011). Pp. 231-234.

of behaviour may be in violation of Article 102(b) TFEU, as it restricts the commercial operations of unlicensed component makers, exposing them to legal and commercial uncertainties, even if they may have certain limited have-made rights[123].

Second, in addition to the abuse of dominant position against competitors, a dominant firm can be found to abuse its position when it restricts the freedom of non-competitors. This concept is well explained by Deringer, who highlights that the objective of competition rules is to safeguard the freedom of choice for market participants and to ensure the unhindered interaction of supply and demand in a competitive environment[124]. The conduct constitutes an abuse when a dominant firm utilises its position to limit or eliminate the freedom of decision-making in competition, whether it be the freedom of competitors or the freedom of choice for consumers [125] . Such actions undermine the fundamental principles of fair competition and hinder market dynamics that lead ultimately to harming the overall welfare of the market.

Finally, Abuse of dominance can occur when a firm holds a dominant position in one market (Market A) and refuses to license its SEPs to suppliers in another market (Market B). In such cases, the SEP holder, with market power in Market A, may seek higher licensing fees, potentially causing harm in Market B. It is important to note that abusive behaviour need not occur within the market where the SEP holder holds dominance and there is no need to have cause and connection between dominance and effects. Consider the example provided by Monti[126], where Market

[123] The Court in *Höfner and Elser* stated that Article 102(b) was breached because the dominant undertaking was unable to satisfy the existing demand. (See: Case No. C-41/90 *Klaus Höfner and Fritz Elser vs. Macrotron GmbH* [1991] ECR I-1979). In the case of level discrimination, the SEP holder may be considered unwilling to satisfy existing demand. Article 102 TFEU does not require proof of actual effects of anti-competitive behaviour, only proof of potential effects in the relevant legal and economic context. Therefore, it is not necessary for the conduct under review to have caused a restriction of output, but only to have the likely effect of causing such a restriction. This reasoning can be extended to the Daimler context, where component manufacturers could not legally manufacture and sell standard-compliant components without a license. Although overall output may not be affected by the practice in each case, the restriction on output is likely to occur.

[124] Arved Deringer, *The Competition Law of the European Economic Community* (New York (osv.) : Commerce Clearing House, 1968). Pp. 166-167.

[125] *Idem*.

[126] Giorgio Monti, *EC Competition Law*, *Cambridge University Press*, 2007 <https://doi.org/https://doi.org/10.1017/CBO9780511805523>. Pp. 186-192.

A represents a raw material market, and the dominant firm is the sole producer of that raw material. In this scenario, the dominant firm can exert influence on Market B by withholding the raw material supply from downstream firms. This refusal to license may be deemed exclusionary if it hinders supplier access to the market, impedes innovation, or creates entry barriers for potential competitors.

Crucially, it is not a requirement for the dominant firm to be active in Market B where the refusal to license takes place. The key consideration is whether the firm's refusal to license its intellectual property or essential inputs in Market A, where it is dominant, has an anti-competitive impact in Market B[127].

In the context of *Daimler*, the SEP holder is not extending dominance into another market but is rather seeking maximum royalties by licensing to Daimler at end-product royalty rates. Moreover, by refusing to license to component makers, the SEP holder prevents them from successfully entering another market and developing potentially beneficial products. This behaviour harms competition, and the market suffers as component makers are unable to harness their innovation potential. Such conduct is considered exclusionary abuse.

In line with the argument discussed above, the Düsseldorf court in *Daimler* noted that when component makers have their own licences, they may develop and produce a component on their own and sell to their preferred downstream customers. Moreover, if component makers rely on derived rights, such as have-made rights obtained from the licensed end-product manufacturer, they are limited to selling only to that specific OEM and cannot trade their components in the open market. This constraint prevents them from independently innovating and developing their products, which can have a negative impact on consumers[128]. In such cases, a refusal by the SEP holder to grant an independent licence to component makers may impede competition, potentially triggering a duty to deal under Article 102 TFEU. This is particularly relevant considering that component makers have the potential to further advance the patented technology for new

[127] *Idem*.
[128] Düsseldorf judgement. *Supra fn.* 22.

applications and explore untapped markets beyond a specific sector.

In conclusion, building upon the landmark judgment of the *Huawei* by the ECJ, we contend that the refusal of a SEP holder to grant licences to component makers could be considered an abuse of dominant position. This applies not only when the refusal has the potential to exclude competitors downstream, but also when it obstructs technological advancement and innovation, ultimately harming consumers. An example of this is the limitations faced by unlicensed component makers in their commercial activities.

**d. Policy change suggestion**

Based on the provided discussion, we can suggest a policy change in the EU on imposing SEP holders under FRAND commitment to license component makers. Such a change could be relevant because a) there is no hard-and-fast rule that requires the dominant undertaking to be vertically integrated and in competition with potential licensees in downstream market for abuse withing the meaning of Article 102 TFEU. b) While it is true that most cases of refusal to license under Article 102 have involved vertically integrated firms, the EU courts have not definitively stated that a non-vertically integrated firm can never be subject to exclusionary abuse. c) The circumstances that led to the imposition of a duty to license in *Huawei* also apply to non-vertically integrated undertakings as indispensability condition is met because the SEP is equally necessary for all who want to manufacture and sell standard-compliant products regardless of whether or not the SEP holder is vertically integrated. In addition, the condition of legitimate expectation is also satisfied because FRAND commitment creates a legitimate expectation that the SEP holder will license the SEP on FRAND terms to all entities that require it to manufacture and sell standard-compliant products. d) Lastly, imposing a duty to license to component makers would not have a detrimental effect on the SEP holder's incentives to innovate because they have already decided to exploit their patent by granting FRAND licences[129].

[129] Nazzini, 'Level Discrimination and FRAND Commitments under EU Competition Law'. Pp. 234-235.

Such duty to license to component makers would be more crucial in two following scenarios:

The first case is when the suppliers need the SEPs to develop patented technology for a new usage that goes beyond a particular sector, opening up a new market. In this scenario, a licence request from the component makers should not be refused. Tricky enough, one may wonder what the role of these suppliers in the supply chain at issue would be. Are they indeed suppliers for the standards-compliant product in question, or independent persons as they want to develop a new product / component?

There should be a distinction between component makers who are part of the chain, and those who are independent makers of a product. In the latter case, the independent makers should prove that they do not intend to duplicate goods already offered on the market. Instead, they want to produce new goods or services for which there is a potential consumer demand, therefore, they are entitled to a licence because they are no longer component suppliers, but in fact producers.

The second scenario involves a situation where the SEP holder insists on licensing to end-product manufacturer while arguing that have-made right would safeguard component suppliers, but the conditions of have-made right could not be fulfilled, i.e., the end-product manufacturer could not *design* the component himself.[130]. Therefore, if end-product manufacturer claims that the standard-compliant component was designed by his suppliers and not by himself, then the SEP holder cannot benefit from the arguments for have made rights in convincing the end-product manufacturer to take a licence. In such a situation, the SEP holder must license component suppliers instead of end-product manufacturer[131].

[130] We elaborate this in our proposal in section V. (C).
[131] When considering the application of Article 102 TFEU, it is important to keep in mind two key factors. Firstly, this article only applies to undertakings that have a dominant position in the relevant market(s). Therefore, any analysis under Article 102 TFEU must begin with determining whether the company in question holds such a position. Secondly, even if a refusal to license is found to constitute an abuse that restricts competition, the dominant undertaking can attempt to show that its conduct is objectively justified. The dominant undertaking must bear the burden of substantiating an objective justification for their conduct. In the case of a refusal to license to component makers,

## 2. Non-discrimination principle

The general principle of non-discrimination under EU Law could be relevant to our study as it argues that by refusing to license, the SEP holder make a discriminatory choice based on his position in the supply chain. This could be an alternative approach to determine if a refusal to license a component manufacturer is an abuse of dominance. In terms of value chain, the key question is whether refusing licenses to component makers, while granting them to end-product manufacturer, constitutes different treatment of equivalent transactions with other trading parties under Article 102(c), ultimately putting them at a competitive disadvantage. It is worth mentioning that the non-discrimination (ND) prong of FRAND commitment and non-discrimination principle are usually discussed together in the literature, however, as the ND prong does not address licensing level but royalty base, it will be discussed in the next section.

### i. Equivalent Transaction

To determine whether a dominant company has engaged in discriminatory behaviour under Article 102(c), it must be shown that the company has placed some of its trading partners at a competitive disadvantage on a relevant market where they compete [132]. There must be present the following elements: equivalent transactions, dissimilar conditions, and competitive disadvantage [133]. If these elements are established, it is up to the dominant undertaking to provide evidence

such conduct may be justified if it is either objectively necessary or produces efficiencies that outweigh the restrictive effects on consumers. The Guidance Paper outlines four requirements that a company must meet to justify abusive conduct that forecloses its rivals. Firstly, the conduct must lead to efficiencies, which are not limited to economic considerations such as price or cost but can also include technical improvements in the quality of the goods. Secondly, the conduct must be essential for realising these efficiencies. Thirdly, the efficiencies must outweigh the negative effects on competition. Fourthly, the conduct must not eliminate effective competition by removing all or most existing sources of actual or potential competition. See Communication from the Commission — Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, OJ C 45, 24.2.2009, p. 7–20. Para 30.

[132] Judgment of 19 April 2018, *MEO vs. Autoridade da Concorrência*, C-525/16, EU:C:2018:270. [hereinafter: *MEO*]. Para. 23.

[133] The ECJ in the *United Brands* case clarified that the scope of Article 102(c) is limited to situations where a dominant undertaking engages in transactions equivalent to those with its customers. Case 27/76, United *Brands Company and United Brands Continentaal BV vs. Commission* (1978) ECLI:EU:C:1978:22. [hereinafter: *United Brands*]

that their conduct is objectively justified[134]. This type of discrimination is the only one prohibited under Article 102(c) and is known as market-distorting discrimination, as its anti-competitive effect immediately distorts downstream or upstream competition[135].

In our context, the first two elements are not present: The practice of licensing only end-product manufacturers would not consist in the application of dissimilar conditions to equivalent transactions as transactions with component makers are not equivalent to transactions with end-product manufacturers and additionally, component makers are not in a competitive relationship with end-product manufacturers. Therefore, the practice could not cause competitive distortions between suppliers or customers of the SEP holder.

With regard to the competitive disadvantages, the following analysis is crucial for applying subparagraph (c) of the Article 102 TFEU: it must be shown not only that the behaviour of an undertaking in a dominant market position is *discriminatory*, but also that it tends to *distort* that competitive relationship that hinders the competitive position of some of the business partners of that undertaking in relation to the others. The ECJ has elaborated the subparagraph (c) of the Article 102 TFEU in *MEO* case. Though it is related to price discrimination, it could be inspiring for our analysis. In *MEO*, The Court ruled that the concept of competitive disadvantage must be interpreted to the effect that where a dominant undertaking applies discriminatory prices to trade partners on the downstream market, it covers a situation in which that behaviour is capable of distorting competition between those trade partners[136]. Competitive disadvantage presupposes a distortion of competition between two undertakings which are competitors, *at least potentially*. The anti-competitive effect under Article 102(c) must flow from discrimination, but the discrimination must be proved to cause competitive distortions upstream or downstream. The competitive harm is the negative effect of discrimination on the productive and dynamic efficiency of the suppliers or customers of the dominant

[134] *Ibid*. Paras. 24-27 and 37.
[135] *Idem*.
[136] *MEO*. *Supra fn. 132*. Para. 37.

undertaking[137].

This ultimately means that Article 102(c) cannot establish a duty of the SEP holder to license component manufacturers if the SEP holder is licensing only end-product manufacturer. This is because transactions with component makers are not equivalent to transactions with end-product manufacturers, and component makers are not in a competitive relationship with end-product manufacturers. However, under Article 102(c), the SEP holder may be obligated to grant licenses to all competing component makers once he has licensed one of them[138].

By the same token, Mannheim court in *Daimler* ruled that there was no indication that Nokia was distorting competition between trading partners by imposing discriminatory conditions in the selection of the contracting partner or requiring the royalty be based on the last stage of the value chain[139]. Specifically, the court found that there was no risk of Daimler being placed at a competitive disadvantage compared to other car manufacturers, nor was there any risk of Daimler being unable to switch to other licensed suppliers for LTE connectivity in vehicles, possibly on more favourable terms. Thus, the existing supplier chain would not be affected by the SEP holder licensing practice[140].

Overall, the provided discussions bring out that the rules on discrimination under Article 102 (c) TFEU do not solve the puzzle of licensing level in value chain.

### 3. Horizontal Guidelines

The bottom line from the two previous analyses revealed that unlike non-discrimination under Article 102 (c), the *Huawei* doctrine could be applied in determining licensing level in the sense that it could impose a duty to license to component makers. To complete our competition law investigation, in the following section we study the EU Commission Guidelines on the applicability of

[137] Nazzini, *The Foundations of European Union Competition Law The Objective and Principles of Article 102*. Pp. 250-255.
[138] However, this obligation is subject to considering relevant factors that differentiate the position of one licensee from another.
[139] Mannheim judgment. *Supra fn*. 20. P. 64.
[140] *Idem*.

Article 101 of the TFEU to horizontal cooperation agreements[141] to see whether in these guidelines and its new version of 2022, there is an indication to show that the Commission may also expect the SEP holder to grant a licence to component makers.

From the standpoint of the scope of the Horizontal Guidelines (HGs) there is a big doubt whether they can cover vertical licensing agreements between SEP holders and (non-competing) implementers. In addition, the Horizontal Guidelines are to provide a safe harbour for the SDOs, and in the standardisation agreements section seek to promote SSOs' IPR policies compliant with Article 101 TFEU. The Horizontal Guidelines do not propose an antitrust obligation. Their function is to provide a safe harbour that specifies which competitors' agreements can be deemed presumptively lawful[142]. Hence, outside of this safe harbour, there is no antitrust presumption of liability. However, in the literature, mostly the proponent of licencing to all including component makers refer to paragraph 285[143] which states that: "*[i]n order to ensure effective access to the standard, the IPR policy would need to require participants wishing to have their IPR included in the standard to provide an irrevocable commitment in writing to offer to license their essential IPR to all third parties on fair, reasonable and non-discriminatory terms…",* arguing that licence to all third parties is clear enough to envisage an obligation for SEP holders to licence to component makers. On the other hand, the proponents of access to all argue that the term "all third parties" is not further defined and full implementation of standard could be only happened at end-product level. They also argue that what is important for the Commission is accessibility of a standard to the users of that standard and accessibility does not exclusively mean a licence[144].

[141] European Commission, Guidelines on the applicability of Art. 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements [2011] OJ C11/1. [hereinafter: Horizontal Guidelines].
[142] The para. 279 (476 in the revised HGs) states that "*the non-fulfilment of any or all of the principles set out in this section will not lead to any presumption of a restriction of competition within Article 101 TFEU*.".
[143] In the revised Horizontal Guidelines. *Supra fn*. 114. Para. 482.
[144] See the list of both groups *supra fn*. 64.

With regard to the "access" or "licence" [145], while some believe that what legally matters is access, some other deplete access from any legal meaning and make arguments for licence[146]. The former argue that in the Guidelines the prevention of *effective access* to the standard is crucial; standardisation agreements should provide *access* to standardised technology; and that FRAND commitment is made to guarantee *effective access* to standards[147]. The latter, however, highlight that this distinction between access and licence is meaningless and effective accessibility does not occur but through licence[148].

Our examination shows that in the Horizontal Guidelines context, access is applied in two occasions. First, in standardisation agreements under which effective access to the technology should be guaranteed through IPR Policies of SDOs for the relevant *industry*. The Guidelines explain how the IPR policy through good faith disclosure could provide this access[149]. In this context, the access is a goal provided

[145] Legally speaking, a license, has an affirmative defence to a claim of patent infringement. A contract under which the patent holder promises not to assert claims of infringement of its patents against an identified body. A license is a suspension or exemption from the exclusionary right, which the patent holder, in its sole discretion, may grant. It is a common misconception to think of a patent licence as providing the ability to make and sell some product. Agreements of that sort are known as technology transfers and can entail the conveyance of technical information, know-how, documentation, or even physical materials, facilities, and personnel, to enable the transferee to manufacture a particular product or carry out process, for example. A patent licence will often accompany a technology transfer, perhaps in the same contractual document. But it is quite common for parties to enter into patent licences without engaging in any technology transfer, with each promising not to sue the other over patent infringement while each using its own know-how. Because a patent license is not about gaining access to the know-how or the technical capability needed to participate in a commercial endeavour, a licence is not necessarily required for an implementer to carry on its business. Implementers can, and often do, manufacture and sell products that may be patented by others and then they get a licence to legalise their business from patent law perspective. See Layne-Farrar and Stark. Pp. 110-112.

[146] Geradin and Katsifis. P. 4.

[147] See for e.g., Borghetti, Nikolic, and Petit. P.39; Juan Martinez, 'FRAND as Access to All versus License to All', *Journal of Intellectual Property Law & Practice*, 14.8 (2019), 642–51 <https://doi.org/10.1093/jiplp/jpz075>. P. 646.

[148] Geradin and Katsifis. P. 4.

149 Paragraph 483 provides that: "the IPR policy would need to require good faith disclosure by participants of their IPR that might be essential for the implementation of the standard under development. This is relevant for (i) enabling the industry to make an informed choice of technology to be included in a standard 279 and (ii) assisting in achieving the goal of effective access to the standard. Such a disclosure obligation could be based on reasonable endeavours to identify IPR reading on the potential standard and to update the disclosure as the standard develops. With respect to patents, the IPR disclosure should include at least the patent number or patent application number. If this information is not yet publicly available, then it is also sufficient if the participant declares that it is likely to have IPR claims over a particular technology without identifying specific IPR claims or applications for IPR (so-called blanket disclosure)281. Except for this case, blanket

through the SDOs' IPR Policies and in particular different types of disclosure models[150]. Some models may require participants to engage in IPR discourse, while others may only encourage it.

The proponent to licence to all including component makers also refer to paragraph 294[151] arguing that where the result of a standard is not at all accessible for all members or third parties, this may foreclose or segment markets and is thereby likely to restrict competition[152]. Likewise, competition is likely to be restricted where the result of a standard is only accessible on discriminatory or excessive terms for members or third parties. However, in the case of several competing standards or in the case of effective competition between the standardised solution and non-standardised solution, a limitation of access may not produce restrictive effects on competition. One however must highlight that this paragraph is also about the Commission assessment of the standardisation agreements at the SDO level, and it is not imposing any obligation for the SEP holders. The Guidelines then state that a clear and balanced IPR policy, adapted to the particular industry and the needs of the SDO in question, increases the likelihood that the implementers of the standard will be granted effective access to the standards elaborated by that standard development organisation. This is a bridge to the second usage of access where the goal is to provide the standardised technology for its implementers which is fulfilled through FRAND commitment set by the SDOs.

Second, the Guidelines state that to ensure effective access to the standard, the IPR policy would need to require participants wishing to have their IPR included in the standard, to provide an irrevocable commitment in writing to offer to license their essential IPR to all third parties on FRAND terms[153]. Accordingly, the first access is at the disclosure level and the addressee is the relevant industry, however, the

disclosure would be less likely to enable the industry to make an informed choice of technology and to ensure effective access to the standard. Participants should also be encouraged to update their disclosures at the time of adoption of a standard, in particular if there are any changes which may have an impact on the essentiality or validity of their IPRs. Since the risks with regard to effective access are not the same in the case of a standard development organisation with a royalty-free standards policy, IPR disclosure would not be relevant in that context."

[150] Revised Horizontal Guidelines 2022. Supra fn. 114. Para. 492.

[151] Revised Horizontal Guidelines 2022. Supra fn. 114. Para. 491.

[152] Rosenbrock. Pp. 5-6.

[153] Revised Horizontal Guidelines 2022. *Supra fn*. 114. Para. 482.

second access is the ultimate goal of standardisation which is typically attained through licence. One however should not conclude that the effective access is attained only through a licence. As stated earlier, Horizontal Guidelines do not create legal obligations and FRAND obligation is created by the patentees' signature of the SDOs' IPR policies. It is in line with the Guidelines stating that FRAND commitment is designed to ensure that the essential IPR protected technology incorporated in a standard is "accessible to the users" of that standard on FRAND terms and conditions[154].

As concluding remarks, we share the idea that access is a goal while a licence is a legal means to achieve it[155]. What the SEP holder typically committed to the SDOs is to provide all third parties with an access through a licence. The HGs do not define any specific rule for how licence should be granted to ensure that access, nor impose any duty to license to component manufacturers[156].

## IV. Royalty rate base

In the previous sections, we discussed the question of licensing level through reviewing Nokia's initial offer and subsequent Daimler's counteroffer. We saw how both the parties in their negotiations often rely on various legal arguments such as have-made rights, patent exhaustion and competition law to gain bargaining power and advantage. However, when they cannot come to an agreement, they often turn to courts for resolution, where courts are expected to address about the appropriate base for licensing.

Royalty base, which is the theme of the discussion in this section, refers to methods adopted to determine a rate for royalty. It is worth mentioning that while the level

[154] *Ibid.* Para. 484.
[155] Heiden, Padilla, and Peters. P. 6.
[156] It is however worth noting that the new version highlights the possibility of hold-out situation under which the user of the standard, refuses to pay a FRAND royalty fee or uses dilatory strategies We believe that this new consideration is a clear message from the Commission to highlight the two-side objectives of FRAND commitment: a) to prevent SEP holders from making the implementation of a standard difficult by refusing to license or by requesting unfair or unreasonable fees, (hold-up) and b) to allow them to monetise their technologies via FRAND royalties. Therefore, the issue of implementation is better to be determined on a case-by-case and industry-by-industry basis. See: Revised Horizontal Guidelines 2022. *Supra fn.* 114. Para. 482.

of licensing and royalty base are two distinct notions[157], the arguments put forth to privilege one level or base with regard to the other tend to follow a similar pattern, i.e., those in favour of licensing all parties, including the component maker, generally support a component-based royalty rate[158], while those advocating for access to all tend to support end-product based licensing[159]. However, the fact that patentees' participation in the economic benefits of the technology is fulfilled at the end of value chain, does not necessarily imply that the licence agreement has to be exclusively concluded with the producer of the end-product[160]. Indeed, this debate is largely driven by pricing considerations, as applying royalty to the higher-value end-product can potentially generate a larger amount compared to applying it to the lower-priced component.

In 2010, Eric Stasik[161] conducted a highly cited survey aiming to determine the patent licensing expectations of the largest contributors to the LTE (4G) standard[162].

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[157] Igor Nikolic, *Licensing Standard Essential Patents : FRAND and the Internet of Things* (London: Bloomsbury Publishing, 2021). P. 151.

[158] For the literature in favour of using component base royalty see: William F. Lee and A. Douglas Melamed, 'Breaking the Vicious Cycle of Patent Damages', *Cornell Law Review*, 101.2 (2016), 385–466 <https://doi.org/10.2139/ssrn.2577462>; Grasso; Lemley and Shapiro, 'Patent Holdup and Royalty Stacking'; Janusz Ordover and Allan Shampine, 'Implementing the FRAND Commitment', *Antitrust Source*, October (2014) <https://doi.org/10.2139/ssrn.2448530>; Joseph Kattan, Janusz Ordover, and Allan Shampine, 'FRAND and the Smallest Saleable Unit', *Competition Policy International*, September, 2016, 1–8; Joseph Kattan, 'The Next FRAND Battle: Why the Royalty Base Matters', 2015.1 (2015), 1–12 <www.competitionpolicyinternational.com>.

[159] Axel Gautier and Nicolas Petit, 'Smallest Salable Patent Practicing Unit and Component Licensing: Why 1$ Is Not 1$', *Journal of Competition Law and Economics*, 15.1 (2021), 1–32 <https://doi.org/10.2139/ssrn.2954592>; Edward F Sherry and David Teece, *On the 'Smallest Saleable Patent Practicing Unit' Doctrine: An Economic and Public Policy Analysis*, *Tusher Center for the Management of Intelectual Capital*, 2016 <https://doi.org/10.2139/ssrn.2764614>; Luke Froeb and Shor Mikhael, 'Innovators, Implementers, and Two-Sided Hold-Up', *Antitrust Source*, August, 2015, 1–10 <https://www.mikeshor.com/research/antitrustsource.pdf>; Bowman Heiden and Jens Andreasson, 'Reevaluating Patent Damages in the Knowledge Economy: The Intellectual Value Chain and the Royalty Base for Standard-Essential Patents', *The Criterion Journal on Innovation*, 1 (2016), 229–85 <http://www.mpegla.com/main/programs/AVC/Pages/PatentList.>; Blecker, Sanchez, and Stasik; Gregory Sidak, 'The Proper Royalty Base for Patent Damages', *Journal of Competition Law and Economics*, 10.4 (2014), 989–1037 <https://doi.org/10.1093/joclec/nhu030>; Borghetti, Nikolic, and Petit.

[160] This argument was in fact highlighted by the Mannheim court in the *Daimler* case. See *supra fn*. 20.

[161] Eric Stasik, 'Royalty Rates And Licensing Strategies For Essential Patents On LTE (4G) Telecommunication Standards', *Les Nouvelles - Journal of the Licensing Executives Society*, 2010 <https://www.lesi.org/news-results/2011/05/02/royalty-rates-and-licensing-strategies-for-essential-patents-on-lte-(4g)-telecommunication-standards>.

162 The companies that had announced LTE rates by 2010, and the rates they announced (all expressed in terms of the handset price), were: Qualcomm (3.25%), Motorola (2.5%), Alcatel-

All companies interviewed in the survey expected to license their patents as a percentage of the sales price of an end-user device, rather than the price of any specific component[163]. Similarly, Putnam and Williams examined the licensing practices of the leading contributors to 2G, 3G, and 4G standards and found no evidence that a component or a combination of components were used as a metering device for royalty rate calculation[164]. This led them to conclude that in telecom sector, licensors and user equipment sellers do not rely on any specific component to measure the value of licensed technology. Even Qualcomm, a leading component processor manufacturer, negotiates licence payments based on the user equipment price in addition to the component price[165]. This finding is notable because it indicates that the value of licensed technology in the telecom industry is primarily based on the end-product rather than any individual component. However, it does not follow automatically that this approach should be applied in the connected car industry. The connected car's hybrid nature, often likened to a "smartphone on wheels", poses challenges in defining a standardised approach for this unique sector.

Pricing debate has given rise to the creation of two opposing blocks as well in the academic literature as in practice[166]. Those in favour of component-based licensing and those of end-product based licensing present completely contrasting arguments, and we examine these arguments before presenting our own stance at next section.

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Lucent (2%), Ericsson (1.5%), Huawei (1.5%), Nokia Corp. (1.5%), Nortel Networks (1%), ZTE (1%), Nokia Siemens Networks (0.8%). Cited in Putnam and Williams. P. 33.

[163] Stasik. P. 116.

[164] Putnam and Williams. Pp. 41-43.

[165] Qualcomm stated that it expected to charge royalties for a license under its standards essential LTE patents for complete, end user subscriber devices that implement LTE of approximately 3.25% of the wholesale selling price of each such device. See Qualcomm, 'LTE/WiMax PATENT LICENSING STATEMENT', 2008 <https://www.qualcomm.com/media/documents/files/lte-wimax-patent-licensing-statement.pdf>.

[166] For many years, the level of licensing was not a significant concern in SEP licensing, until the *FTC vs. Qualcomm* revealed the mobile phone industry has faced it. In this case, Qualcomm who used to supplied chips to the industry refused to license its competitors causing a disruption in the supply chain. In this case, the FTC levelled allegations against Qualcomm for engaging in anticompetitive behaviour by exploiting its market dominance in cellular modem chips and violating antitrust regulations. The case revolved around the fairness and reasonableness of Qualcomm's licensing practices, which compelled customers to pay royalties based on the overall device price rather than the specific cost of the modem chip. Ultimately, the court sided with the FTC, concluding that Qualcomm's licensing practices were anticompetitive and had detrimental effects on market competition. See*: Fed. Trade Comm'n vs. Qualcomm Inc.*, Case No. 17-CV-00220-LHK (N.D. Cal. Nov. 6, 2018).

It is important to note that there may be some overlap between the licensing level and royalty base in the arguments presented by both sides.

## A. Total economic value of connectivity

According to the European Commission, licensing terms must bear a clear relationship to the *economic value* of the patented technology[167]. In this context, determining a FRAND value should require considering the *present value added* of the patented technology. That value should be irrespective of the market success of the product which is unrelated to the patented technology[168]. In addition, FRAND valuation should ensure continued incentives for SEP holders to contribute their best available technology to standards[169].

The meaning and the magnitude of the added value depend on context of valuation and market. Heiden explains that a good or service in an economic system may create value to social actors, producers, consumers, and society as a whole and accordingly, he examines three different values, i.e., total market value, total economic value, and net social value[170].

Briefly speaking, total economic value as the value provided by a good or service in terms of satisfying individual needs, is often expressed in monetary terms and is determined by factors including supply and demand, production costs, and the perceived utility of the good or service. Total market value focuses the price at which a good or service can be bought or sold in a particular market, and net social value englobes the overall impact of a project or decision on society as a whole, taking into account a range of social and environmental factors[171]. Economic value

[167] Brussels, 29.11.2017 - COM(2017) 712 final - 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. [hereinafter: EC, setting out the EU approach to SEPs]. P. 6. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0712.
[168] *Idem*.
[169] *Idem*.
[170] Heiden. P. 11.
[171] For example, a product that is in high demand and has a relatively low cost of production is likely to have a high economic value because it can be sold at a price that is much higher than the cost of producing it. On the other hand, a product that is in low demand or has a high cost of production may have a lower economic value because it is difficult to sell at a price that covers its production costs.

is an important concept in economics and business because it helps to determine the price that consumers are willing to pay for a product and the profits that companies can expect to earn from producing and selling it.

The estimation of the value of technology is challenging basically because pure technology markets in which market prices can be obtained do not exist. This is especially the case for enabling technologies and multi-technology products including automobiles or mobile subscriptions[172]. When the value of technology cannot be defined by market transactions, it must be determined through an inspection on the contribution it has to the value for consumer, that is, its value-in-use (VIU). Technology-based innovation generally generates value through either improvement to existing products and services providing efficiency and performance benefits to existing value propositions (e.g., anti-lock brakes, more fuel-efficient diesel engines, or advanced navigation systems), or creation of new products, services, or business models (e.g., ride-sharing apps, over-the-air updates, and autonomous driving)[173].

One may argue that what is paid to a TCU designer by a car manufacturer should be considered as an indication of TCU's economic value, that is, the price that consumer is willing to pay. This is in fact Daimler's argument suggesting car manufacturer as consumer and the supplier as a licensee where the licence fee should be based on the sales price of the supplier[174]. This view leads to the same result as the component-based royalty rate does.

Connected vehicle services encompass a broad cross-section of growing interrelated value propositions for their consumers and manufacturers, including convenience, safety, security, time-savings, cost savings, entertainment, comfort, and vehicle management features amongst others. Therefore, it seems to be more relevant to regard the connected car buyer as the main consumer, and the price that the buyer is willing to pay is an *indication* of TCU economic value. Nevertheless,

[172] David J. Teece, 'Profiting from Innovation in the Digital Economy: Enabling Technologies, Standards, and Licensing Models in the Wireless World', *Research Policy*, 47.8 (2018), 1367–87 <https://doi.org/10.1016/j.respol.2017.01.015>.
[173] Heiden. P. 12.
[174] Mannheim judgment. *Supra fn*. 20. P. 52

the value of the connected car, i.e., its market price, should not be simply considered as the royalty base due to the fact that this price is often impacted by the adjunct optional equipment attached to the product. An example can be gold-plated smartphones, or luxury connected cars equipped with pricy decorations, that makes it impossible to determine what part of the market price represents SEPs value, and what part the value of the additional or optional attachments.

## B. Full functionality of SEPs

Those in favour of component-based licensing assert that components, such as modems, best represent a standard's functionality and the value of standardised technology. They argue that communication standards for cellular 3G, 4G, 5G, and wireless are implemented at the component level, specifically at the baseband chip.

On the other hand, advocates of end-product-based licensing contend that end-products, such as smartphones, accurately reflect the true value of the standardised technologies as their functionality is fully realised in the end-product device. They maintain that the standard value depends on its downstream use, and that basing royalties on the final downstream device acknowledges this distinction. They often point to the price difference between an iPad and an iPhone, both with almost the same features but with different connectivity capabilities, thereby different prices, to illustrate this point[175].

Proponents of component-based licensing express concern that licensing at the end-product level would allow SEP holders to capture value created by unrelated components (e.g., cameras in a mobile device) or technologies (e.g., software that relates to the operating system of smartphone), leading to unjustifiable overcompensation and hold-up. In the same context but in a different direction, supporters of end-product-based licensing believe that component-based licensing would devalue SEPs, harm innovators, and disincentivize participation in standard development, as enforceable royalties may be driven down.

We recall that in connected car industry, contrary to smartphone’s, the car as the

[175] Nikolic. P. 152.

end-product does not reflect the true value of the standardised telecommunication technology as it comprises numerous elements one of which is the TCU. It is actually TCU, i.e., the component, that reflects such a value as its functionality is fully realised thank to the cellular technology.

## C. Smallest Saleable Patent Practicing Unit

Proponents of the licence to all (component-based licensing) argue that SSPPU is the right royalty base. They argue that determining the value of patented technology should follow a similar methodology as damage calculations in patent law. In essence, this approach considers the value associated with the infringement of the specific patented component in question. They argue that US Patent Damages Law requires the use of SSPPU in the calculation of damages where a product has multiple components[176].

The courts have stated that SSPPU is simply a step towards meeting the requirement of apportionment, and patent holders must estimate what portion of the value of a multi-component product is attributable to the patented technology[177].

The US antitrust agencies acknowledge the use of SSPPU approach for setting FRAND royalties. The FTC recommended SSPPU where the invention's contribution is a large and complex product[178]. It rereferred to *Cornell vs. Hewlett-Packard*[179] where the court chose the processor as the base where it was the smallest priceable unit. The DOJ also, in the Business Review Letter on IEEE's policy of 2015 (the 2015 Letter), stated that the SSPPU method proposed by the IEEE may be appropriate in calculating a royalty that is correctly tied to the patented invention, particularly when the product is complex and incorporates many patented

[176] *VirnetX, Inc. vs. Cisco Sys., Inc.,* 767 F.3d 1308, 1327-28 (Fed. Cir. 2014). The court clarified that, in the case of complex function devices, one way to apportion the value contributed by a particular patent is to use the SSPPU as a royalty base.
[177] *Ibid.* Para 1327. See also *Microsoft Corp. vs. Motorola, Inc*. Case No. C10- 1823JLR (W.D. Wash. 25 Apr. 2013). Para. 427 and *Ericsson, Inc. vs. D-Link Sys., Inc*., CASE NO. 6:10-CV-473 (E.D. Tex. Aug. 6, 2013). At. 28-30.
[178] Federal Trade Commission, *The Evolving IP Marketplace Aligning Patent Notice and Remedies with Competition*, 2011 <https://www.ftc.gov/reports/evolving-ip-marketplace-aligning-patent-notice-remedies-competition>. Pp. 24-24.
[179] *Cornell Uni vs. Hewlett-Packard Co.,* 609 F. Supp. 2d. 279, 288 (N.D.N.Y. 2009).

technologies[180]. The DOJ concluded that the update of policy of 2015 on reasonable rate provides a clearer definition of a "reasonable rate" which may help speed up licensing negotiations and limit patent infringement litigation. It helps ensure that reasonable royalties for essential patents compensate the patent holder for the value attributable to the patents, which is consistent with the US case law[181].

On the other hand, proponents of access to all (end-product-based licensing) refuse SSPPU as a royalty base. They refer to the update of the DOJ on the Business Review to the IEEE Policy. In this update (the 2020 Letter), the DOJ emphasised that the 2015 Letter was not an endorsement of the IEEE policy and this misinterpretation has influenced some competition authorities outside the US, leading to several enforcement actions against SEP holders while it has no basis under US law[182]. The 2020 Letter highlighted that the DOJ had never mandated SSPPU as the only basis for royalty determination otherwise the implementers are less likely to accept royalty payments based on the entire market value, since they can always (after a judicial proceeding) receive the smaller adjudicated royalty. In the 2020 Letter, the DOJ fully changed its view, stating that while there are a variety of ways parties might value patented technology, end-product basis is the basis in the real-world licences, and it is the most effective method of estimating as asserted patent's value. The DOJ stressed that the recommendation of IEEE's policy for using SSPPU in the absence of other bases, would bear on the parties' licence negotiations and discouraged them to use end-product basis[183].

The 2020 Letter stated that SSPPU is one of the possible tools for courts to set a royalty rate and particularly for jury-trial litigations[184]. Similarly, the Ninth Circuit

[180] Department of Justice, Antitrust Division. Business Review Letter Regarding the Institute of Electrical and Electronics Engineers Incorporated. February 2, 2015. Available at: https://www.justice.gov/atr/response-institute-electrical-and-electronics-engineers-incorporated#_ftn43.
[181] *Idem*.
[182] Department of Justice, Antitrust Division. Business Review Letter Regarding the Institute of Electrical and Electronics Engineers Incorporated. September 10, 2020. P. 3. Available at: https://www.justice.gov/atr/page/file/1315291/download.
[183] *Ibid*. P. 7.
[184] The court in Ericsson vs. D-Link Systems ruled that the end-product base might mislead the jury. The court stated that: "It is not that an appropriately apportioned royalty award could never be fashioned by starting with the entire market value of a multi-component product. it is that reliance

in *FTC vs. Qualcomm* reiterated that, "*no court has held that the SSPPU concept is a per se rule for "reasonable royalty" calculations; instead, the concept is used as a tool in jury cases to minimise potential jury confusion when the jury is weighing complex expert testimony about patent damages"*[185]. In this respect, the rule for calculating damages do not necessarily have to mirror the rule guiding negotiations between parties for licensing agreements[186].

This discussion makes it evident that the DOJ changed its policy in this regard, as in 2015, it was inclined towards implementers, but in 2020, the policy shifted towards SEP holders. In addition, Putnam argues that the concept of SSPPU is an arbitrary approach to limiting a patentee's damages and lacks a basis in economic theory or data[187]. In complex devices where components work synergistically, SSPPU fails to capture the incremental value added by the invention, rendering it inadequate to measure an invention's economic impact[188]. For instance, in the telecom sector, some licensees of SEPs portfolios propose that royalty base should be limited to the baseband processor. However, this strategy attempts to manipulate the size of the total payment by defining the royalty base improperly, without any economic analysis of the causal relationship between inventive input and economic output[189]. Additionally, improvements to a single input affect the value of the output, as well as the contributions made by other inputs. This increase in value is not necessarily reflected in the price of the improved input itself, especially when the input's manufacturer does not account for a royalty or other cost of using the invention. Finally, the terms of actual licences can reveal essential information about how industry participants view the causal relationship between licensed inventions and their increment to output. For example, in the telecom sector, agents often choose the value of user equipment that includes a baseband processor as a royalty metering device, recognising that standard-implementing inventions often

on the entire market value might mislead the jury". See: Ericsson, Inc. vs. D-Link Sys., Inc., 773 F.3d 1201, 113 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 2014). At. 1227.

[185] United States Court of Appeals for the Ninth Circuit. (Year). Federal Trade Commission, Plaintiff-Appellee, vs. Qualcomm, No. 19-16122. D.C. No. 5:17-cv-00220-LHK. Pp. 42-43. Available at: https://cdn.ca9.uscourts.gov/datastore/opinions/2020/08/11/19-16122.pdf.

[186] *Supra fn.* 182. P. 8.

[187] Putnam and Williams. P. 46.

[188] *Idem*.

[189] *Idem*.

operate synergistically to increase the user equipment's value[190]. Putnam concludes that the question of whether a given component is saleable, at what price, when and by whom, is influenced by a range of supply chain decisions and other business considerations that are causally unrelated to the use and impact of the invention[191].

These complexities make it challenging to define and measure an intermediate royalty base and require careful consideration in cases where such comparisons are necessary. In addition, the precondition to use of SSPPU as an evaluator of a licensed patent is that the component that allegedly embodies the patented invention is *saleable*. In fact, to determine the appropriate royalty base for a component, it should be assessed whether it is independently saleable on the open market. If it is the case and its price is known, the royalty can be based on that price. In contrast, if the component is only intended for use in end-products or has been designed by end-product manufacturers, the component price becomes just one element among others in the agreement between the commander and supplier, which may involve also payment terms, warranty, quantities, lead times, and other commercial details. In such a circumstance, licensors generally do not have access to accurate and verifiable price of components.

### 1. Is TCU saleable?

In the automotive industry, a TCU is an embedded system onboard a vehicle that wirelessly connects the vehicle to cloud services or other vehicles using V2X standards over a cellular network. The TCU gathers telemetry data from the vehicle, including information about position, speed, engine data, and connectivity quality, by interfacing with various sub-systems over data and control busses within the vehicle. Additionally, it may offer in-vehicle connectivity using Wi-Fi and Bluetooth and provide the eCall function in applicable markets[192].

A TCU comprises several components such as a satellite navigation unit, an external mobile communication interface, an electronic processing unit, a

[190] *Ibid.* P. 41.
[191] *Ibid.* P. 28.
[192] Richa Tyagi, 'Connected Vehicle : Features & Trends', *Telematics Wire*, 2022 <https://carbiketech.com/telematics-control-unit/>.

microcontroller, a microprocessor or Field-Programmable Gate Array (FPGA), and a memory. The TCU tracks vehicle's latitude and longitude and sends them to a centralized database server. The TCU can also process the information and store GPS coordinates in its memory when no mobile coverage is available and do the same thing for vehicle's sensor data[193].

In the *Daimler* case, Daimler argued that the TCU component is a saleable terminal as a mobile station based on its technical functions, but the Mannheim court rejected this argument[194]. The court explained that connectivity components such as TCU are only utilised when installed in a vehicle and connected or interacting with other electronic components. The invention's relevance is not fully realised in the component alone and can only be realised through installation and connection with other components in the vehicle, where all benefit can only be achieved after the connectivity modules is installed in the vehicle. In this context, the court concluded that the TCU cannot be considered a saleable terminal equipment and cannot be, therefore, the basis for royalty calculations, instead, it is the smallest *technica*l unit[195].

Whether or not a TCU is considered a saleable component depends on various factors, such as its technical specifications and intended use. In general, if a TCU is designed and manufactured to be installed and used specifically in a particular type of vehicle or as part of a larger system, it cannot be considered a saleable component. The TCU may be then seen as a component of the larger system and its value may be included in the overall value of the system, rather than as a standalone product. On the other hand, if it is designed and manufactured to be sold as a standalone product that can be installed and used independently of other devices, then it may be considered a saleable component. Google search shows that the market for 5G *ready-to-use* TCUs will be valued at a significant 33,105.5 million US dollars by the end of 2023 and is expected to grow at a rate of 26.6% from 2023

[193] 'What Is Telematics Control Unit & How It Works ? What Is Telematics Control Unit ?', *CarBikeTech Team*, 2021 <https://carbiketech.com/telematics-control-unit/>.
[194] Mannheim judgment. *Supra fn. 20*. P. 56.
[195] *Idem*.

to 2033[196].This indicates that there are many suppliers in the market for telematics units, not just limited to tier-1 suppliers, and that these products are in high demand.

## D. Transaction costs

Transaction costs are a useful indicator to identify the better royalty base, as in addition to being desirable to the society, reducing the costs related to the negotiation for a licence is in line with the EU Commission's goal[197].

From the perspective of minimising transaction costs, defining an optimal licensing level of cost is of great importance. But selecting such a level for SEPs requires careful consideration of various factors, given that transaction costs depend largely on the technology at issue and the type of product[198].

In a complex value chain with patents at different levels, licensing at a single level can save on transaction costs by reducing the number and the complexity of negotiations. When SEP holders own several patented technologies included in the same standard, licensing at a unique level in the value chain can prevent double-dipping and overcompensation, as required by patent exhaustion. There may be, however, asymmetric information about patents between SEP holders and licensees, that may result in royalties being charged for the same patents at multiple levels. This can lead to under-compensation if SEPs users in the middle of a supply chain refuse to take a licence claiming that all relevant SEPs are implemented at the end-product level, while end-product manufacturers refuse too claiming that all SEPs are implemented at the component level in the middle[199]. Langus and Lipatov suggest that SEP holders typically target the level where most of their SEPs are implemented and trusting them to choose the licensing level that minimises transaction costs and maximises total output[200]. To evaluate this approach in IoT

[196] Market for 5G-*ready* TCUs will be valued at a significant 33,105.5 million US dollars by the end of 2023 and is expected to grow at a rate of 26.6% from 2023 to 2033. Available at: https://www.persistencemarketresearch.com/market-research/5g-ready-telematics-control-units-tcu-market.asp.
[197] EC, setting out the EU approach to SEPs. *Supra fn.* 167. P. 7.
[198] Geradin and Katsifis. Pp. 10-11.
[199] Heiden, Padilla, and Peters. Pp. 14-15.
[200] Gregor Langus and Vilen Lipatov, *Efficient Level of SEPs Licensing*, *CESifo Working Papers No. 9574*, 2022 <https://doi.org/10.2139/ssrn.4036991>. P. 13.

context, comparing licensing costs at different levels can provide a useful benchmark. In IoT, licensing at the component level may be preferable if there are fewer licensees in the middle than at the end-product manufacturers' level, potentially leading to lower costs. In this context, Geradin highlights the importance of considering the vast number of OEMs in the IoT space, cautioning that licensing at the end-product level could increase transaction costs and result in inefficiencies[201]. Henkel similarly argues that licensing should take place at upstream level where transactions costs is minimised,[202] emphasising the smaller number of component makers and accordingly fewer licence agreements, thus minimising transaction costs. On the other hand, Heiden et al. raises the point that component makers may struggle to pay a FRAND rate and may lack the necessary information to enforce licensing agreements at the middle level[203]. Additionally, due to the difficulty in identifying which patents apply where, downstream licensing becomes a more appealing option for reducing transaction costs. He also argues that moving licensing upstream may lead to challenges in setting SEP royalties based on different use-cases, resulting in higher monitoring and auditing costs[204].

Factors that favour downstream licensing include reducing double marginalization, limiting exposure of integrated firms, and managing risk. Licensing at the midstream level can have advantages too, particularly when there is a high risk of hold-up[205]. When selecting the licensing level, it is essential to consider the use case and industry-specific factors. If a large portion of patents applies to both levels of the value chain, it may be beneficial to only license downstream to minimise transaction costs. In contrast, licensing midstream may be preferable when midstream suppliers have limited bargaining power and cannot pass through royalties charged by licensors to their downstream customers[206]. To deal with uncertainty, licensors can commit not to enforce their patents on firms operating

[201] Geradin and Katsifis. P. 12.
[202] Joachim Henkel, 'How to License SEPs to Promote Innovation and Entrepreneurship in the IoT', *SSRN Electronic Journal*, March, 2021 <https://doi.org/10.2139/ssrn.3808987>. P. 15.
[203] Heiden, Padilla, and Peters. P. 12.
[204] *Ibid.* P. 13.
[205] Heiden, Padilla, and Peters. Pp. 12-13
[206] *Ibid.* Pp. 14-16.

upstream of the licensing level, or they can include have-made rights and exceptions in their licences to protect midstream firms. It is also important to prevent a complex web of licensing agreements by not dividing up SEP portfolios.

## E. ND prong of FRAND commitment

Non-Discriminatory (ND) prong of the FRAND commitment requires SEP holders not to employ a pricing strategy that demands different royalty rates from potential licensees who are *similarly situated* for the same patent[207]. Here, we explore whether this standard can provide any guidance for establishing a royalty rate. To clarify, we investigate whether determining a royalty rate for one party, such as component makers, could serve as a basis for determining a similar rate for another party, i.e., end-product manufacturers.

### 1. Different interpretations

Before going through our examination, it is worth mentioning that different scholars have proposed different interpretations for similarly situated notion. Sidak suggests that licensees are similarly situated only if they use the same patents or portfolio in products in the same market at comparable royalty rates in both transactions[208]. Botta argues that such a narrow interpretation would result in discriminatory treatment for producers of different industries negotiating licences with the holders of communications standards, such as connected cars and e-homes[209]. According to Contreras and Layne-Farrar, the status of similarly situated should be determined based on a set of specific, relevant facts on a case-by-case basis, which should include the use of the licensed patent, company size, competitive position, and the expected length of time the patented technology will remain valuable to

[207] EC, setting out the EU approach to SEPs. *Supra fn.* 167. P. 7.
[208] Gregory Sidak, 'Fair and Unfair Discrimination in Royalties for Standard-Essential Patents Encumbered by a FRAND or RAND Commitment', *The Criterion Journal on Innovation*, 2 (2017), 301–70 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3179149>. Pp. 359-363.
[209] Marco Botta, 'Nondiscrimination in Standard Essential Patents; ND Prong V. Art. 102(C) TFEU', *Journal of Competition Law and Economics*, 17.4 (2021), 947–77 <https://doi.org/10.1093/joclec/nhab011>. P. 17.

licensees[210].

In addition, opinions diverge around the notion of price discrimination and varying royalty rates. Here is important to distinguish between the non-discrimination element of FRAND and a Most-Favoured Nations (MFN) clause. Not only did ETSI reject explicitly a most-favoured-licensee approach and chose to allow patent holders some flexibility in reaching reasonable agreements with different potential licensees, but also several courts in different jurisdictions rejected the MFN interpretation of the ND prong by ruling that the SEP holder is not required to grant to every licensee the same royalty rate[211]. On the other hand, according to the SEP Expert Group, the SEP holder may charge different royalty rates depending on the connectivity rates used by IoT components/chips for different applications[212]. This approach would acknowledge the different levels of technical complexity and value created by the different types of connectivity, and potentially provide an incentive for SEP holders to invest in and develop new and innovative technologies[213].

## 2. Application of ND prong

In the ND prong of FRAND, the term similarly situated refers to the notion that all licensees who are similarly situated should be offered the same terms and conditions for the SEP licence. This means that licensees who are in the same position with respect to their need for the SEP licence and their ability to comply with the terms of the licence should receive the same treatment including royalty setting. SEP holders must not discriminate between similarly situated licensees by

[210] Jorge L Contreras and Anne Layne- Farrar, 'Non- Discrimination and FRAND Commitments', in *The Cambridge Handbook of Technical Standardisation Law,* ed. by Jorge Contreras (Cambridge University Press, Cambridge, 2017), pp. 186–208 <https://ssrn.com/abstract=3138578>. P. 194.
[211] In *HTC vs.Ericsson* case the court rejected MFN interpretation of the ND prong ruling that the proposed instruction from HTC (i.e., requiring Ericsson to provide identical licensing terms to all prospective licensees) would turn the non-discrimination element of FRAND into a most-favoured-licensee approach. See: *HTC Corp. vs. Telefonaktiebolaget LM Ericsson*, 2021 U.S. App. LEXIS 26250, __ F.4th __ (Fed. Cir. 2021). Available at: https://www.ca5.uscourts.gov/opinions/pub/19/19-40566-CV0.pdf. Pp. 11-12. To see the same view of the UK Supreme Court and the German Federal Court of Justice, see: UK Supreme Court, Unwired Planet International Ltd and another (Respondents) vs. Huawei Technologies (UK) Co Ltd and another (Appellants), 26 August 2020. [2020] UKSC 37. Para. 116 and Bundesgerichtshof , *Sisvel vs. Haier*, ruled on 5.5.2020, ECLI: DE: BGH: 2020: 050520UKZR36.17.0.
[212] Baron, Geradin, and others. P. 94.
[213] *Idem*.

offering more favourable terms to some licensees over others unless such a differential treatment is based on valid business reasons[214]. This is intended to prevent the SEP holder from using his position to unfairly disadvantage competitors[215].

It should be noted that determining whether licensees are similarly situated can be challenging, especially in rapidly evolving and diverse landscape of IoT. Factors such as the nature of the technology, potential applications, competitive landscape, and characteristics of the licensees must be considered. Licensees' size, experience, expertise, and market position play a vital role[216]. A licensee producing a smart home device may be more similar to another licensee producing a different type of smart home device, rather than a licensee producing a connected car, as the two industries are likely to have different competitive landscapes, business models, and product characteristics[217].

ND prong could possibly help in founding a basis for royalty rate, provided that a component maker can show that he is similarly situated with respect to another licensee who is licensed under terms that the component maker considers FRAND. In conclusion, our discussion highlights two key points. First, our analysis reveals that even if we establish a royalty rate for one party, such as component makers, it cannot be automatically applied to the other party. This is because the two parties

[214] Mannheim court in the *Daimler* case rules that different treatment of trading partners may be objectively justified, which has to be answered by weighing up all interests involved. Mannheim judgement. *Supra fn*.20. P. 62.
[215] This makes more sense from economic perspective under which Non-Discrimination principle is to prevent distortion in competition, that is advantaging one party over another who cannot compete fairly in the marketplace. Hence, if they are not in competition and the SEP holders are not a direct rival, then there is no basis for applying this principle.
[216] Similarly, a licensee with less experience in the technology may require more support or assistance from licensor in order to fully realise the benefits of the technology. Cano Perez argue that offering the same terms to companies that are not similarly situated would be of little help especially for SMEs, which are not able to afford licensing conditions that capture the entire potential of the technology. Thus, there is a need to adopt our mind-set to the new licensing practices which will emerge in connection with IoT and 5G. For example, in the case of an IoT technology that can be used in a range of different products (e.g., smart home devices, connected car etc.), the determination of similarly situated licensees may depend on specific features of the product and the intended use of the technology. See: Ruben Perez Cano, 'Non-Discrimination Under FRAND Commitment. One Size Fits All, Or Does Not Fit At All? The Example Of Wireless Technology: IoT And 5G.', *Les Nouvelles - Journal of the Licensing Executives Society*, LIV.4 (2019), 257–67 <ssrn: https://ssrn.com/abstract=3470188>. P. 261.
[217] Botta. P. 17.

are not similarly situated within the meaning of ND prong of FRAND commitment. Second, it underscores that the ND aspect of FRAND is distinct from the standard outlined in Article 102(c) of the TFEU. While the latter primarily pertains to the licensing level, the former pertains to the determination of the royalty rate. We believe that conflating these two standards is a misconception and clarifying this distinction may avoid disputes between licensors and (potential) licensees[218].

## V. Discussion and proposal

We recall that the royalty rate determination in multi-tier IoT value chains is challenging the interests of licensor and licensee may fall in a deep conflict. The licensor would like to licence to the end-product manufacturer in the hope of having a more interesting licence agreement, while component makers as those who are practically engaged in the design and the production of the component see their right to have licence, but in a component base which may not be attractive from the licensor' point of view.

In contrast to IoT, licensing for cellular standards in mobile communication industry has been long stablished where licences are typically concluded with handset end-product manufacturers like Samsung and Apple, rather than component manufacturers such as chipset makers[219]. Some suggest applying the

[218] In *Unwired Planet vs. Huawei*, the judge addresses the non-discrimination aspect of FRAND licensing obligations. Huawei argues that non-discrimination means that licensors should treat similarly situated licensees the same way. They claim that they are similarly situated to Samsung and should be offered similar rates. Unwired Planet disagrees, stating that the obligation does not require offering Huawei the same rate as Samsung.
Justice Birss finds that Huawei and Samsung are similarly situated, as both are major multinational telecom manufacturers active in the same markets. The judge also discusses the principles of non-discrimination in competition law, emphasising that comparable situations should not be treated differently without objective justification. Regarding the discrepancies in pricing between licenses, the judge notes that these differences are substantial and favour Huawei's argument. However, he points out that the issue is not about Huawei paying a higher rate, but that Huawei's competitor (Samsung) has been granted a much lower rate. The judge considers whether distortion of competition is part of the non-discrimination obligation of FRAND. He concludes that the ETSI FRAND undertaking should not include a hard-edged non-discrimination obligation without considering the distortion of competition. Instead, he concludes that a benchmark rate applicable to all similar licensees suffices as a non-discrimination measure, and any specific non-discrimination obligation applies only if it would distort competition between licensees. [2017] EWHC 711 (Pat). Paras. 485-503.

[219] In the *HTC vs. Ericsson* case, the court referred to independent experts who acknowledged that

same practice to the IoT value chains. The proponents of this practice (end-product base licensing) argue that SEPs have been licensed *traditionally* at the end-product level, which is, according to them, the most appropriate representation of the value of the standard[220]. They find it more straightforward to give licence to a party who is directly in contact and engaged with the end consumer as the ultimate payer for the product. In their logic, if the end of the chain gets a licence, he can set the end price accordingly and sell the good directly to the consumer.

Conversely, for the advocates of licence to all (component-based licensing), licensing at the end-product level is not necessarily the best practice in other sectors including vehicle manufacturing, where OEMs expect receiving third-party rights-free components. The distinction between mobile and connected car industries becomes more vivid if one notes that in car industry, end-product maker (e.g., as we saw in *Daimler*) typically does not design the cellular components he needs, while in mobile industry, end-product manufacturers (e.g., Apple or Samsung) perform the full design of the product. In fact, a car manufacturer neither may have the knowledge around the SEP in question, nor any incentive to develop the technology. In addition, the end-product market price, which is the royalty rate base in the access-to-all approach, is not necessarily determined by the mere number of SEPs used in the final product but it is often increased by the adjunct optional equipments attached to the product. Here an example can be connected cars equipped with pricy decorations or enhanced comfortability options that makes it far more difficult to determine what part of the market price represents SEPs' value, and what part the value of the additional or optional attachments.

## A. Examples of licensing at component level

end-product level licensing is the industry practice for mobile telecommunications. The Judge considered evidence of the actual industry practice of licensing at the end-product level, not baseband chip component level. See: *HTC Corp. vs. Telefonaktiebolaget LM Ericsson, Ericsson Inc.*, CIVIL ACTION NO. 6:18-CV-00243-JRG (E.D. Tex. Jan. 22, 2019). Available at: https://www.essentialpatentblog.com/wp-content/uploads/sites/64/2019/05/2019-05-23-HTC-vs.-Ericsson-Redacted-Memorandum-Of-dckt-538_0.pdf. P. 10.

[220] Huber. at p. 4 argues that at the time the ETSI IPR policy was adopted, the prevailing industry practice was to license at the device level; Borghetti, Nikolic, and Petit. at p. 9 and Blecker, Sanchez, and Stasik. at p. 230 claim that whole-device licensing is an efficient and universally accepted norm in the cellular communications industry.

Despite the general practice of licensing SEPs at the end-product level, there are some cases where licensing occurs at the component level. For instance, Motorola has licensed some of its telecom SEPs to several chipset and component suppliers including Qualcomm; and Ericsson has licensed not only to smartphone manufacturers, but also to component suppliers such as Qualcomm[221]. It is worth noting that SEP licensing can involve licensing between component suppliers as well, as exemplified by Qualcomm's licensing of its modem chip to other chip producers [222]. However, it is important to acknowledge that these licensing agreements between competitors often occur through cross-licensing schemes that are unrelated to our Daimler context where the SEP holders are not vertically integrated in the market. In such a context, the case of Blu-ray is an interesting example as it shows how licensing arrangements can be influenced by the complexity of the value chain and can happen at both upstream and downstream levels.

Blu-ray licensing typically targets end-product makers, i.e., manufacturers of Blu-ray player set, or recorder set. However, licensing in some cases occurs at the upstream levels too, such as drive manufacturers, software providers in the PC industry and so forth as well as disc pressers in the content industry. This occurs due to the complexities involved in the Blu-ray value chain which involves multiple players across different industries. By licensing at upstream levels, the Blu-ray licensing organisation can ensure that all essential patents are licensed and that the value chain operates smoothly. This approach helps minimise potential conflicts and ensures that all players involved in the Blu-ray ecosystem have the necessary licences to operate within the standard[223].

The SEP Expert Group explains that SEPs have varying licensing schemes

[221] Putnam and Williams. P. 42.
[222] In *FTC vs. Qualcomm*, the court maintained that Qualcomm had previously licensed its modem chip SEPs to other chip producers and received modem chip-level (as opposed to handset-level) licences to other SEP holders' SEPs. Findings of Facts and Conclusions of Law of the United States District Court, Norther District of California, San Jose Division, of 21 May 2019, *Federal Trade Commission vs. Qualcomm Incorporated,* Case No.17-CV-00220-LHK. P. 127. Available at: https://www.ftc.gov/system/files/documents/cases/qualcomm_findings_of_fact_and_conclusions_of_law.pdf.
[223] Heiden, Padilla, and Peters. Pp. 25-27.

depending on technology standards[224]. For consumer products like TV sets, CD/DVD players, and mobile phones, licensing at the end-product level has been typical. However, for standards such as MPERG1/2/4, HEVC, and other audio and video compression technology, licensing can differ depending on the types of products that incorporate these SEPs [225], or the licensing mechanism through various patent pools[226].

It should be noted that in terms of royalty setting, component base and end-product base share the same principle i.e., both suggest that the rate should be calculated based on the product price. However, while the end-product has a very clear market price, there is often no such a price for the component itself[227].

This section showed that although there are some general licensing schemes for SEPs, different practices exist depending on technology standards and the complexity of value chains.

## B. Importance of industry practice

Industry practices are considered to be a factor by courts when determining licensing issues. In *the Intellectual Ventures vs. Vodafone* case[228], the court determined that licensing to network operators was not consistent with prevailing industry practices in the sector, where licensing to end-product manufacturers was the norm. The case involved a dispute over licensing terms for a portfolio of SEPs

[224] Baron, Geradin, and others. Pp. 77-78.
[225] *Idem*. The MPEG LA patent pool provides licenses for the MPEG2-Video standard, offering two types of licenses. One type is targeted at consumer products that include encoders/decoders, while the other type is directed at encoders/decoders used in all other types of products.
[226] *Idem*. Both the MPEG-LA patent pool and the HEVC Advance patent pool provide licenses for the HEVC standard, specifically targeting HEVC products sold to end users. However, the MPEG-LA pool offers the additional convenience of allowing chip and module makers to pay royalties on behalf of their licensed customers.
[227] In fact, component makers most often work with the end manufacturer based on a fixed-term contract concluded behind closed doors in which makers do not have any bargaining power to later adjust the price based on the demand on the market. Therefore, the component actual price on the open market, which should serve in the second approach as the royalty base, is most often not accessible.
[228] *Intellectual Ventures vs. Vodafone*, Case No. 4c O 77/17, Düsseldorf District Court (Landgericht Düsseldorf) [2018] Judgment of 11 July 2018. The English summary of the case is available at: https://caselaw.4ipcouncil.com/german-court-decisions/lg-dusseldorf/district-court-landgericht-dusseldorf/.

related to wireless communications. Intellectual Ventures was the owner of the patents and had offered Vodafone a licensing deal, which Vodafone had rejected. The court's ruling was based on a number of factors, including the fact that licensing to network operators was not consistent with prevailing industry practices in the sector. The court noted that the customary practice in the wireless communications sector was for SEP holders to license to end-product manufacturers rather than network operators. The court also found that the terms of the licensing offer made by Intellectual Ventures to Vodafone were not in line with prevailing licensing practices in the industry and were therefore not FRAND.

At this stage, one may wonder how a case would unfold if it involved two different industries, such as the connected car that involves both the automotive and telecommunications industry. We need to know if licensing practices in one industry can be extended to the other. There are differing views on this matter. One perspective suggests that device-level licensing is reasonable for smartphones since end-product manufacturers or more correctly OEMs possess knowledge of the relevant cellular technologies, which allows them to negotiate with SEP holders on equal footing. Additionally, connectivity is central to the functionality of mobile devices and OEMs may themselves hold SEPs, which could lead to mutually beneficial cross-licensing arrangements. Conversely, for industries where connectivity is not core to the end-product's functionality, such as home appliances or medical devices, the default may well be upstream licensing, namely licensing at the level of the value chain where the relevant patents are first implemented[229].

The clash of views was evident in the *Daimler* case where different German courts took different positions. The Mannheim court ruled that upstream licensing was common practice in the automotive industry but did not obligate Nokia/SEP holder to adopt a corresponding approach[230]. The Munich court ruled that to the extent that the Daimler's products are increasingly moving from the area of classic automobile construction to the area of mobile communications, Nokia is not obliged to respect

[229] Henkel. Pp. 28- 29.
[230] The court also disagreed with Daimler's assumption stated that the LTE-capable mobile station device in a motor vehicle is not of secondary importance. Mannheim judgement. *Supra fn.* 20. P. 64.

the practice and customs in the automotive industry, but instead Daimler must accept telecom customary as a matter of principle. And therefore, if in the latter the common practice is to license to end-product manufacturer, Daimler must generally accept this against itself[231]. However, the Düsseldorf court emphasised the importance of each level being responsible for the legal conformity of the technical solution they develop[232].

### 1. Contradictory judgments over prevailing industry practice

Even if a common practice for the telecom industry/ETSI could be agreed upon, there still exists another substantial problem as one may ask if such a practice can be applied to other industries including automotive which use cellular communications but have different practices and business models. This was in fact one of the preliminary queries posed to the ECJ, as the Düsseldorf court sought clarification on whether customary trading practices play a decisive role in determining licensing level[233].

Given the vast number of subcomponents involved, the standard practice in the automotive industry is to license at supplier level rather than OEM's, as this way the subcomponents are free from third-party rights when delivered to the OEM. The Düsseldorf court justified this practice noting that the level in the chain that selects a specific technical solution is responsible for the legal conformity of the solution it develops itself and therefore is better positioned to determine whether such a solution infringes third-party property rights[234]. Since a typical motor vehicle contains up to 30,000 components, it would be very hard for a car manufacturer to verify whether the technical solutions installed in the car and supplied by third parties infringe third-party property rights[235]. The more complex the supplier part is and the further removed the technology is from the actual field of activity of the car manufacturer, the more acute the problem becomes, as for the TCUs and NADs

[231] Munich judgement. *Supra fn.* 21. Para. 178.
[232] Düsseldorf judgement. *Supra fn*. 22. Para. 45.
[233] *Nokia vs. Daimler*, Preliminary Ruling. *Supra fn*. 23. P. 3 of the English translation.
[234] *Idem*. Moreover, suppliers invest significant resources in research and development of new innovations and require the economic and legal freedom that can be guaranteed only by an unrestricted license in their favour.
[235] Düsseldorf judgement. *Supra fn*. 22. Para. 24.

in question here.

The Munich court in *Daimler* held that Nokia is not obligated to respect Daimler's customary practices or to be engaged in the licensing practice that are in line with previous habits and customs in the automotive industry including the Daimler's classic business model[236]. In contrast, it is Daimler that needs to respect the practices and customs of the mobile communications industry as its products are moving away from the domain of conventional automotive engineering and getting more into the mobile communication area. If the prevailing practice there is to license end-product manufacturers, Daimler must accept it[237].

The Munich court's decision had implications for Daimler, as it required it to be aware of the prevailing licensing practice in the mobile industry, and to align its customary practice with those in that market.

Likewise, the Mannheim court in *Daimler* ruled that the automotive industry's practices do not compel Nokia to adopt a corresponding approach[238]. When some Daimler suppliers cited various well-known licenses executed with suppliers, the court challenged that those agreements do no cover connectivity in vehicles[239]. Dismissing the suppliers' argument[240], the court referred to the Avanci patent pool's practices under which several car manufacturers have obtained licenses for connectivity standards at the end-product level.

This discussion makes it clear even though industry practices are informative in understanding licensing approaches across different sectors, they cannot be simply applied to other industries. Determining which practices should be applied to complex value chains, such as those in connected cars, is challenging. Even in cases with the same facts and circumstances, like *Daimler*, German courts have diverged and suggested different approaches.

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[236] Munich judgment. *Supra fn*. 21. Paras. 178-181.
[237] *Idem*.
[238] Mannheim judgment. *Supra fn*. 20. P. 64.
[239] *Ibid.* P. 59.
[240] *Ibid.* P. 64.

## C. Proposal

Despite the apparent difference between these two licensing approaches in value chain, i.e., component level licensing and end-product licensing, they share the same view toward the rate setting, that is, they pay a great deal of attention to the "*geometry*" of the chain in a sense that they suggest the royalty should be paid either at the chain upstream (component maker) or at its downstream (end-product manufacture) only because of *their place* in the chain regardless of *their role* in the creation of the component or in implementing the technology. That is why there is a great deal of work in the literature around the relation between the components (upstream) and end-products (downstream), or on whether or not SEP holder is integrated in the downstream market and so forth.

### 1. Licensing level

We believe that there could be a third approach following which no matter what the position of a player is in the chain, his rights in terms of licence and his duties in terms of royalty can be defined by his *function* in the creation of the component. And it is in this functionalistic context that we propose that the royalty must be paid by whoever *implements* the connectivity technology into the device, where implementation of a technology in a product means the *design* of that product using that technology carried out by a designer who owns and supplies all the specifications including the working drawings that are complete and sufficient so that no substantial additional design, specification or drawing are needed for the make of the component.

In such a framework, we can formulate our approach as follows: The party who carries out the design of a component using a wireless communication technology which is to be integrated later in an end-product is seen the implementer of the SEP, thereby the one who must be considered as legitimate licensee.

It should be noted that the distinction between design and manufacture in our approach is crucial as a designed TCU may be manufactured directly by its designer or later by someone else in the chain. The manufacture level in our view is not,

however, decisive in determining who should assume royalty. If we apply our approach to the *Daimler* case, we can suggest that whoever had designed the TCU (as the component using the LTE technology) should take licence, whether it was the Tier 1 supplier, or Tier 2, or even Daimler itself (if it had been designer in the *Daimler* context, albeit it was not).

This approach is logically supported by the following facts:

**Full functionality representation of the SEP**: In connected car industry, contrary to smartphone's, the car does not represent the true value of the implemented cellular technology as it is composed of numerous pieces one of which is TCU. It is actually TCU that reflects such a value as its functionality is fully realised by the cellular technology.

**Licence for the party who legitimately needs it**: it is only the design that defines the component characteristics which ultimately determine its functionality in the end-product. When design is done, the component manufacture is just following a procedure to assemble the electronic elements on a board and embed all in a deliverable form that can be attachable to the internal structure of the end-product. With regard to the TCU, the designer defines the requirements and capabilities of the device, including supported network protocols and the type of data needed to be transmitted. The TCU designer specifies also the device Quality of Service (QoS) parameters, such as bandwidth required, the level of traffic prioritization for different types of data, and the maximum latency or packet loss allowed to ensure that the device operates efficiently and effectively within the specified network environment[241]. Therefore, the implementer's (designer's) function is crucial in

[241] QoS in the context of TCU refers to the ability of the network to provide reliable and timely communication between the vehicle and the backend systems, as well as to ensure that the critical data generated by the vehicle is given priority over less important data. For example, a TCU may need to send data related to critical safety functions, such as airbag deployment or emergency braking, to the backend systems in real-time. This data needs to be given priority over less critical data, such as infotainment updates, which can be delayed or temporarily buffered to ensure that the critical data is transmitted without interruption. The implementation of QoS in TCUs typically involves techniques such as traffic prioritization, bandwidth allocation, and congestion control. These techniques help ensure that the vehicle's critical functions are given the necessary resources to function reliably and efficiently, while also optimising the overall network performance. However, the QoS parameters may be determined through a collaborative effort between the TCU designer, the network operator or the backend system.

bringing a technology from concept to reality and making it available for use by consumers and businesses. They are responsible for ensuring that the technology meets the necessary standards and requirements, and for making it accessible and usable by the target audience.

**Innovation promotion**: design is the first step in the commercial success of the implementation of a technology in an end-product. If the implementation is successful, the market will demand further development of the implementation. In such a circumstance, the designer must be able to develop his design freely and independently. If licence is given to end-product maker, supplier's innovation will be restrained by the interests of the licensee whose commercial interests may be different.

**Social benefit and device efficiency**: if the component's technical characteristics can be such introduced into the calculation of the royalty rate that for a more efficient component, its designer pays less royalty rate, he will be normally incentivised to design more efficient devices that in addition to all benefits that such a device can bring for the society, it makes him pay less royalty after all. This subject is broadly discussed in the following section.

## 2. Royalty base

After agreeing that the designer is the right one to take licence, the issue of licensing level is resolved. The next step is to define a basis for the royalty based on the component technological characteristics. As mentioned earlier, price is the ultimate reason in most SEP licensing litigations, if not all; and all the back-and-forth disputes over who should take licence arises because due to the lack of clarity in terms of the rate base, there exist always a possibility for the parties to negotiate in the hope of having a greater piece of the cake[242]. If this possibility becomes

[242] To have a concrete idea about the financial transactions in the connected car industry: in 2018, the revenue gained by automakers per connected vehicle were about 670 dollars in the US and 593 dollars worldwide. The growth from 2018 to 2023 in the total revenue from connectivity-enabled products and services in the automotive sector is estimated to be from 223 to about 483 billion dollars, with forecasts predicting a total revenue as great as 2 trillion dollars by 2030. See: Heiden. P. 29-33. Therefore, it is quite understandable why the owners of connectivity standards seek a fair

restrained (or ideally blocked) by suggesting a *range* for the rate, the parties will be less keen to think of litigation.

In the following, we will show how a base can be defined for royalty through taking the component's technical characteristics into account.

**a. Technology-based FRAND rate**

We believe that for that licensing in IoT context to be FRAND, the royalty rate collected from the technology implementer (device designer) should be defined *proportional to the Quality of Service (QoS)* that the component at issue requires in order to perform as designed[243]. To achieve this purpose, one or several of the parameters involved in the QoS evaluation can be taken into account to quantify the demand of the component for service. For IoT products, the best option seems to be the required bandwidth which is a measure of the device's capacity to transmit data. In this context, the device demand is defined as its requirement for data exchange with respect to what the LTE technology offers to a *reference user*.

Mobile phone industry is historically the *first* client of the LTE technology for which the LTE was originally developed to serve, and its developments through decades has been fulfilled in order to enhance mobile phone communication experience by passing from 2G in 1998 to 5G today. This fact lets us consider mobile phone industry as the *reference user* of the LTE amongst all its other users including IoT, and the rate paid by them as the *reference rate*.

In this framework, The FRAND royalty rate would be set such that the rate paid by a component designer be proportional to the component demand for data transmission and calculated based on the reference rate paid by the reference user for the level of data exchange defined for the reference device. Such a logic can be

share of this enormous revenue for themselves. This view is advocated by proponents of end-product royalty base arguing that SEP value should be determined based on a specific use-case in supply chain downstream.

[243] QoS is the measurement of the overall performance of a network founded on a wireless technology as experienced by the users of that technology. It is quantified measure of a quality where several related aspects of the network service are often considered, including packet loss, bit rate, throughput, transmission delay, availability, jitter, etc.

mathematically described as follows.

$$R_{IoT} = R_{ref} \frac{X_{IoT}}{X_{ref}}$$

Where $R_{IoT}$ is the royalty rate to be paid by the component designer, $R_{ref}$ is the reference rate paid by the reference network users, i.e., mobile phone manufacturers; $X_{IoT}$ and $X_{ref}$ denote the data exchange rate requirements defined for the IoT device and the mobile phone, respectively.

In this context, if the IoT device requires the same data exchange rate as that of mobile phones, i.e., $X_{IoT} = X_{ref}$, then $R_{IoT} = R_{ref}$: it is FRAND if the SEP holder asks the component designer for the same royalty as that paid by the mobile phone manufacturers. On the other hand, a $X_{IoT} < X_{ref}$ leads to $R_{IoT} < R_{ref}$, and vice versa.

This definition for royalty rate allows to incorporate the device functionality into the calculation. For example, a connected car uses cellular connectivity frequently and to a fuller capacity than a smart refrigerator that would use connectivity only occasionally and with limited functionality. To show how the proposed base can treat functionality difference, two numerical examples are provided in the following.[244].

Example 1: a TCU in a connected car can generate a tremendous amount of data, but not all these data is needed to be transferred to the cloud other than a very tiny fraction of that which would be at the highest some value around 200 megabytes an hour, hence $X_{IoT}$ = 200. On the other hand, the average data consumption of a mobile phone is about 30 megabytes an hour, hence, $X_{ref}$ = 30. Therefore, the *order of magnitude* of the royalty rate which licensor can expect to gain from the component designer can be estimated as follows.

[244] For the statistics see: Felix Richter, 'Big Data on Wheels', *Statista*, 2017 <https://www.statista.com/chart/8018/connected-car-data-generation/>.

$$R_{IoT} = R_{ref} \frac{200}{30} \approx 6R_{ref}$$

That is, six times the reference royalty rate, that is paid by iPhone or Samsung for their smartphone industry.

Example 2: the amount of data produced by a connected refrigerator which may vary depending on the specific model and usage patterns, could range from a few megabytes per day to several gigabytes per month. Like connected cars, the data generated by a connected refrigerator is usually stored and processed locally, with only a small amount of data transmitted to cloud-based servers for remote monitoring and analysis, which is some value in the order of ten megabyte per month, i.e., 0.015 megabyte an hour ($X_{IoT}$ = 0.015). Therefore, the SEP holder may expect a royalty in the order of the following rate:

$$R_{IoT} = R_{ref} \frac{0.015}{30} = \frac{R_{ref}}{2000}$$

This suggest that the *order of magnitude* of the royalty rate which can be sought by the licensor from the SEP implementer in the smart refrigerator chain is about one two thousandth of the reference royalty rate paid by the mobile phone manufacturers.

**b. Value of innovation**

SEP holders can argue for a greater share than $R_{IoT}$ calculated above with this justification that IoT success is the outcome of their innovation in creating the cellular technology. One needs here to distinguish two innovations: the historical, that is made when inventing 4G (licensor's innovation), and the actual IoT that is made now by inventing the idea of connected devices (manufacturer's innovation, e.g., Daimler).

The success of connected device in the market is not a mere result of wireless communication technologies integrated in the device, but it is the outcome of the brilliant idea made by the people who envisaged that such a product can win the market.

When LTE or Wi-Fi developers were presenting their technologies two decades ago, they had no idea that one day their invention might have such vast applications. If IoT devices owe to LTE and wireless technology, it is merely because these technologies provide a ground where next ideas, including IoT, could take root and evolve, just like the idea of internet itself, and if we go back farther in history, we can think of electricity. Without electricity or internet or LTE, none of this new IoT could be achievable. However, it does not mean that the inventors of internet-related technologies (like https protocol or VPN) or LTE can claim a *direct* financial share in the victory of an innovation (e.g., connected car) that they were never an active part of. What is fair is that SEP innovators take a benefit proportional to their contribution to the success of IoT. The presented formula can be also interpreted an attempt to relate the share of the SEP holder in the success of IoT ($R_{IoT}$) to the extent that IoT owes the technology developed by the SEP holder ($X_{IoT}$).

### c. Future development

It should be noted that the proposed formulation is one of the possibilities to implement a pro rata royalty rate. What is important to us is to set a base for the rate proportional to the technical characteristics of the component. Issues such as using what reference rate values with which, this proportionality is better computed, or whether or not this value is publicly available, is beyond the scope of this research. The EC in the Proposal on SEP Regulation suggests that Aggregate Royalty (i.e., total maximum price) should be set for using a standard before or shortly after its publication[245]. If this takes place, this definite Aggregate Rate can replace our reference rate. On the other hand, each generation of the LTE has a nominal data transmission capacity that is listed in the patent claim. This nominal value can also replace the reference exchange rate in the above formula. But till then, the above suggested reform seems us the most efficient given the State of the Art at the time being.

[245] Proposal for a Regulation of the European Parliament and of the Council on standard essential patents and amending Regulation (EU)2017/1001, Brussels, 27.4.2023 COM(2023) 232 final. Available at: https://single-market-economy.ec.europa.eu/system/files/2023-04/COM_2023_232_1_EN_ACT_part1_v13.pdf.

## 3. Final remarks

We believe that our proposed approach can lead to more legal and commercial certainty and to less litigation. Once the IoT-component designer is a licensee and the royalty basis is not only qualitatively FRAND, but also quantitatively proportional to the product technical statistics and its share in the network use, there would not be any incentive for a party to go to litigation the result of which is already predictable.

As mentioned earlier, the existing approaches see the value chain from a pure geometrical viewpoint with parties defined based on their place along the production stream, i.e., upstream, midstream, and downstream. This view imposes solutions regardless of the function that each party assumes in terms of implementing SEP. What courts have done so far was to choose one level as licensee based on the existing law and accordingly define a base for royalty, or to propose case-by-case approaches where at the end, parties have resolved their disputes after spending years in litigations, or bilaterally behind closed doors. This is a defective cycle opposed to transparency which led to endless useless negotiations, litigations, lack of legal and commercial certainty.

Under our *functionalistic* approach the supply chain is seen differently. There is no need to separate licensing level from royalty base which typically and often overlap. The appropriate licensee is IoT component designer whatever his place is in value chain, and the royalty base is clear. Remember that our approach will naturally minimise the number of transactions too, as a licensed component maker can participate in several value chains. Given that transaction costs directly depend on the number of transactions, with reducing transaction number, the total transaction cost will reduce as well.

As predominantly designers manufacture components too, our approach outcome aligns with the theory of labour division proposed by Henkel[246]. He argues that the division of labour, as a keystone of modern industrial production, suggests that

[246] Henkel. P. 29-30.

responsibility for patent licensing should rest with those parties who have the understanding of the technologies that embody the relevant patents[247]. In many cases outside the smartphone context, this party will be the component maker, not the OEM. A connected car manufacturer has very likely no knowledge of the complex cellular technologies that TCU may include, and it would be wholly irrational to expect him to invest in acquiring such expertise. In the case of complex multi-component products, the OEM at the end of value chain may, due to the division of labour, be limited to designing the mere end-product and assembling hundreds or even thousands of components. A car manufacturer may assemble as many as 30'000 components sourced from various suppliers. It is thus no wonder that car manufacturers have traditionally relied on an approach whereby suppliers are expected to deliver their parts free of third-party IPRs; the car manufacturer lacks knowledge as to whether each of the thousand components may infringe on third-party IPRs.

On the other hand, component maker who is the designer of component has clearly the necessary knowledge over the technology used, hence it is more efficient that the responsibility over clearing IPRs on his products lies with him. In terms of industry practice, it should be noted that at the advent of smartphone by Apple's iPhone in 2007, all design was made by Apple itself. In this context, the end-product royalty base was reasonably a prevailing industry practice.

The rapid pace of technological advancements has led to a significant increase in electronic waste. Proportional royalty can help reduce the amount of electronic waste by encouraging designers to create devices that are more energy-efficient and have longer lifespans. When the royalty rate is proportional to the volume of network infrastructure that a device occupies, it can encourage designers to create mechanisms that consume less bandwidth, require less energy, and use fewer rechargeable batteries, or make batteries last longer before needing for replacement. This will lead to more energy-efficient systems that eventually produce lesser CO2 emissions, contribute to waste material reduction, and promote natural resources

[247] *Idem*.

conservation.

## VI. Conclusion

Connected cars pose a unique challenge for SEP licensing due to the integration of TCU into vehicles, leading to complexities within the connected car value chains. These multi-tiered structures raise questions about who should obtain licenses and at what rates. SEP holders typically prefer licensing to end-product manufacturers, as it yields higher royalties based on a percentage of the final product's price. Conversely, end-product manufacturers and their suppliers argue that licenses should go to the suppliers, with royalties limited to the TCU's price. This situation played out in the legal dispute between Nokia (the SEP holder), Daimler (the car manufacturer), and its supplier before German courts.

When parties fail to reach an agreement, they often seek court intervention to resolve the licensing base debate. They ask the authority to determine the FRAND-compliant offer, whether before a competition authority or a court. The FRAND commitment provides a strong legal foundation for courts and competition authorities to step in and establish FRAND terms for licenses. Regardless of its legal nature, the FRAND commitment serves as the primary legal basis for authority/court involvement in these disputes.

In this context, our study initially examined whether patent law, FRAND commitments, and competition law could compel SEP holders to license suppliers, aligning with Daimler's argument. It revealed that patent law, while not inherently requiring licensing, offers guidance based on specific standards and doctrines. Examination of the have-made right concept indicated that if certain conditions are met, primarily the end-product manufacturer being the IoT component designer (in this case, the TCU), they could instruct suppliers to produce the TCU component. However, this condition is often unmet in the IoT context, as end-product manufacturers lack the technical expertise, facilities, and interest for component design. Nonetheless, if it was the case, the SEP holder might choose to license the end-product manufacturer, with suppliers protected through the have-made right

against patent infringement actions, as Nokia argued. From a patent claim and exhaustion perspective, the component supplier could be a more efficient licensee, though not a legal requirement, compared to the end-product manufacturer.

Additionally, Nokia's commitment to ETSI for its SEPs prompted an examination of ETSI's IPR policy and its FRAND commitment, which revealed vague wording necessitating interpretation under the French Civil Code, as ETSI's governing law. Despite considerable effort, it could not be conclusively established that the ETSI FRAND commitment mandates licensing to component makers. The analysis of competition law, particularly within the Huawei doctrine section, led us to suggest a policy shift toward licensing component suppliers.

Licensing levels are often linked to the royalty base because licensing downstream can result in higher royalties. However, we propose a different approach to consider the royalty base. We discuss the EU Commission's requirement that SEP royalties be based on the economic value created by the SEP, which, in the IoT context, is connectivity. We challenge the idea that the end-product price necessarily represents connectivity's price, considering the various unrelated components that influence an IoT product's price. Transaction cost criteria may not definitively determine the best level and corresponding royalty base. An analysis of the ND prong of the FRAND commitment also reveals that even if a royalty base is set for end-product manufacturers, it cannot be applied to component suppliers since these parties are not similarly situated.

This analysis leads to a new proposal for determining the right licensee and an appropriate royalty base for IoT devices within multi-tier value chains. Rather than focusing on the geometric placement of parties downstream or upstream, we consider their roles in the chains. We argue that licenses should be granted to the IoT component's designer, the party with technology knowledge and design capabilities. This entity is entitled to a license providing legal certainty to work with the technology and develop new components or products, regardless of whether they are the end-product manufacturer or component supplier.

We then propose a proportional functionalistic approach to establish a royalty base for IoT components, using technical, measurable factors. We recommend quantifying FRAND rates based on the characteristics of IoT devices, specifically their data consumption, as a more objective measure than qualitative factors like fairness. We introduce a formula to illustrate the calculation method, using data consumption as the basis for determining the royalty rate. This approach offers a starting point for negotiations while potentially benefiting the environment with positive secondary effects.

# *Part II*

# *Procedural matters*

# *Chapter 3*

# *Injunction in SEP: a fundamental right or an abusive behaviour*

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[1] This chapter was presented at the "The Law Facing the 4.0 Revolution" in the Doctoral program in Law - annual seminar 2018, for doctoral students, researchers and scholars from Western Switzerland and published as a chapter in an edited book.

# I. Introduction

In today's world, standards and patents are crucial to advance competition and innovation. While standards disseminate vastly technologies amongst producers and users and create interoperability, "*patents provide R&D with incentives and enable innovative companies to receive an adequate return on investments*[2]". The US DOJ expresses that standards not only promote innovation, efficiency and consumer choice, but they also foster public health and safety[3].

To set industry-wide technical standards, companies work together in Standard-Setting Organisations (SSOs). Some of the organisations are official bodies such as International Organisation for Standardisation (ISO) and some are private groups such as European Telecommunications Standards Institutes (ETSI) and Institutes for Electrical and Electronics Engineers (IEEE). This cooperation under the SSO framework is of great market benefits, especially in network market "*where the value of a product increases with the number of consumers using the same product*[4]".

"*Technological features specified by standards*[5]" can be protected by patents. A patent that protects technology essential to a standard is called a standard-essential patent (SEP). In other words, a patent opted typically by participants during a process of standardisation, which is essential for complying with the standard are referred to as SEP. It is impossible to manufacture standard-compliant products such as smartphones or tablets without using technologies covered by one or more

[2] Brussels, 29.11.2017 - COM(2017) 712 final - 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. [hereinafter: EC, setting out the EU approach to SEPs]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0712. P. 1.

[3] US Department of Justice and the Federal Trade Commission, *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition* 2007. [hereinafter: US DOJ & FTC, Antitrust and IPRs]. Available at: <https://www.ftc.gov/sites/default/files/documents/reports/antitrust-enforcement-and-intellectual-property-rights-promoting-innovation-and-competition-report.s.department-justice-and-federal-trade-commission/p040101promotinginnovationandcompetitionrpt0704.pdf. P. 6.

[4] Michael Fröhlich, *Availability of Injunctive Relief for FRAND-Committed Standard Essential Patents, Incl. FRAND-Defence in Patent Infringement Proceedings*, 2014. P. 3.

[5] Contreras, 'The Global Standards Wars: Patent and Competition Disputes in North America, Europe and Asia'. P. 3.

SEPs[6]. To set a standard, companies choose one technology which is essential to a standard and exclude other technologies, thereby "*competing technologies and companies may face a barrier to entry [to market] and may potentially be excluded from the market[7]"*.

Patents and standards are very prone to conflict. As an intellectual property, patent benefits from a right securing its private and exclusive use, while standard is by definition adopted for collective use and broad dissemination[8]. Public availability of standards is so crucial that the European Commission has maintained that "*the technical specification that is not available to all potential users is not a standard*[9]". Once a technology protected by patents is locked into a standard and investment towards the standard compliant products development have been made, working around the technology or switching over to an alternative may become far difficult for the technology implementers and subsequently it restricts their choice to the following in case that they do not want to take liability of infringement[10]:

- The manufacturers may ask the SEP holders for a licence and in return pays royalty; or
- They may design around the patent (i.e., inventing an interchangeable or alternative patent) and cut the production/sale of the infringing product.

The fact that the manufacturers are locked-in the standardised technology may increase the SEP holders' bargaining power[11], and may allow them the following

[6] European Commission, Competition Policy Brief, Standard Essential Patents, Issue 8 (2014). [hereinafter: EC, Competition Policy brief, SEPs]. Available at: https://ec.europa.eu/competition/publications/cpb/2014/008_en.pdf. P. 2.
[7] European Commission, Guidelines on the applicability of Art. 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements [2011] OJ C11/1. [hereinafter: Horizontal Guidelines]. Para. 266.
[8] Fröhlich. P. 3.
[9] European Commission, Communication on Intellectual Property Rights and Standardisation, COM (1992) 445 Final, Brussels. [hereinafter: EC, Communication on IPRs and Standardisation]. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:1992:0445:FIN:EN:PDF. Para. 2.1.12.
[10] Contreras, 'The Global Standards Wars: Patent and Competition Disputes in North America, Europe and Asia'. P. 3.
[11] Ashish Bharadwaj, Manveen Singh, and Srajan Jain, 'All Good Things Mustn't Come to an End: Reigniting the Debate on Patent Policy and Standard Setting', in *Multi-Dimensional Approaches Towards New Technology Insights on Innovation, Patents and Competition*, ed. by Ashish

abusive behaviours:

They may seek or threaten to seek injunction to force manufacturers in order to accept unfair and unreasonable terms under licensing agreement. For example, they may bundle either their SEP(s) with other products or their licencing with other licencings and force the implementer to admit this under the injunction threat.

They may ask for a royalty excessively far from fair and reasonable. This phenomenon termed "patent hold-up" harms competitors, increase price and ultimately hamper innovation. This is discussed later.

Or they may fully refuse the manufacturers' access to the standard.

These actions depend on the case circumstances, can be targeted by competition authorities as anti-competitive behaviours. In Horizontal Guidelines, the Commission states that *"preventing certain companies from obtaining effective access to the results of the standard-setting process (the specification and/or the essential IPR for implementing the standard)"* leads to anti-competitive results[12]. Lang explains this statement arguing that refusal to offer a licence by SEP holder deprives consumers from having a fair share of the standard agreements benefits and it would distort or eliminate competition[13].

In this regard, with the aim of mitigating the competition law concerns, the European Commission since 1992, has required the European standard setting bodies to make European standards available to all persons wishing to use European standards on Fair, Reasonable and Non-Discriminatory (FRAND) terms[14]. The Commission emphasises on the effective access to the standards and requires participants of SSOs to "*provide an irrevocable commitment in writing to offer to license essential IPR to all third parties on [FRAND] terms*[15]". In fact, the commitment to grant licences on FRAND terms allows undertakings to agree on

Bharadwaj, Vishwas H Devaiah, and Indranath Gupta (Springer Open, 2018), p. 85 <https://doi.org/10.1007/978-981-13-1232-8>. P. 90.
[12] Horizontal Guidelines. *Supra fn*. 7. Para. 268.
[13] Temple Lang. p. 588.
[14] EC, Communication on IPRs and Standardisation. *Supra fn*.9. Para. 6.2.1.
[15] Horizontal Guidelines. *Supra fn*. 7. Para. 285.

one standard, to exclude all other competition technologies and as a result to eliminate competition[16].

Additionally, FRAND commitment is a promise intended to mitigate the risk of patent hold-up[17]. This commitment by SSOs members is crucial to offsetting the potential anticompetitive effects of standardisation agreements while preserving the procompetitive aspects of standard setting[18].

In their turn, SSOs require their participants to make a FRAND commitment through their IPR policies, for their patented technology to be included in a standard. SSOs have this policy because the incorporation of patented technology into a standard creates market reliance on that patent and increases its value[19]. However, apart from what SSOs' motivation or interest is, it should be noted that the obligations under competition law are permanent and their application in all cases does not depend on whether or not the obligations are stated in the agreement adopting the standard or in the SSO IPR policies. It is not thus sufficient for the SSOs to merely include these obligations formally in their policies. In fact, in order to fulfil the competition law purpose, i.e., promoting competition and consumers' welfare through making an SEP available to users, the licences must be given[20].

This paper works on examining lawfulness of seeking injunction against infringement in SEP context where SEP holders are under FRAND commitment with SSOs. The paper analyses some relevant case law both in the EU and the US to examine how they treat this issue. In the coming chapters, injunction is described briefly from IP law and fundamental rights point of views. Seeking an injunction is then discussed under Article 102 TFEU as well as under US antitrust law (Sherman act and the FTC Act). Contract law perspective is also discussed not only because seeking an injunction can be considered as a breach of FRAND contract, but also

[16] Temple Lang. P. 587.
[17] *In the Matter of Motorola Mobility LLC and Google Inc.,* Analysis of proposed consent order to aid public comment, File No. 121-0120, 2013. p. 2. Available at: https://www.ftc.gov/sites/default/files/documents/cases/2013/01/130103googlemotorolaanalysis.pdf (hereinafter: *Motorola/Google*, Analysis of proposed consent order, 2013).
[18] *Ibid.*
[19] *Ibid.*
[20] Temple Lang. P. 587.

since the contractual nature of FRAND has been highlighted by some competition law authorities. The paper concludes with presenting comments and comparing different approaches.

## II. Divergent legal approaches regarding injunction

### A. Injunction under IP law and Fundamental Rights

An injunction is a judicial remedy by which certain actions are required to be done or to be prohibited. In the IP rights context, the exclusive rights granted to an IP owner including a patentee enable him to exclude others from "*making, using, selling, offering to sell, or importing the patented invention*[21]". A patentee may also exercise his exclusive right in bringing an action for an injunction to exclude alleged infringers from using his patent. The overriding purpose of injunctive relief is to ensure that IPR infringements *cease* as soon as possible[22].

Seeking an injunction in most jurisdictions including the US is also one of the statutory remedies available to a patent holder for infringement of his patent[23]. It is the case at international level too. Article 41 (1) of TRIPS Agreement obliges its Members to ensure the availability of enforcement procedures under their laws "*so as to permit effective action against any act of infringement of intellectual property rights*". The EU Member States, in most areas of IP law have obligation to empower their national courts to issue injunctions against counterfeiters[24]. In Union law, in despite of the various arrangements adopted by Member States in applying an injunction, in case of an IP right infringement the Directive on the enforcement of IP rights provides that the judicial authorities of Member States may issue against the infringer an injunction aimed at prohibiting the continuation of any imminent

[21] Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994), Art. 28(1) a.
[22] European Observatory on Infringements of Intellectual Property Rights, Injunctions in intellectual property rights [hereinafter: European Observatory on Infringements of IPRs]. Available at: https://single-market-economy.ec.europa.eu/industry/strategy/intellectual-property/enforcement-intellectual-property-rights/european-observatory-infringements-intellectual-property-rights_en. P. 2.
[23] 35 U.S.C. § 283.
[24] European Observatory on Infringements of IPRs. P. 2.

infringement[25].

Furthermore, bringing an action for an injunction as a right to an effective remedy and right to a fair trial is considered as a fundamental right under Article 47 of the Charter, which reads "*everyone whose rights and freedoms guaranteed by the law of the Union are violated has the right to an effective remedy before a tribunal*[26]".

## B. Injunction under the competition law and contract law

The legitimacy of seeking an injunction is a matter of controversy where an SEP holder committed to grant licences on FRAND terms[27]. Such an SEP holder may not exercise his right under patent law to seek an injunction unless he fulfils his FRAND commitment. Making a standard available to others is in fact the SEP holder's obligation in return to the benefits he is enjoying from the standardisation agreement[28]. Thereby, competition law may regard seeking an injunction as an illegitimate tool allowing the SEP owner to exclude his rivals from the market; or to force implementers to accept a non-FRAND-termed licencing offer or as an excuse to refuse to license his SEP(s)[29]. If an injunction is issued without justification, it will distort the entire benefits assumed for collaboration between patent law, standardisation and competition law. The ECJ in *Huawei* explains the anti-competitive impacts of injunction having ruled that:

> *«Although the proprietor of the essential patent at issue has the right to bring an action for a prohibitory injunction or for the recall of products, the fact that that patent has obtained SEP status means that its proprietor can prevent products manufactured by competitors from appearing or remaining on the market and, thereby, reserve to itself the manufacture of the products in question[30]».*

[25] Directive 2004/48/EC of the European Parliament and the Council of 29 April 2004 on the enforcement of intellectual property rights of OJ L 195, 2.6.2004. p. 16-25, Article 11. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0048R(01)&from=EN.
[26] Charter of Fundamental Rights of the European Union, OJ C 326, 26.10.2012. p. 391-407.
[27] Temple Lang. P. 588.
[28] *Ibid.* P. 587.
[29] Lemley and Shapiro, 'Patent Holdup and Royalty Stacking'. P. 1993.
[30] Case C-170/13 *Huawei Technologies Co. Ltd vs.ZTE Corp.*, EU:C:2015:477. [hereinafter: *Huawei*]. Para. 52.

From contract law perspective, under the conditions discussed in chapter IV, seeking an injunction may be considered as a breach of FRAND contract concluded between the SEP holder and the SSO and seen as a bad faith act.

## III. Seeking injunction in FRAND/SEP under Article 102 TFEU

### A. Context

Article 102 TFEU prohibits any *abuse* by undertakings of a *dominant position* within the internal market or in a substantial part of it, if it may affect trade between Member States. As regards the holding a dominant position, having SEP does not give necessarily dominance to its owner. The Commission states that "*even if the establishment of a standard can create or increase the market power of IPR holders possessing IPR essential to the standard, there is no presumption that holding or exercising IPR essential to a standard equates to the possession or exercise of market power. The question of market power can only be assessed on a case-by-case basis*[31]". Advocate General Wathelet also, in *Huawei* case declares that "*an undertaking owns an SEP does not necessarily mean that it holds a dominant position within the meaning of Article 102 TFEU*[32]". Although holding a dominant position is not *per se* prohibited by Article 102 TFEU[33], it is a statutory condition to fall under the provision of this Article.

As regards the abuse, exercising IPR through seeking an injunction cannot be simply admitted as an abusive conduct. According to settled case-law, the concept of abuse of a dominant position is an objective concept. To decide whether seeking an injunction is abusive or not, the conduct of the dominant undertaking "*which is such as to influence the structure of a market where the degree of competition is already weakened precisely because of the presence of the undertaking concerned,*

[31] Horizontal Guidelines. *Supra fn*. 7. Para. 269.
[32] Opinion of Advocate General Wathelet, 20 November 2014, Case C-170/13 *Huawei*, EU:C:2015:477. Para. 57 [hereinafter: *Huawei* AG's opinion].
[33] Case C-322/81 *Michelin vs. Commission,* EU:C:1983:313, para. 57 and Case C-209/10 *Post Danmark,* EU:C:2012:172. Para. 26.

*and […] the effect of hindering the maintenance of the degree of competition still existing in the market or the growth of that competition*" should be analysed[34].

## B. Injunction as an abuse

In this chapter, two of the abusive behaviours of which seeking an injunction may seem as a kind are discussed. However, we will see that the case law prefers to consider this action as a separate abuse with its own specifications.

### 1. Vexatious litigation

In *ITT Promedia, the dominant* patent holder, Belgacome was accused of having initiated vexatious litigation against the implementer, ITT Promedia. The Court of First Instance affirmed the Commission decision providing that seeking an action before the court is a fundamental right and it can only be considered abusive under two strict conditions. The commission had decided that "*the fundamental right of access to a judge cannot be characterised as an abuse unless an undertaking in a dominant position brings an action only to harass the opposite party without attempting to establish its right and if it is conceived in the framework of a plan whose goal is to eliminate competition*[35]". The court underlined that legal proceedings are capable of constituting an abuse of a dominant position within the meaning of Article 102 TFEU in *wholly exceptional circumstances*, because access to the court is a fundamental right and a general principle ensuring the rule of law[36].

The Court of First Instance in *Protégé International having* referred to the two cumulative conditions of *ITT Promedia* ruled that in order to conclude that bringing an action before a court constitutes an abuse of dominant position, these two conditions must be interpreted and applied restrictively, so as not to prevent the application of the general principle of access to the courts[37].

The two cases reveal that how bringing an action is viewed within the meaning of

[34] *Huawei* AG's opinion. *Supra fn*. 32. Para. 68.
[35] Case T-111/96 *ITT Promedia vs. Commission*, EU:T:1998:183. [hereinafter: *ITT Promedia*]. Para. 30.
[36] *Ibid.* Para. 60.
[37] Case T-119/09 *Protégé International vs. Commission*, EU:T:2012:421. Paras. 49-63.

Article 102 TFEU. Seeking an injunction may be hence, regarded a vexatious litigation only if the action, as an unmeritorious litigation on an objective view, is manifestly unfounded *and* it has an anti-competitive object[38].

## 2. Refusal to license

According to the case law of the ECJ, a mere refusal to grant a licence an IPR cannot in itself, constitute an abuse of a dominant position[39]. The ECJ rules that the exercise of an exclusive right by the proprietor may in exceptional circumstances, involve abusive conduct[40]. The ECJ has determined the circumstances under which the refusal to grant a licence is considered unjustifiable and violates Article 102 TFEU[41]:

- The refusal in question concerned a product,
- The supply of which is indispensable for carrying on the business in question,
- The refusal prevents the appearance of a new product for which there was a potential consumer demand,
- There is no justification for the refusal,
- The refuse is likely to exclude all competition in the market[42].

The Court in *Huawei* highlights the important role of FRAND commitment in SEP context and ruled "*a refusal by the proprietor of the SEP to grant a licence on FRAND terms may, in principle, constitute an abuse within the meaning of Article 102 TFEU*[43]". The Court reasons that "*an undertaking to grant licences on FRAND terms creates legitimate expectations on the part of third parties that the proprietor of the SEP will in fact grant licences on such terms*[44]". However, the ECJ refers to the AG's opinion and differentiated the exceptional circumstances in the exercise

[38] *ITT Promedia. Supra fn.* 35. Para. 56.
[39] See e.g., Case C-238/87 *Volvo vs. Veng,* EU:C:1988:477. [hereinafter: *Volvo*]. Paras. 8-9; Case C-7/97 *Bronner*, EU:C:1998:569. [hereinafter: *Bronner*]. Paras. 39-40, Case T-201/04 *Microsoft vs. Commission,* EU:T:2007:289. Para. 107.
[40] Joined cases C-241/91 P and C-242/91 P. *Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) Commission,* EU:C:1995:98, [hereinafter: *RTE and ITP]*. Para. 50, *Volvo.* Para. 9.
[41] Case C-418/01 *IMS Health,* EU:C:2004:257. [hereinafter: *IMS Health*]. Paras. 35-38.
[42] *Magill. Supra fn.* 40. Paras. 53-56.
[43] *Huawei. Supra fn*. 30. Para. 53.
[44] *Ibid.* Para. 53.

of an exclusive right linked to an IPR by the proprietor and seeking an injunction by the SEP owner under FRAND commitment[45]. The AG refers to settled case-law pointing out that refusal to grant a copyright licence[46], refusal to grant a licence for the use of a brick structure protected by an intellectual property right[47] or refusal of a media undertaking to include a rival daily newspaper in its newspaper home-delivery scheme[48] which were the subject matters of the previous judgements are not comparable with a licence to use the patent indispensable to the production of standard-compliant products. The AG expresses that in the SEP context, SEP holders typically inform the SSOs of the patent at issue and voluntarily gives a commitment to license that patent to third parties on FRAND terms[49]. Hence, this circumstance is different from the above-mentioned case law and from patents that are not essential to a standard which allow manufacturers to produce products without recourse to the patent concerned[50]. This also lays out by the Commission in *Google/Motorola* decision where it says the above-mentioned criteria in refusal would not be an appropriate legal standard for SEPs but would be for non-SEPs[51].

## 3. New form of abuse

The EU case law has so far recognized different examples of abuse. For instance, in *AstraZeneca*, the General Court recognizes the «submission of objectively misleading statements» as a form of abuse[52]. As another example, in *Continental Can*, the Court holds that "*abuse may occur if an undertaking in a dominant position strengthens such position in such a way that the degree of dominance reached substantially fetters competition, i.e. that only undertakings remain in the market whose behaviour depends on the dominant one*[53]". Furthermore, given that neither the ECJ nor AG in *Huawei* consider seeking an injunction in FRAND/SEP

[45] *Ibid.* Paras. 46-48.
[46] *RTE and ITP. Supra fn*. 40. Paras. 50, 53-56.
[47] *IMS Health*. *Supra. fn*. 41. Paras. 35-36.
[48] *Bronner. Supra fn.* 39. Paras. 39-40.
[49] *Huawei* AG's opinion. *Supra fn*. 32. Para. 70.
[50] *Huawei*. *Supra fn*. 30. Para. 50.
[51] *Google/Motorola Mobility* (Case M.6381) Commission Decision, C [2012] 1068 final, Brussels, OJ C 75, 13/02/2012.
[52] Case T-321/05 *AstraZeneca vs. Commission*, EU:T:2010:266. Para. 361.
[53] Case C-6/72 *Europemballage Corporation and Continental Can Company vs. Commission*, EU:C:1973:22, p. 217. Para. 12.

as an abusive litigation or an abusive refusal to supply and the fact of increasing number of SEPs litigations, one may consider seeking an injunction as a new form of abuse under certain circumstances.

Correspondingly, in 2012, the Commission set out that seeking an injunction harms competition where a commitment to license SEPs on FRAND terms has been given by the SEP holder, and where a potential licensee has shown itself to be *willing* to negotiate a FRAND licence for the SEPs[54]. The Commission Vice President states that "*[W]hen companies have contributed their patents to an industry standard and have-made a commitment to license the patents in return for fair remuneration, then the use of injunctions against willing licensees can be anti-competitive*[55]".

The willing licensee test initially was introduced in *Orange Book Standard* case in which German Federal Supreme court establishes that where the owner of a patent seeks an injunction against a defendant who has a claim to a licence for that patent, the patent holder abuses his dominant position only where the following conditions are met:

- the prospective licensee made a binding, unconditional offer to conclude a licence on customary terms, and,
- the potential licensee acts like a true licensee[56].

Regarding the first condition, the court explains that a serious offer should be such concrete in terms, conditions, and such ready for acceptance that the patent holder cannot refuse it without violating competition law[57]. Additionally, the potential licensee must not only fulfil his contractual obligations for acts of past infringement (if any), but he must also pay royalties as if he was a licensee. The court emphasises

[54] European Commission, Press Release, Antitrust: Commission sends Statement of Objections to Samsung on potential misuse of mobile phone standard-essential patents, IP/12/1448, 21 December 2012. Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_12_1448. [hereinafter: Commission, Press Release, *Samsung*].
[55] *Ibid.*
[56] *Huawei* AG's opinion. *Supra fn*. 32. Para. 31.
[57] Case KZR 39/06 *Orange Book Standard* German Federal Supreme Court, (2006), English translation. P.14. Available at: https://www.ie-forum.nl/backoffice/uploads/file/IEForum/IEForum%20Uitspraken/Octrooirecht/EN%20Translation%20BGH%20Orange%20Book%20Standard%20-%20eng.pdf.

that "*the defendant's* '*dolopetit plea*' *based on antitrust law will only be successful providing he is a 'willing licensee' acting in good faith*[58]". This reasoning reminds another old Roman law principle stating no court will lend its aid to a man who founds his cause of action upon an immoral or an illegal act.

In *Motorola* the Commission decides that seeking an injunction against a willing licensee is abusive and in violation of Article 102 TFEU. The Commission explains that where Motorola committed to license its SEP on FRAND terms, the conditions constituting exceptional circumstances are different from those "*where a patent holder seeks to enforce its exclusive right on the basis of a patent that does not read on standardised technology and that is not encumbered by a commitment to license under FRAND terms and conditions*[59]". It reasons that when a licensee is willing to conclude licensing agreement, seeking an injunction risks to exclude products from the market [60]. Similarly, in *Samsung,* the Commission lays down the anti-competitive effects of seeking an injunction concluding that Samsung/SEP holder has intended to exclude his rival from the market and has induced the implementer to accept disadvantageous licensing terms[61]. *While the willing licensee* test served as a procedural defence against injunctions in the *Orange Book Standard* case, it was a substantive competition law offense in the Commission decisions[62].

In 2014, the SEP holder, Huawei, Before the Dusseldorf Regional Court, had brought an action for an injunction against the alleged infringer, ZTE, to prohibit the continuation of the infringement of his patent essential to LTE standard and an order for the rendering of accounts, the recall of products and the assessment of damages[63]. The court was faced with two approaches in determining the point from which the SEP holder had infringed Article 102 TFEU by having abused his dominant position in relation to the infringer. These two approaches which lead to

[58] Pentheroudakis and Baron. P. 69.
[59] *Motorola* (Case AT.39985) Commission Decision, C [2014] 2892 final, Brussels, OJ C 344, 2.10.2014. Para. 300 [hereinafter: *Motorola*].
[60] *Motorola*. Para. 294.
[61] *Samsung* (Case AT.39939) Commission Decision, C [2014] 2891 final, Brussels, OJ C 350, 4.10.2014. para. 62 [hereinafter: *Samsung*].
[62] Petit. P. 14.
[63] *Huawei. Supra fn*. 30. Para. 27.

diverging results are as follows:

According to the findings of *Orange Book Standard*, the infringer's offers were not unconditional within the meaning of the case-law and he did not pay the royalty which he had calculated himself. Following this approach, Huawei was not obliged to accept one of the offers and consequently, seeking an injunction was not considered as a violation of Article 102 TFEU.

The court could refer to the Commission's statement in 2012[64]. Following this approach, the action for an injunction brought by Huawei had to be dismissed as an abuse since the latter had promised to ETSI to licence his patent to third parties and ZTE was willing to negotiate within the meaning of the Commission's position[65].

In this conflicting situation, the court decided to stay the proceedings and to ask the ECJ for a preliminary ruling as follows:

> *"in what circumstances the bringing of an action for infringement, by an undertaking in a dominant position and holding an SEP, which has given an undertaking to the standardisation body to grant licences to third parties on FRAND terms, seeking an injunction prohibiting the infringement of that SEP or seeking the recall of products for the manufacture of which the SEP has been used, is to be regarded as constituting an abuse contrary to Article 102 TFEU[66]".*

In its analysis, the ECJ details a series of procedural steps for both parties. To not violate Article 102 TFEU, the SEP holder has an obligation to comply with specific requirements when bringing actions against alleged infringers. Likewise, to preserve his ability to challenge the SEP holder's behaviour under Article 102 TFEU, the infringer also must comply with a series of procedural steps[67], which though they look procedural in nature, contain important substantive concerns of EU competition law[68]:

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[64] Commission, Press Release, *Samsung. Supra fn. 54.*
[65] *Huawei* AG's opinion. *Supra fn*. 32. Paras.30-38.
[66] *Huawei. Supra fn*. 30. Para. 44.
[67] *Ibid.* 50-70.
[68] Peter Georg, 'The Effect of FRAND Commitments on Patent Remedies', in *Patent Remedies and*

The SEP holder must alert the alleged infringer specifying the concerned SEP and the way by which it has been infringed. The user is not necessarily aware of the SEP usage.

The alleged infringer must express its willingness to license on FRAND terms.

The SEP holder must make a specific written offer for a licence on FRAND terms containing all the terms normally included in a licence in the sector in question, in particular the precise amount of the royalty and the way in which that amount is calculated.

The alleged infringer must diligently respond to that offer without tactical delays in accordance with recognised commercial practices in the field and in good faith, this being a matter which must be established on the basis of objective factors.

Would the alleged infringer reject the patentee's offer, it must make a specific counter-offer promptly in writing on FRAND terms.

Would SEP holder reject the counter-offer, the alleged infringer must provide appropriate security (including for past use) and be able to render an account of its acts of use.

The Court in *Huawei* highlights that in FRAND/SEP context, the patent obtains SEP status only in return for the proprietor's irrevocable undertaking, given to the standardisation body that he is prepared to grant licences on FRAND terms[69]. It consequently is not disproportionate to expect an SEP holder for notifying an alleged infringer about the concerned SEP, as this is he who naturally knows if his SEP has been infringed and how. The implementer is not assumed to be aware of the details of SEPs covering a specific product. In addition, due to his obligation in not discriminating licensees, the SEP holder is of the information necessary for complying with this obligation[70].

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*Complex Products - toward a Global Consensus*, ed. by Sang Jo; et al Contreras, Jorge L; Cotter, Thomas F; Jong (Cambridge University Press, 2019), pp. 160–201. P. 318.

[69] *Huawei. Supra fn*. 30. Para. 51.

[70] *Huawei* AG's opinion. *Supra fn.* 32. Paras. 84-86.

## IV. Seeking injunction in FRAND/SEP under US Antitrust Law

Despite different legal provisions and case law between the US and the EU, both the systems share common concerns in respect to an SEP holder seeking injunction in FRAND/SEP context[71]. The DOJ and FTC also challenge the SEP holders' use of injunction.

In *Bosch*, seeking an injunction was considered coercive constituting an unfair method of competition in violation of Section 5 of the FTC Act, which prohibits unfair or deceptive acts or practices in, or affecting commerce[72]. The FTC rules that pursuant to the SEP holder's FRAND obligations, Bosch shall be permitted to seek an injunction *if and only if* a third party that wishes to use the SEPs refuses in writing to license the patent consistent with the letter of assurance, or otherwise refuses to license the patent on terms that comply with the letter of assurance as determined by a process agreed upon by both parties or a court[73]. The FTC asserts injunctions against willing licensees of FRAND/SEPs can reinstate the risk of patent hold-up that FRAND commitment is intended to ameliorate. The negotiation under threat of an injunction may be weighted heavily in favour of the patentee in a way that is in tension with the FRAND commitment[74].

Along the same line, in *Motorola/Google*, the FTC asserts that Motorola's attempt to enjoin sales of the implementers constitutes an unfair method of competition[75] and harms competition by threatening to undermine the integrity and efficiency of the standard-setting process. Injunction undermines the efficiency of standard-

[71] Henningsson. P. 457.
[72] Federal Register, Vol. 77, No. 232, Monday, December 3, 2012 / Notices p. 71596. [hereinafter: Federal Register, Notice]. Available at: https://www.ftc.gov/sites/default/files/documents/cases/2012/12/121203robertboschfrn.pdf.
[73] *In the Matter of Robert Bosch GmbH*, Decision and Order, FTC Apr. 24, 2013, Docket No. C-4377. p. 14. Available at: https://www.ftc.gov/sites/default/files/documents/cases/2013/04/130424robertboschdo.pdf. (hereinafter: *Bosch*, Decision and Order, 2013).
[74] Federal Register, Notice. *Supra fn.* 72. P. 71596.
[75] *In the Matter of Motorola Mobility LLC & Google Inc*., Decision and Order, FTC Jul.24, 2013, Docket No. C-4410, p. 1. Available at: https://www.ftc.gov/sites/default/files/documents/cases/2013/07/130724googlemotorolado.pdf. (hereinafter: *Motorola/Google*, Decision and Order, 2013).

setting process and its outcome when FRAND commitment is reneged. It threatens to increase prices and reduce the quality of products on the market and to deter firms from entering the market[76]. Regarding the price increase, FTC reasons that "*many consumer electronics manufacturers will pass on some portion of unreasonable or discriminatory royalties they agree to pay to avoid an injunction or exclusion order*[77] ". FTC orders that before seeking an injunction on FRAND/SEPs, the SEP holder must: (1) provide a potential licensee with a written offer containing all of the material licence terms necessary to license his SEPs, and (2) provide a potential licensee with an offer of binding arbitration to determine the terms of a licence that are not agreed upon[78]. The SEP holder ultimately agreed not to seek an injunction against an infringer of FRAND-committed patents unless the potential licensee is outside the jurisdiction of the US courts; states in writing or in sworn testimony that he will not accept a licence of the patent; refuses to enter into a licence agreement determined by a court or arbitrator to comply with the FRAND requirement; or fails to assure the SEP holder that he is willing to accept a licence on FRAND terms[79].

Nevertheless, it seems that an implementer is barely willing to provide a written refusal or a refusal in sworn testimony of a FRAND licence offer. This requirement also puts the SEP holder in a difficult situation when the implementer tries to delay and hinder the negotiation without explicitly refusing to license on FRAND terms[80].

From Sherman Act perspective, seeking an injunction may constitute an anticompetitive behaviour under the Section 2 which prohibits acts that "*monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolise any part of the trade or commerce*[81]". This is due to the fact that injunction diminishes the number of competitors practicing the standard contrary to the SEP holder's agreement to license all new users. It also permits the SEP holder to monopolise the market for the standard-compliant

[76] *Motorola/Google*, Analysis of proposed consent order, 2013. *Supra fn*. 17 P. 3.
[77] *Ibid.* P. 6.
[78] *Ibid.* P. 6.
[79] *Ibid.* Pp. 7-8.
[80] Henningsson. P. 461.
[81] 15 U.S.C. § 2.

product. Could the SEP holder enjoin the sale of a standard-compliant end-product, he could potentially exercise power to raise the product price or the licensing fee. The courts finds that SEP holders "*may injure competition by breaching FRAND commitments they made to induce SSOs to standardise their patented technologies*[82]".

Having reiterated the division's focus on the role of Section 2 in protecting competition in high-technology industries from certain exclusionary practices involving patent licensing, then Deputy Assistant Attorney General of DOJ warned in 2013 about certain SEP holders' opportunistic behaviours and proposed to limit injunction actions for FRAND/SEP infringement claims[83]. It seems that DOJ has changed its approach, as the current Assistant Attorney General strongly believes that "*breach of FRAND commitment cannot be considered an unlawful monopolization or attempted to monopolization*[84]". Having refused any antitrust law duty for SEP holder to license on FRAND terms, he highlights that such antitrust duty would contravene the policies of the Sherman Act stating that "*a unilateral refusal to license a patent on FRAND terms should not give rise to a cause of action under Section 2*[85]". He also indicates that FRAND commitment may very well create a duty under contract law requiring an SEP holder to fulfil his obligation with any willing licensee; however, the Sherman Act does not convert FRAND commitment into a compulsory licensing scheme. Regardless of these contrast opinions, it should be noted that the cases brought under Section 2 of the Sherman Act, has so far involved allegations of bad faith or deceptive conduct by the patent holder *before* the standard was adopted and not directly relevant to seeking an injunction[86].

## V. Seeking injunction as a breach of FRAND contract

The US Supreme Court in *eBay Inc. v. MercExchange* refers to well-established

[82] *Motorola/Google*, Analysis of proposed consent order, 2013. *Supra fn.* 17. P. 4.
[83] Renata B Hesse, *Department of Justice: IP, Antitrust and Looking Back on the Last Four Years*, 2013 <https://www.justice.gov/atr/file/518361/download>. Pp. 15-16.
[84] Delrahim.
[85] *Idem*.
[86] *Motorola/Google*, Analysis of proposed consent order, 2013. *Supra fn.* 17. P. 4.

principles of equity ruling that in patent cases a plaintiff/SEP holder seeking a permanent injunction must satisfy a four-factor test demonstrating that[87]:

- he has suffered an irreparable injury,
- remedies available at law, such as monetary damages, are inadequate to compensate for that injury,
- considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted,
- the public interest would not be disserved by a permanent injunction.

The *eBay* factors have been referred in many cases including *Microsof v. Motorola,* where seeking an injunction in FRAND/SEP was of many contractual demonstrations[88]. The court avoids from concluding a general ruling for all FRAND/SEPs and rounds its decision off with a narrow but firm conclusion. The court holds that Motorola has violated evidently its fair dealing obligations and good faith through injunctive actions[89]. Motorola/SEP holder made commitment to the ITU to license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable terms and conditions to use the patented material necessary to manufacture and/or to sell implementations of its SEPs. The court decides that "s*uch a sweeping promise as a [F]RAND agreement serves as a guarantee that the SEP holder will not take steps to keep would-be users from using the patented material, such as seeking an injunction, but will instead proffer licences consistent with the commitment made*[90]". The court also in *Realtek* holds that an SEP holder's action in seeking an injunction before offering a licence on FRAND terms was "*inherently inconsistent and a breach of defendants' promise to license the patents on [F]RAND terms*[91]". In *Motorola/Google,* FTC articulates that FRAND commitment creates express and implied contract with the SSO and their members concluding that the SEP holder has violated the FRAND commitment to

[87] *eBay Inc. vs. MercExchange*, L. L. C., 547 U.S. 388 (2006). P. 2.
[88] *Microsoft Corp. vs. Motorola, Inc.*, 795 F.3d 1024, 116 U.S.P.Q.2d (BNA) 1001 (9th Cir. 2015). P. 23.
[89] *Ibid.* P. 54.
[90] *Ibid.* P. 47.
[91] *Realtek Semiconductor Corp. vs. LSI Corp*., No. C-12-03451-RMW, District Court, California, 2013, 946 F.Supp.2d 1007.

ETSI, ITU, and IEEE by seeking or threatening to enjoin certain competitors from marketing and selling products compliant with the relevant standards[92].

The contractual approach considers that the patent holder makes a contract with an SSO in order to license his SEP(s) on FRAND terms providing his patents become essential for a standard. The three elements of contract are then present, i.e., offer, acceptance and consideration. Implementers can rely on this contract to enforce the promise to license given by the patent owner. In this view, the FRAND commitment is a valid contract, implementers are third-party beneficiaries[93], and the introduction of the duty of good faith and fair dealing is a contractual standard stemming from FRAND commitment.

The question about the true nature of a FRAND commitment and discussing whether what is concluded between patentees and SSOs is a contract or a commitment to a performance is beyond the scope of the present paper. However, what is important here is that FRAND commitment does not necessarily prohibit SEP holders from seeking an injunction for infringement of FRAND/SEPs[94]. Denial of injunction is not essentially because of FRAND commitment, but it is the result of SEP holders' behaviour. In *Apple v. Motorola,* the judge decides that establishing a *per se* ruling on unavailability of injunction for SEPs is error. While FRAND commitment is certainly criteria relevant to the entitlement to an injunction, there is no reason to create a separate rule or analytical framework for addressing injunctions for FRAND-committed patents[95].

Sidak correctly adds another reasoning as pointing out that according to the principle of *nemo dat quod non habet* (one cannot transfer what one does not have), the implementer as a third-party beneficiary of the FRAND contract can "*in no event encompass more or broader rights than what the SEP holder initially granted to the SSOs for the benefit of the implementer*[96]". The implementers may refer to

[92] *Motorola/Google*, Analysis of proposed consent order, 2013. *Supra fn.* 17. P. 3.
[93] *Apple, Inc. vs. Motorola Mobility, Inc.* No. 11-cv-178-bbc, District Court, W.D. Wisconsin, 2012, 886 F.Supp.2d 1067.
[94] Sidak, XI. P. 220.
[95] *Apple Inc. vs. Motorola, Inc.,* 757 F.3d 1286 (Fed. Cir. 2014). Para. 1331.
[96] Sidak, XI. P. 221.

FRAND contract to deprive SEP holders from injunction only if there is an explicit waiver by the SEP holder in the FRAND contract. FRAND commitment can be considered as a waiver of the right to seek injunction, if this waiver of a statutory right is clear and unmistakable[97].

What will happen if SSOs get involved in introducing some clear requirements for seeking an injunction in their IPR policies?

This in fact happened in 2015, where for the first time, the IEEE added an explicit waiver in its IPR policies. According to the new bylaws, the patent holder is requested to provide a Letter of Assurance (LOA) waving his right to seek an injunction. It provides that "*the submitter of an accepted LOA who has committed to make available a licence for one or more essential patent claims agrees that it shall neither seek nor seek to enforce a prohibitive order based on such essential patent claim(s) in a jurisdiction, […] unless the implementer fails to participate in, or to comply with the outcome of an adjudication*[98]".

However, this new policy could not solve the problem in practice. Several IEEE contributors contested against this amendment having argued that the proposed systematic banning of injunction in FRAND/SEP infringement can potentially promote opportunistic behaviour amongst implementers[99]. Imposing an unjustified restriction to the SEP holder in seeking an injunction paves the road for the implementers to obtain unreasonably low licensing rates. Accordingly, some of them have announced that they no longer make licensing agreements under the amended bylaws since they regard it as discouraging for technology developers[100].

## VI. Comment and Conclusion

[97] *Metropolitan Edison Co vs. NLRB*, 460 US 693 (1983), 663 F.2d 478.
[98] § 6.2 IEEE.
[99] Rick Nelson, 'Qualcomm Responds to Updated IEEE Standards-Related Patent Policy', *Electronic Design*, 2015 <https://www.electronicdesign.com/technologies/communications/article/21205060/qualcomm-responds-to-updated-ieee-standardsrelated-patent-policy>.
[100] Richard Lloyd, 'Ericsson and Nokia the Latest to Confirm That They Will Not License under the New IEEE Patent Policy', *IAM*, 2015 <https://www.iam-media.com/article/ericsson-and-nokia-the-latest-confirm-they-will-not-license-under-the-new-ieee-patent-policy>.

This paper was centred on presenting through discussing different cases the complexity and the controversy laid under seeking injunction in SEP context where the SEP holder is committed to license his SEP on FRAND terms. Albeit it might initially appear that the legitimacy of seeking an injunction in FRAND/SEPs may vary depending on the applicable law whether competition law, patent law, contract law or fundamental right, the analyses revealed that the judgments' outcomes were not very different one from another. While each law is of its own arguments and legal bases, they mostly have-made their decisions based on the parties' behaviour and the governing circumstances. Complementary and not contradictory, the IP and competition laws both aim at seeking innovation and growth. The exclusive IPRs are considered as strategic weapons and powerful tools for generating sustained competitive advantages.

Presenting an absolute attitude regarding seeking an injunction in FRAND/SEP context, either fully banning or unconditionally allowing SEP holders to seek injunction, will thus fail since none of these attitudes lead to a sustainable solution. In the case of fully prohibiting injunction, the implementers may not negotiate in good faith, as they see no risk of injunction menacing them. The absence of injunction as a penalty against infringement promotes the risk that the implementers obtain lower royalties than what would otherwise be considered FRAND. They then, would not be afraid when damages are the worst-case scenario of litigation that they may face[101]. "*If the sole recourse that SEP holders had was damages, implementers would be able to refuse to agree to license on FRAND terms, a situation that would lead to hold-out*[102]". This view (full prohibition) is shared mainly amongst commentators who consider the use of injunction as a hold-up promoter and regard a reasonable royalty as a sufficient compensation. Nevertheless, a legal system does not eliminate a right only in the fear of a potential abuse. The risk that the injunction might favour the SEP holder in royalty negotiations or might result in royalty rates beyond the value and the strength of a

[101] Henningsson. P. 464.
[102] Vincent Angwenyi, 'Hold-up, Hold-out and F/RAND: The Quest for Balance', *Journal of Intellectual Property Law and Practice*, 12.12 (2017), 1012–23 <https://doi.org/10.1093/jiplp/jpx195>. P. 1019.

patent, or that an SEP holder having planned to demand excessive royalties through threatening to injunction would intentionally wait until an alleged infringer incorporates a patent into his product[103], is exaggerated. Exaggerating hold-up as a great concern can potentially push us toward hold-out.

On the other hand, unconditionally allowing SEP holders to seek an injunction means to ignore the SEP's and FRAND commitment's special characteristics and roles. If a patent is genuinely essential to a standard, implementers cannot change the technology freely and thereby they get locked-in by their own investment. If an injunction is given without justification, the implementer will be shut out of the market[104]. Standard setting delivers substantial benefits to consumers, promotes innovation and competition, and facilitates the entry of related products and consumer choice thanks to FRAND commitment[105]. FRAND commitment ensures and encourages manufacturers to produce standard-compliant products and as a result promotes interoperability of competing devices and benefits consumers with lower costs of products[106].

FRAND licensing should then be considered as a two-way street that requires good faith of both parties to tackle two symmetrical risks, i.e., hold-up and hold-out[107]. The *Huawei* judgment approves this approach as the Court enumerates obligations for both SEP holders and implementers to obtain and avoid an injunction respectively. Hold-out refers to the act of an unwilling licensee of an SEP successfully avoiding a licence or forcing the SEP holder to accept royalties below FRAND rates by adopting delaying tactics, while hold-up refers to the practice of an SEP holder extracting royalties above FRAND by threatening to seek injunction[108].

In Europe, an SEP holder under FRAND commitment, does not abuse its dominant position by seeking an injunction as long as he has fulfilled all the procedural

[103] Lemley and Shapiro, 'Patent Holdup and Royalty Stacking'. Pp. 1992-1993.
[104] Temple Lang. P. 588.
[105] Federal Register, Notice. *Supra fn*. 72. P. 71597.
[106] *Motorola/Google*, Analysis of proposed consent order, 2013. *Supra fn.* 17. P. 2.
[107] *Ericsson Inc et al vs. D-Link Systems Inc et al*, Memorandum Opinion and Order, Case No. 6:10-CV-473. 2013. P. 51 (hereinafter: *Ericsson*, Memorandum Opinion and Order, 2013).
[108] Angwenyi. P. 1019.

obligations provided in *Huawei* judgement. Seeking an injunction against a willing licensee, nevertheless, violates Article 102 TFEU, should the implementer (a) act in good faith in accordance with commercial practices, and (b) diligently respond to the provided offer without any delaying tactics provided this action affects trade between Member States.

The *Huawei* guidance by the ECJ left some issues unresolved to enable national courts to address the specific circumstances of each individual case in a fair manner[109]. As an example, the Düsseldorf District Court in case of *St. Lawrence v. Vodafone*[110] decides that five months is too long for the implementer to express willingness to be bound by a FRAND licence and rules that a reasonable period for declaring willingness is to be defined on a case-by-case analysis[111].

In the US, although seeking an injunction in SEP context is allowed, it needs to be analysed under *eBay* four-factors, in all patent cases, whether essential to a standard or not[112]. If an accused infringer wants to avoid an injunction by arguing hold-up problem, he must present actual evidence which is certainly something more than a general argument of possibility of the hold-up phenomenon[113]. Seeking and threatening injunctions against willing licensees of FRAND/SEPs disable the efficiency of the standard setting process and make producers reluctant to participate in the process of standardisation and implement published standards. It also, reduces the value of standard setting in a way that companies will be less likely to rely on the standard-setting process. "*Implementers wary of the risk of patent hold-up may diminish or abandon entirely their participation in the standard-setting process and their reliance on standards*[114]". If companies abandon participation in the standard setting process, "*consumers will no longer enjoy the benefits of interoperability that arise from standard setting, manufacturers have less incentive to innovate and differentiate product offerings, and new*

[109] *Ibid.* P. 1023.
[110] Case 4a O 73/14 *Saint Lawrence Communications GmbH vs. Vodafone GmbH*, (2016), p. 11. English translation of case summary Available at: https://caselaw.4ipcouncil.com/german-court-decisions/lg-dusseldorf/saint-lawrence-v-vodafone-lg-dusseldorf.
[111] Angwenyi. P. 1023.
[112] *Idem*.
[113] *Ericsson*, Memorandum Opinion and Order, 2013. *Supra fn*.107. P. 51.
[114] *Motorola/Google*, Analysis of proposed consent order, *Supra fn*. 17. 2013. P. 2.

*manufacturers will be deterred from entering the market*[115]".

The presence of contract approach is inevitable due to the absence of a *specific* enforcement mechanism to the FRAND commitment. This approach is just presented by AG's *Huawei* proposing that the assessment of the lawfulness of injunction in FRAND/SEP "*could adequately - if not better - be resolved in the context of other branches of law or by mechanisms other than the rules of competition law*[116]". The US DOJ Antitrust Division head suggests that the US antitrust law must not be used as a tool to police FRAND commitment which SEP holders unilaterally make to SSOs. He emphasises that "*transforming a FRAND contract obligation into an antitrust duty would perturb the purpose of both antitrust law and patent law*[117]". He radically takes it as a mistake to admit a contractual FRAND commitment in order to establish an obligation under the antitrust laws[118]. FRAND contract however cannot be *per se* considered as an injunction waiver; thereby it does not preclude SEP holders from seeking injunction. FRAND contract is not breached unless the SEP holder has acted in violation of good faith and fair trade.

Would the goal be to strike a balance between securing free competition, safeguarding the intellectual property owner's rights, and his right to effective judicial protection guaranteed by Article 17(2) and Article 47 of the Charter, case-by-case analysis has been and shall be taken as the only valid approach in assessing lawfulness of seeking an injunction in FRAND/SEP context. Such an assessment must be fulfilled in a way that the interest of all stakeholders is considered equally without preferring that of a particular one to the others'.

[115] *Ibid.* P. 3.
[116] *Huawei* AG's opinion. *Supra fn.* 32. Para. 9.
[117] Delrahim.
[118] Delrahim.

# *Chapter 4*

# *Arbitration in FRAND-related disputes*

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# I. Introduction

The interplay between patents and standards is crucial for innovation, growth and development. While patents are to empower innovative R&D investors to gain an adequate return on their investment, standards allow interoperability and simplify the production of end–use items. A Standard Essential Patent (SEP) protects technologies essential to a standard. As a matter of fact, it is impossible to manufacture standard–compliant products such as smartphones without using technologies covered by SEPs. There are thousands of SEPs reading on technologies implemented in various standards including Wi-Fi and 4G. Companies work together in Standard Development Organisations (SDOs) to develop standards, a process in which they choose one technology which is essential to the standard in question and exclude the others. This may create barrier for competing technologies/companies in entering the market, and this is what competition law may regard as a problem.

The other issue is that in SEPs there are combined two opposite elements, i.e., the exclusivity of patents, which gives an exclusive right to their owners, and the public availability of standards, which is to guarantee their collective use and broad dissemination. Once a technical patent becomes essential, the standard implementers prefer to use it at no or at very low cost[2]. On the other side, the SEP holders who have invested heavily in their patent seek a beneficial *quid pro quo*. This conflict, which occurs between the private interests of the two businesses fighting for greater benefits, may get extended further and become a matter of public concern and consumer welfare. Device interoperability[3], as a public interest, is guaranteed when SEP holders provide implementers (device manufacturers) with licensing agreements concluded in accordance with the competition law.

It is commonly perceived that SEP holder-implementor conflict can be resolved by a fair and reasonable royalty given to the holders by the implementers, where the

[2] Geradin, 'FRAND Arbitration: The Determination of Fair, Reasonable and Non-Discriminatory Rates for SEPs by Arbitral Tribunals'. P. 3.
[3] As an example of interoperability, smartphone users expect their devices to be compatible with the available technologies (4G, 5G, etc.) whoever the creators of the technology or their device manufactures are.

holder (patentee) agrees to make the SEPs available under fair, reasonable, and non–discriminatory (FRAND) terms. Since 1992, the European Commission in its Communication asks the European standard setting bodies to make the European standards available on FRAND terms to all persons who wish to use them[4]. This allows the implementers to have access to the SEPs necessary for their products.

The FRAND mechanism not only can ensure device interoperability, but also can help resolve the conflicts between standard implementers and patent holders particularly by preventing dispute around fairness and reasonability of licensing terms and conditions. The non-discriminatory prong of FRAND can diminish undue discrimination against level standard implementers in their licensing negotiations[5].

Antitrust and competition authorities consider FRAND licencing important[6]. Most SDOs require in their IPR policies that their participants, prior to the development of a standard, should make a commitment that they will licence their patented technologies on FRAND terms after their patents are selected and incorporated into the standard. In case the patent holder is reluctant to grant FRAND commitment, their patent must not be selected nor included in the standard[7].

Nevertheless, there still exist in practice many conflicts and contradictions that have led to a growing number of disputes and litigations. The WTO TBT Committee mentioned 57 specific trade concerns which are predominantly related to standards and regulations in the ICT sector including the use of 4G/LTE technologies in smartphones[8]. These disputes are usually around setting the FRAND commitment in concrete terms. In fact, although making a patent holder committed to FRAND commitment seems an easy task, the lack of a clear meaning for such a commitment

[4] Para. 6.2. European Commission, Communication on Intellectual Property Rights and Standardisation, COM (1992) 445 Final, Brussels. [hereinafter: EC, Communication on IPRs and Standardisation] states that "*European standard-making bodies should ensure that: 1. All persons wishing to use European standards must be given access to those standards; 2. Standards are available for use on FRAND terms*". Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:1992:0445:FIN:EN:PDF.
[5] Xiaoping Wu. P. 8.
[6] Contreras, 'Global Rate Setting: A Solution for Standards-Essential Patents?'. P. 704.
[7] Para. 2.3. of ITU-T/ITU-R/ISO/IEC.
[8] WTO, *ICT Products at the Centre of Discussions at Standards and Regulations Committee*, 2016 <https://www.wto.org/english/news_e/news16_e/tbt_10nov16_e.htm>.

perturbs its enforceability. In addition, there exist other conflicts in FRAND context, including IP issues (patents validity and enforceability, the essentiality of a technical standard and patent infringement), competition law issues (SEP holders' abusive behaviour and unfair trading), and typical case in contract law which is a breach of FRAND commitment as a contractual obligation. These conflicts show that the expected problem solver, i.e., FRAND mechanism has itself turned into a troublemaker.

Nowadays, licensing of ICT SEPs goes beyond smartphones, online-shops or telecom services. New sectors including agriculture, waterworks, and automobile have already started to incorporate themselves into the digital environment which is mostly managed by ICT standards[9]. This great number of newcomers joining a play whose original players have different corporate culture and know-how, can create new challenges for the SEP community.

Given the growing number of disputes stemming from the digital revolution, proposing proper dispute resolution mechanisms for FREAN-related disputes proves vital. In this context, when parties fail to reach a FRAND agreement, a potential option to unlock the situation is arbitration. In fact, telecom industry players, such as InterDigital, Huawei, Qualcomm, BlackBerry and Nokia, are already turning to international arbitration[10]. ICC International Court of Arbitration for instance, has already arbitrated some SEP/FRAND cases[11].

Besides, on both sides of the Atlantic, antitrust authorities including the US Federal Trade Commission (FTC) and the EU Commission (EC) have acknowledged potential use of arbitration as a suitable option to facilitate the determination of SEP/FRAND proceedings. As an example, in *Motorola Mobility vs. Google* (2014), the FTC Consent Order provided that if FRAND negotiations failed after six

[9] Picht and Loderer. P. 578.
[10] See e.g., Steve Brachmann, 'BlackBerry Settles Arbitration with Qualcomm, Will Receive $940 Million for Contract Dispute over Patent Royalties', *IPWatchdog*, 2017 <https://ipwatchdog.com/2017/06/02/blackberry-settles-arbitration-qualcomm-940-million-contract-dispute-patent-royalties/id=83882/>.
[11] See e.g., the arbitral proceedings between InterDigital and Huawei, 30.09.2016. Available at: www.sec.gov/Archives/edgar/data/1405495/000140549516000076/idcc-q39302016.htm; Nokia and LG Electronics (lexislegalnews.com/articles/20489/icc-issues-confidential-award-in-nokia-patent-dispute-with-lg-electronics)

months, the potential licensee could request a determination or binding arbitration. Also, in *Motorola vs. Samsung Electronics* (2014), the EC's Consent Order provided similarly that should negotiation fail after 12 months, the dispute was to be resolved by a Court or by ICC arbitration. In 2014, the EC study "Patents and standards", by stating that "*efficient SEP licensing requires efficient mechanism to resolve disputes*", suggests mediation and arbitration as appropriate mechanisms. In the same vein, the Court of Justice of European Union (ECJ) in the *Huawei vs. ZTE* case also rules that where the parties do not reach an agreement about the details of FRAND terms, they may agree to request an independent party to settle the dispute[12].

On the other hand, some SDOs have started to insert arbitration mechanism in their IP policies. For instance, Article 14.7 of DVB IP policy states that "*disputes on the terms offered by a member may be resolved by arbitration*"[13].

This increasing attention to arbitration is accompanied by some regulatory developments and guidelines. The WIPO Arbitration and Mediation Centre provides tailored model submission agreements that parties may use to refer a dispute concerning the determination of FRAND terms[14]. The WIPO also offers special guidance for SEP/FRAND ADR[15], which addresses important matters including scope, appointment procedure, procedural schedule, applicable law, confidentiality, interim measures, and appeal. This centre has also expressed interest in contribution to an essentiality assessment scheme[16]. The Munich IP Dispute Resolution Forum (IPDR)[17] has also provided the FRAND ADR Case

[12] Case C-170/13 *Huawei Technologies Co. Ltd vs. ZTE Corp.*, EU:C:2015:477. [hereinafter: *Huawei*]. Para. 68.
[13] DVB, *The Statutes of the DVB Project*, 2014 <https://dvb.org/wp-content/uploads/2019/12/dvb_mou.pdf>.
[14] These model agreements seek to ensure a cost-and time- effective FRAND determination and have been developed further to a series of consultations conducted by the WIPO Centre with leading patent law, standardisation and arbitration experts from several jurisdictions. WIPO, *Arbitration for FRAND Disputes Model Submission Agreement*.
[15] WIPO, *Guidance on WIPO FRAND Alternative Dispute Resolution*, 2017 <https://www.wipo.int/publications/en/details.jsp?id=4232>.
[16] Rudi Bekkers, Joachim Henkel, and others, *Pilot Study for Essentiality Assessment of Standard Essential Patents* (Publications Office of the European Union, 2020) <https://doi.org/10.2760/68906>. P. 101.
[17] The (IPDR) is a forum in Munich aiming at developing and promoting effective methods for dispute resolution in the field of Intellectual Property through a series of discussion events.

Management Guidelines which specifically set out a series of guidelines on FRAND issues and ADR mechanism including arbitration[18]. The Guidelines aim to assist corporate and legal decision makers in designing an efficient and strategic approach to FRAND disputes. They contain some distinctive features, such as assistance in defining the scope of FRAND-ADR proceedings, balancing confidentiality with public policy considerations, and evaluating the possibility to appeal the awards.

In this context, the paper aims at investigating the main challenges of arbitration in settling FRAND-relate disputes, in the hope of articulating the necessity of developing more harmonised and effective rules and policies for arbitration in FRAND context. If international FRAND disputes are to settle through international arbitration, presenting transnational and harmonised policies is crucial.

Following this introduction, the paper presents a discussion on the challenging aspects of FRAND-related disputes. Then, advantages and difficulties of arbitration are discussed in the three areas of law. In this context, patent validity is studied in IP-related disputes; different approaches adopted by different jurisdictions are examined; and it is discussed why in arbitration, patent enforceability is more accurate than patent validity. Necessity of parties' agreement is examined too, and some arguments are presented in supporting the arbitrability of patent validity in SEP context and for FRAND-related disputes.

We then focus on those FRAND disputes in where the antitrust issues are raised under the EU and US competition laws. In the following section, the most frequent FRAND dispute, i.e., the issue of setting FRAND rate, is investigated. In addition, arbitration advantages over court are elaborated, and a practical example of arbitration in setting FRAND rate, the *InterDigital vs. Huawei* case is studied. At last, a barrier that competition law as a public policy can build up at the stage of arbitral award enforcement is discussed. The paper will finish by presenting our

[18] Munich IP Dispute Resolution Forum.

remarks on advantages of arbitration.

## II. Why FRAND-related disputes are challenging?

FRAND-related disputes in SEP are challenging as standards being universal, patents incorporated into standards are often registered in multiple jurisdictions. Accordingly, SEP licensing is transnational and is often between multinational companies. Hence, these disputes are international that make choice of law unavoidable and crucial.

In addition, in these disputes three areas of law are engaged, i.e., IP, contract and competition law. Sometimes SEP holder claims that implementer has infringed their patents while the implementer argues that the patent at issue is not basically valid. Sometimes, dispute is started from the other side: implementer sues SEP holder arguing that the latter has breached its FRAND commitment by refusing to license or by asking an excessive price. Competition authorities may also intervene in FRAND disputes because standard developers might coordinate illegally with each other during standard processing or conduct abusive behaviours unilaterally.

Briefly speaking, FRAND disputes can be either over patent issues including patent infringement and validity (IP law), or over setting FRAND licensing terms and royalty rate (contract law), or over antitrust issues or a combination of them. As a result, FRAND-related disputes being of this tribrid nature are such complex that no specific law can govern them.

Furthermore, in disputes over setting FRAND terms and rate that actually constitute the main body of FRAND disputes, there exists a particular challenge, i.e., the fact that no substantive law in any jurisdiction provides a clear legal guidance to set FRAND terms. Courts even in national level may be different in terms of not only the methodology they use, but also the evidence that they consider in determining FRAND rates[19].

[19] Contreras, 'Global Rate Setting: A Solution for Standards-Essential Patents?'. P. 733.

## A. Choice of law

The international nature of FRAND disputes in SEP makes the choice of law indispensable. As discussed, standards are implemented everywhere by implementers and are used to fabricate products to be traded internationally. Patents, on the other hand, are territorial by nature and are safeguarded by the laws of the jurisdiction where they are issued. This territorial nature of patents provides patentees with a possibility to sue alleged infringers in multiple jurisdictions when patents issued in different jurisdictions, even if they are related to the same set of technology.

### 1. International FRAND, contradictory decisions

In SEP context, each of standards includes hundreds of patented technologies issued by multiple jurisdictions and owned by SEP holders around the world. FRAND licences thus are mostly worldwide and are not limited to a single country no matter where standard implementers are located[20]. The territorial feature of patents along with international FRAND licensing in globalised industries such as ICT has led to multiple litigations. These elements make FRAND disputes *international* which accordingly need a choice of law analysis[21].

The choice of law analysis is to link the issue of the dispute to a specific country's law. For the choice of law analysis in FRAND disputes, the court must define the legal categories of law which can be contract, patent or competition law. These categories are defined under the *lex fori,* the law of forum, which produces uncertainties in FRAND cases as they typically arise in multiple jurisdictions and each of these categories of law may be given weight differently[22].

After the classification step, the court identifies the applicable law through applying

[20] A global FRAND licence is indicated in most SDOs, e.g., the IEEE patent policy in section 6.2 requires patent holders to grant licences to "*an unrestricted number of applicants on a worldwide basis without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination…".*
[21] King Fung Tsang and Jyh-an Lee, 'Unfriendly Choice of Law in FRAND', *Virginia Journal of International Law*, 59.2 (2019), 220–304 <ssrn: https://ssrn.com/abstract=3467370>. P. 238.
[22] Tsang and Lee. Pp. 242-244.

connecting factor of the chosen category. If a SEP holder is alleged for breaching FRAND contract before a court that classifies FRAND commitment as a contractual issue; then by considering its choice of law rule, it usually applies the law of the country which is expressly chosen by the parties. But if the court classifies the dispute as a patent law issue, the connecting factor for patent infringement, the *lex loci protectionis* would be applied i.e., the law of the country where the patent is issued[23].

The international elements of FRAND disputes combined with multiple proceedings in multiple jurisdictions, each of which has its own *lex fori* with its own classification and connecting factors, makes choice of law uncertain and complicated and may reach conflicting results. Therefore, a court faced with a FRAND litigation must characterise the FRAND issues under its private international law rules, identify the choice-of-law rules, and thus determine the applicable law.

In addition, courts may face with multiple FRAND issues in the same case including *enforceability of FRAND commitment*, *negotiation,* and *definition of licensing terms*, each of which may be characterised differently in the three categories of law[24], where

- FRAND commitment can be enforced as a contractual issue, i.e., contract between SEP holder and the SDO, or third-party right to be licensed on FRAND terms as derived from the contract between the SEP holder and the SDO, or can be enforceable under antitrust law to prohibit refusal to licence, abusive behaviour, discriminatory terms price, or tying practice;
- FRAND negotiation can be regarded as a competition law issue like the procedural obligations ruled by the ECJ for both parties in *Huawei*[25], or as a duty to negotiate in good faith, and
- FRAND licensing terms including setting royalty rate can be considered as

[23] *Ibid.* P. 245.
[24] *Ibid.* P. 225.
[25] *Huawei. Supra fn.* 12.

patent law issues or contractual obligation in proposing a FRAND offer.

Over the last few years, courts in several jurisdictions have dealt with the determination of FRAND licensing terms under different applicable laws and have developed different sets of approaches that can lead to fragmented litigation. As the number of courts deciding FRAND-related cases has increased, so has disagreement over the interpretation of FRAND commitment. Fragmented litigations may lead to contradictory results if one jurisdiction under one applicable law finds infringement in a dispute while another jurisdiction under another applicable law finds no infringement, when both the litigations involve disputes over the same technology between the same parties.

Multinational firms may control such differences to their own benefit through litigation race or forum shopping where a litigant rushes to bring suit in a jurisdiction favourable to its position, often to foreclose suit in a less favourable jurisdiction. An SEP holder may bring an action in jurisdictions which are known to favour higher FRAND rate, or for issuance of injunction in FRAND encumbered SEPs. For the same reason, jurisdictions in favour of setting lower FRAND rates may attract implementers. This situation may prematurely drive parties to a loop of litigation rather than real negotiation or settlement. In addition, this may contradict the global approach of many technical norms and standards. Contradictory national decisions can be significantly disparate on the notion of FRAND compliant licensing.

## 2. Choice of law in arbitration in FRAND-related disputes

It is largely argued that the multiple proceedings under different laws along with the risk of conflicting results stemmed from court litigations can be resolved through arbitration, as a single proceeding under a law determined by the parties. The following discussion shows that while arbitration does not necessarily remove the need for choice-of-law analysis in FRAND-related disputes, it can be more efficient than court when setting royalty rate is a core of dispute.

In treating choice-of-law question, international arbitration proceedings are

basically engaged with the determination of the applicable law

- to the conduct of the arbitration proceedings, *lex arbitri* or *lex fori*
- to the law governing the arbitration agreement, and
- to the substance or merits of the case.

While the law applicable to the former is governed by the *lex loci arbitri,* the laws governing to the others are the matter of challenge in SEP/FRAND cases. Usually, parties of an international contract agree on an applicable law if they choose arbitration as their dispute settlement mechanism. In this case, the law applicable to the arbitration agreement is usually the same as that specified in the principal contract. The latter is generally chosen by the parties too.

Knowingly, FRAND commitment establishes in no way a *direct* contract between patent holders and standard implementers, but it is one of the IPR policy clauses through which SDOs require patentees participating in an industry-wide development effort to declare that they will follow the SDO's IPR policy including granting licence on FRAND terms if at the time of standardisation, their patents read on the new standard specifications. Once implementers are not party to this agreement between SODs and patentees, it makes no sense to look for a choice of law which is typically chosen by both the parties when the contract is concluded. In addition, although participants in standard-development process are to abide the SDO's rules and policies, none of their clauses for now bind participants to submit their dispute to arbitration.

Arbitrators typically determine the law applicable to the merits of the case in accordance with the parties' agreements, unless a mandatory national law or public policy trumps such an agreement[26]. In contrast, once parties, for any reason, fail to agree, the arbitrator will choose the applicable law depending on the facts of the

[26] Under the Rome I Regulation on the law applicable to contractual obligation, for example, parties are not allowed to circumvent certain rules of law by choosing the governing law of another country. It makes provision for the "overriding mandatory provisions" and "public policy" of a relevant state to be applied over and above the law chosen by the parties. Overriding mandatory provisions will require terms to be written into the contract (e.g., employee rights), while public policy will prevent the application of elements of the foreign governing law (e.g., where the performance of an act in a foreign state is illegal under that state's law).

case at hand, using criteria such as selecting the law with the closest connection to the dispute.

Though without referring to a specific substantive law to govern their dispute, SEP holders and implementer may conclude an arbitration agreement once a FRAND dispute arises, because despite years of heated debates, no consensus is yet reached on choice of law in FRAND-related disputes and no substantive law in any jurisdiction could provide clear legal guidance to set FRAND terms[27]. In addition, due to the nature of FRAND disputes which involve both private and public interests, parties cannot effectively choose a specific law to govern their dispute, and even if they do so, their chosen law will not veto the application of public law including the principle of territoriality of IPRs and competition policies.

Whether in court or in arbitral tribunal, the complexity of choice of law analysis on the substance of FRAND-related disputes is a common difficulty for settlement mechanisms. However, when it comes to setting FRAND royalty rate, arbitration appears more efficient since (a) no national law has not presented yet a clear basis for determining fair and reasonable royalty rates, and (b) FRAND rates are principally set through comparing similar licensing transactions and empirical economic analysis that may not be necessarily supported by the substantive foundations of the national law. These may convince parties to avoid the system of national law and opt for arbitration mechanism instead, which make it possible to eliminate the question of governing law by referring to neutral non-national standards[28]. In this context, arbitration can also appear more efficient due to its single proceeding than multiple proceedings of court litigations in different jurisdictions.

## B. Lack of specific law

Traditionally, there has been a hostility toward arbitration agreements and arbitral awards which were governed not by the law of a specific jurisdiction but under

[27] Eli Greenbaum, 'Arbitration Without Law: Choice of Law in FRAND Disputes', *Res Gestae*, 26 (2016) <http://ir.lawnet.fordham.edu/res_gestae/26%0AThis>. P. 5
[28] Greenbaum. P. 9.

general principles of law, equity, or *Lex Mercatoria*. Rivkin argued that the idea suggesting the arbitral awards settled through extra-legal standards are unenforceable, was originated from an established belief in courts extensive supervisory jurisdiction and a suspicion of the lawfulness, credibility and predictability of awards which are based on non-legal standards[29].

Based on this belief, some English courts had ruled against awards arbitrated through some extra-legal criteria such as justice or equitable principles. However, some judicial decisions oust this old interpretation in a way that the current approach is to give freedom to arbitrators to decide a case according to a specific law or not[30]. As an example, the Court of Appeal in the *Czarnikow vs. Roth, Schmidt & Co.* case highlighted that the arbitrators' freedom is to "release real and effective control" over commercial arbitrations[31]. In addition, an award no longer needs be based on a specific national law to be recognised and enforced by court. This was ruled by the Ninth Circuit Court in the *Ministry of Defence of the Islamic Republic of Iran vs. Gould Inc* where the Court rejected the Gould argument that the Article V(1)(e) of the New York Convention applies only to arbitral awards made in accordance with a national law and does not apply to the enforcement of decisions made otherwise[32], and that enforcing arbitral awards grounded on substantive *general principles of law* may be treated differently than the awards made under national law[33].

The literature also supports the enforceability of arbitral awards which are not made on a specific national law. As an example, Lando declaring that a *stateless* arbitration is not lawless[34] states:

> *"The parties to an international contract sometimes agree not to have their dispute governed by national law. Instead, they submit it to the customs and usages of international trade, to the rules of law which are*

[29] D. W. Rivkin, 'Enforceability of Arbitral Awards Based on Lex Mercatoria', *Arbitration International*, 9.1 (1993), 67–84 <https://doi.org/10.1093/arbitration/9.1.67>. P. 73.
[30] Czarnikow vs. Roth, Schmidt and Company, 2 K.B. 478; (1922) Ll.L.R. 195, at 484.
[31] *Idem*.
[32] *Ministry of Defense vs. Gould Inc.*, 887 F.2d 1357 (9th Cir. 1989). Para. 35.
[33] *Ibid.* Para. 40.
[34] Ole Lando, 'The Lex Mercatoria in International Commercial Arbitration', *The International and Comparative Law Quarterly*, 34.4 (1985), 747–68 <https://doi.org/doi:10.1093/iclqaj/34.4.747>.

*common to all or most of the States engaged in international trade or to those States which are connected with the dispute*[35]*."*

This new trend has been also reflected in the national law of some jurisdictions including in the Swiss international private law which provides that the parties may authorize the arbitral tribunal to rule according to *equity*[36].

### C. Takeaway

FRAND-related disputes are complex not only because the international SEPs makes choice of law analysis unavoidable, but also as they involved different areas of law. This makes arbitration with its single proceeding turn to be more efficient particularly in settling disputes over setting licensing terms and FRAND royalty rate.

Moreover, although lack of specific law makes FRAND-related disputes difficult to be treated in courts, it no longer creates restriction in terms of arbitral awards. A stateless arbitral award can be recognised and enforced by courts.

## III. Arbitration in three types of FRAND disputes

Bearing in mind that there is no perfect challenge-free dispute settlement mechanism, the current chapter is to examine arbitration challenges in settling the disputes. Our goal is to explore where arbitration can settle disputes more effectively and where courts.

### A. IP-related disputes: Arbitrability of patent validity

Validity of patents incorporated in a standard is crucial in the legitimacy of various FRAND cases. Although uncertainty over validity is typical for patents, it turns more critical in SEPs as they are considerably more likely to be licensed[37]. SEPs

[35] *Ibid.* P. 747.
[36] Article 187 of the Swiss Private International Law Act of 18 December 1987. Available at: https://www.swissarbitration.org/wp-content/uploads/2021/05/20210129-Chapter-12-PILA_Translation_English.pdf.
[37] Baron, Geradin, and others. P. 31.

that have been approved for essentiality may still be invalid[38], and if so, their owners may become unentitled to seek an injunction or other remedies. Invalidity has also negative impact on the amount of royalty rate in an SEP portfolio, as the higher number of invalid SEPs is, the lower amount of royalty is set.

Through presenting the debate over arbitrability of patent validity, we in this section study the different approaches taken in this regard by different jurisdictions. We describe why adopting the term *enforceability* is more accurate than validity in arbitration context. The necessity for parties' agreement and its difficulty in FRAND context are also discussed.

## 1. Different approaches toward arbitrability of patent validity

Although, arbitration can cover various IP subject-matters, there is no consensus on the arbitrability of patent validity disputes, which are typically extra-contractual, and are regularly settled by courts. These disputes are traditionally viewed as inappropriate for arbitration as challenging patents are argued to be involved with great public interest[39].

Patent validity is usually invoked as a defence in a lawsuit for an infringement of the patent. The defendant usually counter attacks by arguing that the alleged infringement did not basically occur due to the lack of validity of that patent. The dispute can also arise in a contractual context, when the claimant alleges that the licensee has infringed its patent by a continuing its use after termination of the licensing contract, and the licensee defends itself through arguing the invalidity of the patent.

The opponents of arbitrability of patent validity argue that patent rights are state-sanctioned monopolies, and that is the public authorities' responsibility to ensure that public policy supports this monopoly by balancing private interest of patentees with the interest of the public[40]. Impartiality of public authorities along with their

[38] *Ibid.* P.69.
[39] Contreras and Newman. Pp. 26-27.
[40] Wei-hua Wu, 'International Arbitration of Patent Disputes', *The John Marshall Review Of Intellectual Property Law*, 10.s (2011), 384 <https://repository.law.uic.edu/cgi/viewcontent.cgi?article=1242&context=ripl>. Pp. 390-391.

capacities enable them to monitor public policy and to safeguard the justice of balancing competing interests. In their view, an arbitral award made by a private body might not strike this balance adequately, particularly if the award impacts as well persons who are not parties to the arbitral proceedings (*erga omnes* effect). They also claim that when courts and competent administrative agencies have exclusive jurisdiction to decide on patent validity, they should exclusively settle disputes over the issue, and consequently patent infringement disputes, where validity is involved, should be excluded from arbitration scope[41]. For them, patent rights are there to protect all patent owners against any third-party infringement, not only a single party in an isolated patent dispute[42].

On the other hand, the proponents of arbitrability of patent validity with *inter partes* effect argue that the outcome of patent validity affects merely the involved parties and does not bind third parties. Consequently, the award has nothing to do with public policy, thereby state's sovereignty in registration, granting, and invalidating patents remain intact[43]. In other words, patent rights remain intact against other parties and a negative decision does not result in the total loss of rights[44].

Approaches on arbitrability of patent validity vary considerably from one country to another. The US in response to the growing public concerns about the enormous cost of patent litigation has amended Patent Act and recognised voluntary arbitration as a valid means for adjudicating disputes related to the patent validity and infringement[45]. The Article 294 (a) of the Patent Act states that:

> *"A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to the patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or*

[41] Smith and others. P. 306.
[42] Wei-hua Wu. P. 391.
[43] William Grantham, 'The Arbitrability of International Intellectual Property Disputes', *Berkeley Journal of International Law*, 14.1 (1996), 173–220 <https://heinonline.org/HOL/Page?collection=journals&handle=hein.journals/berkjintlw14&id=177&men_tab=srchresults>. P. 199.
[44] Murray Lee Eiland, 'The Institutional Role in Arbitrating Patent Disputes', *Pepperdine Dispute Resolution Law Journal*, 9.2 (2009), 283 <https://digitalcommons.pepperdine.edu/drlj/vol9/iss2/3/>. P. 292.
[45] 35 U.S.C. § 294(b).

*infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract."*

Voluntary arbitration of patent disputes is authorized by the Act which also states that an arbitral award is final and binding between the parties but "*shall have no force or effect on any other persons*"[46], i.e., with no *erga omnes* effect. However, it is unclear whether any finding of patent invalidity shall be binding on the patentee for future disputes[47], in other words, whether the arbitration procedure itself has any effect on the patent validity. Section 294(c) of the Patent Act precisely states that arbitral awards shall be final and binding between the parties to the arbitration but shall have *no force or effect* on any other person. Parallelly, section 135(d) particularly lays out that the award shall be *dispositive* of the issues to which it relates[48]. It has been ruled that for those matters covered in the award, "*decision by arbitrators is as binding and conclusive as the judgment of a court*" for purposes of *res judicata*[49]. Accordingly, even though both the statutes make it clear that the award will not influence third parties, it is not yet decided if it prevent the use of the award against the parties themselves in future proceedings[50].

In Europe, each country has exclusive jurisdiction over the validity of European patents registered in its territory[51]. Over the years, this situation has resulted in conflicting decisions in different European territories over same patents and same alleged infringements[52]. While in some countries public policy is prevailed and an award on the validity of patent will not be enforced against the defeated party, some others accept arbitral awards on patent validity provided they are enforced *inter*

[46] 35 U.S.C. § 294(c).
[47] Martin and Derek. P. 270.
[48] 35 U.S.C. § 135(d).
[49] *Am. Renaissance Lines, Inc. vs. Saxis Steamship*, 502 F.2d 674 (2d Cir. 1974). at. 678.
[50] Martin and Derek. P. 270.
[51] Article 24 para. 4 of the EU Regulation 1215/2012 on jurisdiction, and the recognition and enforcement of judgments in civil and commercial matters.
[52] See, e.g., *Novartis vs. Johnson & Johnson*, (27 October 2010, Case no. 09/08135) where the Cour d'Appel rejects all Johnson & Johnson arguments of insufficiency and lack of novelty, thereby taking an opposite view to the English Court of Appeal and German Bundespatentgericht; *Occlutech GmbH vs. AGA Medical Corp and Another* [2009] EWHC 2013 (Ch) where English Patents Court agrees with Dutch but not with German court.

*partes*[53].

Belgium and Switzerland having adopted a liberal approach admit the arbitrability of patent validity. The Belgian Patent Law considers equivalent a court judgement with an arbitral award and lays out the latter when annulling a patent totally or partly, shall have the force of *res judicata* in regard of everyone[54].

In Switzerland, the Federal Office of IP declared in 1975 that arbitral tribunal may decide over validity of patents, trademarks and designs. According to the Swiss Federal Statute on Private International Law, any dispute of financial interest may be subject to arbitration[55]. Swiss courts, since then, have regularly interpreted this in order to cover any claims with a pecuniary value for the parties[56], a non-exhaustive list of which including partial or full nullification of patent is provided by the Swiss Supreme Court[57]. It is argued that these claims are considered arbitrable as they would be settled by an ordinary civil court, with which an arbitral tribunal is generally considered "on par"[58]. Regarding the effects of awards which do not result in change in a registry of IP rights, Switzerland has also adopted a liberal approach by stating that an award which does not confirm the validity of a patent or denies a nullity claim or counterclaim, has *erga omnes* effect[59].

It must be also noted that the recognition and enforcement of an international arbitration award rendered by an arbitral tribunal with a seat in Switzerland may be refused in another country if the dispute is not considered arbitrable or otherwise

[53] Briner.
[54] Belgium Patent Law of 1997, Article. 51.
[55] Article 177 of the Swiss Federal Statute on Private International Law, Chapter 12. Available at: https://www.swissarbitration.org/files/34/Swiss%20International%20Arbitration%20Law/IPRG_english.pdf. To find out more see: Thomas D. Halket, *Arbitration of International Intellectual Property Disputes*, ed. by Thomas D. Halket (Juris Publishing, Inc., 2012).
[56] Decision of Dec. 15, 1975, published in the Swiss Review of Industrial Property and Copyright, 36-38.
[57] Patrick M. Baron and Stefan Liniger, 'A Second Look at Arbitrability Approaches to Arbitration in the United States, Switzerland and Germany', *Arbitration International*, 19.1 (2003), 27–54 <https://doi.org/https://doi.org/10.1093/arbitration/19.1.27>. Pp. 33-34.
[58] Manuel Arroyo, 'IP & IT Arbitration in Switzerland', in *Arbitration in Switzerland The Practitioner's Guide*, ed. by Kluwer Law, 2nd editio (Wolters Kluwer, 2018) <https://law-store.wolterskluwer.com/s/product/arbitration-in-switzerland-a-practitioners-handbook-2e/01t0f00000NXhHxAAL>. P.1136.
[59] Arroyo. P.1141

found to be against public policy in such other country[60].

## 2. Enforceability rather than validity

An arbitral award with *inter partes* effect means arbitrators can only declare a patent *enforceable* or *unenforceable* between the parties and they are not allowed to declare its nullity nor its invalidation. Vicente argues that the *inter partes* effect of arbitral awards over patent validity is a reconciliation between the following two conflicting interests: (a) the fact that public policy preventing arbitral awards from invalidating a right granted by a public authority limits awards effects only to parties that have agreed upon; (b) referring to invalidity of a patent is a defendant's right once they are alleged that they have infringed that patent[61].

Although adopting *enforceability* of patents rather than validity seems more accurate legally and linguistically in arbitration of SEP/FRAND cases, *Inter partes* effect of arbitral awards may still lead to fragmented decisions. An SEP can be found un/enforceable in an arbitral award between its holder and an implementer while it is declared in/valid by a national court in a litigation between the holder and another implementer, in the same jurisdiction or elsewhere. It is then curious to see what will happen when these contradictory decisions arise before a court for enforcement and recognition while the defeated party of the arbitral award refers to a contradictory court decision over the validity of patent. In this situation, can the reviewing court annul the award on the basis of public policy by reasoning that when patent validity has been judged by a court, the contradictory arbitral award cannot be enforced? If so, this may make one believe that in patent validity the arbitral award will even not have *inter partes* effect. This issue is more elaborated in section IV at page 222.

## 3. Necessity for parties' agreement

As a private mechanism based on parties' will, arbitration, can only deal with issues

[60] Arroyo. P.1138.
[61] Dário Moura Vicente, 'Arbitrability of Intellectual Property Disputes: A Comparative Survey', *Arbitration International*, 31.4 (2015), 151–62 <https://doi.org/10.1093/arbint/aiv002>. P. 156.

specified in arbitration agreement[62]. Therefore, parties seeking to settle patents validity through arbitration must show their intention in their contract or in arbitration agreement. Otherwise, according to Article V of the NY Convention, the award may be refused if it does not fall within the terms of the submission to arbitration or goes beyond its scope[63].

However, disputes often arise as a result of an infringement of a right by a third party who has entered into no arbitration agreement with the person entitled to exercise the right. This is mostly the case in FRAND context where prior to a dispute, there is typically no contract between SEP holder and implementer, and the parties usually end up with an arbitration agreement only after clashes in multiple litigations in various jurisdictions[64].

A FRAND process starts with a *negotiation phase* between the SEP holder and the implementer. For this phase, the ECJ in *Huawei vs. ZTE* has set the following steps through which SEP holders can fulfil the requirements to seek an injunction against implementer without abusing their dominant position within the meaning of Article 102, Treaty on the Functioning of the European Union (TFEU). The first step is taken by the SEP holder through informing the implementer with a warning letter about the SEP and the availability of licencing on FRAND terms. The second step assumed by the implementer comprises performing a preliminary analysis of the patent validity. If it appeared that the patent is really essential for a specific standard, the implementer has then two possibilities: (a) rejecting the warning letter and incurring the risk of an infringement proceeding concerning the SEP patent; or (b) entering into negotiation with the SEP holder to discuss the granting of a FRAND licence. If the latter is opted, the implementer should send a response letter

[62] 35 U.S.C. § 294(c).
[63] According to the Article V.1.(C): recognition and enforcement of the award may be refused if the award deals with a difference not contemplated by or not falling within the terms of the submission to arbitration, or it contains decisions on matters beyond the scope of the submission to arbitration, provided that, if the decisions on matters submitted to arbitration can be separated from those not so submitted, that part of the award which contains decisions on matters submitted to arbitration may be recognized and enforced.
[64] This practice happens frequently. For instance, InterDigital and Lenovo agreed on an arbitration after almost one-decade failure of negotiations. See: Joff Wild, 'Despite the Difficulties, It Is Time to Embrace Arbitration as the Best Way to Resolve Licensing Disputes', *IAM*, 2019 <https://www.iam-media.com/article/embrace-arbitration>.

to the SEP holder indicating their willingness to conclude a licensing agreement on FRAND terms. The SEP holder in response provides the implementer with a written offer for such a licence. This offer must involve a proposed royalty rate and the manner through which the rate is calculated. The implementer takes the fourth step by analysing the written licence offer. According to the ECJ decision, at this stage the implementer being not prevented from challenging the validity of the patent and its essentiality can perform a thorough analysis regarding the validity and the essentiality of the patent. Usually, the rate of the royalty proposed by the SEP holder is higher than that expected by the implementer. The implementer can, thereby, provide a counteroffer at a lower rate and inform the SEP holder accordingly in a reasonable notice.

According to the ECJ ruling, the implementer counteroffer must be FRAND as well, and the implementer must provide the details of their royalty rate calculation together with adequate justification proving that the rate requested by the SEP holder is not correct. While wating for the counteroffer, the SEP holder cannot sue the implementer. Only a SEP holder having received no feedback from the implementer after the expiration of the notice is entitled to proceed with a request of injunctive relief. Otherwise, upon the reception of the counteroffer rate, the SEP holder should perform their analysis. This cycle (sending licence offer and receiving counteroffer) can be iterated multiple times., i.e., the SEP holder can make more than one licence offer whose duration may differ on a case-by-case basis.

If the SEP holder is satisfied with a counteroffer, an agreement is reached, and the negotiation terminates with success. Otherwise, or if the SEP holder regards the implementer behaviour as bad faith (for example, due to delaying tactics), the negotiation process is deemed unsuccessful, and the parties can request a court or an arbitration to determine the FRAND licence. In such a case, the request is made either by the SEP holder who sues the implementer for infringing the SEP, or by the implementer who sues the SEP holder to invalidate the SEP and/or for a non-infringement declaration.

In case a lawsuit is filed, the conflict risks to continue for some more years. This

may lead to a much more difficult situation for the disputing parties to reach a post-dispute arbitration agreement, and/or to an incomplete arbitration agreement which may omit patent validity.

In the absence of such an agreement, what if the question of validity arises during the arbitral proceeding? Shall the arbitrators settle it or not as the issue is beyond the scope of the parties' agreement? There is no universal answer as it can vary depending on *lex fori*. The US Patent Act, for example, states that in the absence of such an agreement, the arbitrator must consider patent defences if raised by a party to the proceeding. Section 282 of the Act provides the list of the defences including patent validity and infringement[65].

## 4. Our view

As discussed, the main argument presented by the opponents of arbitrability of patent validity is the public policy involvement. Nevertheless, this issue can be viewed differently as follows.

3. **Vague notion**: public policy being not a determined legal concept, its essence, nature and boundaries remain fleeting so that some compare it to a "chameleon" due to its changing appearance[66]. It is practically impossible to confine the notion of *lois de police* to one clear-cut definition, even if very broad or very general[67].
4. **Various approaches**: there is no consensus whether patent validity is a public policy matter. Approaches vary jurisdiction by jurisdiction. Some countries including Switzerland have even tendency to reduce the impact of public policy when it comes to arbitrability. It would prove that the issue is not that essential for all legal orders.

[65] 35 U.S.C. § 294(b) and § 282.
[66] Decision of the Swiss Supreme Court ("Federal Tribunal") of March 8, 2006, in the case of *Tensaccia S.P.A vs. Freyssinet Terra Armata. R.L.* English translation of the decision (by Charles Poncet). Available at: https://www.swissarbitrationdecisions.com/sites/default/files/8%20mars%202006%204P%20278%202005.pdf.
[67] Pierre Mayer Auteur and Vincent Heuzé Auteur, *Droit International Privé*, 11th edn, 2014. Pp.91-92.

5. **Validity of SEP portfolio**: Validity of patent in FRAND-related disputes are typically about an SEP portfolio consisting of multiple patents issued from multiple jurisdictions. In the *Unwired* case, where there was a portfolio of about 2000 patents and patent applications, covering 40 countries, the Judges ruled that examining the validity of patent-by-patent does not make sense, rather validity of a portfolio is under question[68].
6. **Deciding over SEP portfolios is not against public policy**: if an arbitrator determines a SEP portfolio is as valid as it worth FRAND royalty rate, this has nothing to do with the status of each and every patent and therefore the territorial/national public policy associated to each patent is not affected.
7. **Being a public policy is not non-arbitrable.** Even if we consider patent validity as a public policy matter, a dispute that involves public policy issues is not *per se* regarded to be non-arbitrable[69]. Arbitrability of an issue involving public policy is not unprecedented. Competition law issues was traditionally in doubt to be arbitrable due to their mandatory nature which limit the scope of party autonomy and the economic analysis involvement in competition law[70]. Nevertheless, the US Supreme Court in 1985 in *Mitsubishi* ruled that antitrust disputes can be settled by arbitration[71]. The Court ruled that the public interest could be secured by the ability of national courts "*at the award-enforcement stage to ensure that the legitimate interest in the enforcement of antitrust laws has been addressed*"[72]. In 2020, the US DOJ referred the case to arbitration rather than proceed to trial in federal court[73]. In the EU, it is perceived that the ECJ endorse the arbitrability of EU competition law too.
8. **WIPO Guidance**: Under the guidance of WIPO FRAND Alternative Dispute Resolution, parties can agree to settle patent validity through arbitration.

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[68] UKSC 2018/0214. Pp. 9-10.
[69] Baron and Liniger. P. 42.
[70] Tony Cole and others, *Legal Instruments and Practice of Arbitration in the EU*, 2014 <http://www.europarl.europa.eu/RegData/etudes/STUD/2015/509988/IPOL_STU(2015)509988_EN.pdf>. P. 203.
[71] *Mitsubishi Motors Corp. vs. Soler Chrysler-Plymouth, Inc*., 473 U.S. 614, 633-35 (1985).
[72] *Ibid.* At 473.
[73] *United States vs. Novelis*., 2020.

9. **International character**: SEP is an international issue. A territorial/local/national settlement of patents validity in SEP context does not at all lead to the dispute resolution.
10. **SEP Expert Group:** the SEPs Expert Group also found arbitration mechanism effective in patent validity having proposed creating a system that allows implementers to challenge the validity of patents through a fast challenge procedure before an independent arbitration panel[74].
11. **US and EU approaches**: If parties agree, patent validity can be referred to arbitration in the US according to the Patent Act. The EU approach, however, is not clear as there is no harmonised patent law applicable to all Member States. Nevertheless, it would be more effective for the EU with Member States having multiple, sometimes contradictory, public polices to consider the validity of SEP portfolio as beyond public policy. As observed in the *Eco-Swiss* ruling, functioning of the internal market is decisive. Accordingly, allowing arbitration to settle patent validity avoids different contradictory decisions for FRAND disputes and it leads to a better function of EU internal market. In fact, international FRAND disputes are resolved more effectively through a single arbitration proceeding than multiple litigation in several courts in Member States.
12. **Parties' agreement**: If implementer agrees to settle validity of an SEP portfolio via arbitration, there seems no further barrier to avoid this. This view is also in line with a legal presumption of validity.
13. **Contradictory decisions avoidance:** allowing arbitration to decide over validity of SEP portfolios avoids contradictory court judgement in different jurisdictions over the same SEP portfolio between the same parties. If arbitration is competent to settle the disputes involving essential patents incorporated into hundreds of devices across the globe, it could be competent to decide over the validity of SEP portfolios too. In the same vein, the US Supreme Court referring to the Arbitration Act established that, as a matter of federal law, any doubts concerning the scope of arbitrable

[74] Baron, Geradin, and others. P. 73.

issues should be resolved in favour of arbitration.

Based on these arguments, we suggest that arbitration can settle validity of SEP portfolios. However, the other main issue of public policy with regards to patent validity disputes is the question as to what effect the arbitral award should have vis-à-vis third parties. If an implementer raises a nullity claim and the arbitrator declares the patent null and void, the question is whether the patent will only be considered null and void between the parties of the arbitration (*inter partes* effect only) or for everybody (*erga omnes*), and whether the patentee not only loose its right to pursue infringements of its patent against its counterparty in the arbitration, but also against any implementers. In other words, the effect would be the same as if a competent court or other competent public authorities had declared the patent null and void. As discussed, some jurisdictions permit, whether directly or indirectly, that an award may have third party effects while the others will recognize and enforce an arbitral award *inter partes,* but not in favour of or against third parties[75].

It is also important for all parties to an arbitration to understand whether or not they are interested in an arbitral award that has third party effects with regard to the patent at issue. From the parties' point of view, it is obvious that the patentees are not interested in extending nullity of their patents beyond their arbitration, they in fact are generally interested in even limiting the *inter partes* effect to as few jurisdictions as possible. The other party also may not be interested to have an arbitral award with *erga omnes* effect, because, raising patent invalidity could be a defence against infringement claims of a patentee, or an attempt of a licensee trying to terminate their licence agreement on the basis that the patent at issue is no longer of value. In this scenario, the interest of the attacking party is to protect itself from attacks of the patentee, but not preventing him to attack third parties who could be its competitors. In fact, it may be a competitive advantage for the party raising the nullity claim if the patent owner continues to enforce his patent against third parties if these third parties are competitors of the party attacking the patent. In such a situation, an arbitration may prove to be particularly attractive, as it provides the parties with more freedom to control the process. For instance, both parties may be

[75] Arroyo. P. 1128.

interested in keeping the arbitration confidential, which may not be possible in a state court[76].

All in all, in FRAND context, it does not make sense to assess each and every patent in an SEP portfolio with hundreds of patents granted by multiple jurisdictions, and thereby if the *lex fori* does not allow arbitrator to decide over the patent validity, it can decide over the validity of SEP portfolio provided to parties' agreement. As regards the latter, the right to court is reserved for the implementer who seeks to file an action for validity of patent before a court. Arbitration is capable to settle the issue of overall validity of SEP portfolio. In fact, if an implementer wants to challenge the validity of patents, it should put forward evidence about the validity of overall SEP portfolio demonstrating that this portfolio is worse than the other comparable portfolio. With regard to the effect of such award, although having full effect will avoid fragmented and contradictory decisions, it all depends on the applicable law of a national court in where the award is to be recognised and enforced.

## B. Competition law-related FRAND disputes

In the US and in the EU, the arbitrability of antitrust disputes has been long under question because of their public policy nature and the fundamental importance that the legislations governing this domain bear due to their impact on the market, their policy dimension, and the limitation imposed on economic freedom[77].

In the US where the courts were traditionally allowed based on the American Safety doctrine to refuse arbitration of antitrust disputes[78], the situation has already changed. Beeson and Poudret argued that this change was a result of awareness regarding the fundamental distinction between *the subject matter of the dispute* and *the nature of the rules in question*[79].

[76] Arroyo. P. 1140.
[77] *The Design of Competition Law Institutions : Global Norms , Local Choices*, ed. by Eleanor M Fox and Michael J Trebilcock, *Oxford University Press*, 2013 <https://doi.org/10.1093/acprof>.
[78] *American Safety Equipment Corp vs. JP Maguire & Co* (2d Cir1968) 391 F2d 821.
[79] Sebastien Besson and Jean-françois Poudret, *Comparative Law of International Arbitration*, 2nd

In 1985, the US Supreme Court recognized in *Mitsubishi* case the arbitrability of disputes which involve the application of US antitrust legislation when an international contract encloses an arbitration agreement[80]. It then highlighted the specific character of international disputes and recognised the validity of the parties' arbitration agreement[81]. In addition, the Court held that the international character of the controversy makes it arbitrable, while, if the antitrust issues were raised in a purely domestic context, then the merits of those claims would have controlled entirely by the American law[82].

In the EU, the ECJ ruling in *Eco Swiss* represents a partially similar approach, where the Court did not exclude arbitrability of disputes containing the EU competition law, although it ruled that an arbitral award shall be enforced if the competition issue does not go against public policy or involve a violation under Articles 101 and 102 of the TFEU. The reasoning of the Court was based on the fact that the role of competition law is particularly important in the EU, as their enforcement is fundamental to ensure the correct functioning of the common market[83].

Bearing this background in mind, the antitrust-related FRAND disputes could be filed by either an antitrust authority suing a firm (whether SEP holder or implementer) because of its anti-competitive behaviour, or by a firm which is often an implementer suing an SEP holder arguing that the latter does an abusive conduct whether by refusing to license its SEP, or asking an excessive amount of royalty, or other abusive conducts. In any case, in order for a dispute pertaining to a competition law issue to be resolved by arbitration, an agreement to arbitrate must exist.

An antitrust authority starts a complaint against the firm where there is a violation

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edn (Thomson / Sweet & Maxwell / Schulthess (London), 2007). P. 296. It should be noted that a Swiss Cantonal Tribunal in 1975 observed this distinction when distinguishing between the subject matter of arbitration, which is a dispute concerning a right of which the parties may freely dispose, e.g., dispute over the validity of a contract, and the legal rules which are applicable to the solution of the dispute.

[80] *Mitsubishi Motors Corp. vs. Soler Chrysler-Plymouth, Inc.,* 473 U.S. 614 (1985) [hereinafter: *Mitsubishi*].

[81] *Ibid.* At. 629.

[82] *Ibid.* At. 634.

[83] Cole and others. Pp. 203-204

of competition law. For example, the US antitrust agencies may enforce antitrust law themselves, bring antitrust suits to federal courts, or refer the case to arbitration. In March 2020, the DOJ completed its first-of-a-kind arbitration in *United States vs. Novelis*[84] where the parties, i.e., the DOJ and Novelis, decided to bring the sole issue in dispute before an arbitrator rather than to trial in federal court in merger litigation[85].

In the EU, the EC has long required, since *Elf Acquitaine vs. Thyssen and Minol*[86], arbitration of disputes between private parties arising out of Commission requirements imposed when conditional merger clearance was granted. Therefore, in the two main jurisdictions of FRAND-related disputes, antitrust authorities are authorised to use arbitration.

In November 2020, the DOJ showed its tendency toward using arbitration by issuing a new guidance on when it may consider the use of arbitration. The new Arbitration Guidance applying to any civil litigation brought by the Antitrust Division, focuses on the use of arbitration to resolve merger disputes. The DOJ calling arbitration as "*an important litigation tool that the Antitrust Division has at its disposal*", describes it advantages of arbitration including efficiency in time and government resources, and benefiting from deep antirust experts. It also identifies the following factors that may lead the DOJ to pursue arbitration instead of litigation for disputes: the issues in the case are clear, easily agreed upon; complex and they would benefit from adjudication by an expert in antitrust law. This was also held by the US Supreme Court where it stated that potential complexity in antitrust matters should not suffice to ward off arbitration[87].

Therefore, the international character of FRAND disputes favours arbitration in antitrust-related disputes, no matter if an antitrust authority files an action or a private party does. In any case, both parties engaged in dispute should agree upon

[84] Available at: https://www.justice.gov/atr/case-document/file/1257031/download.
[85] Available at: https://www.justice.gov/opa/pr/justice-department-wins-historic-arbitration-merger-dispute.
[86] Available at: https://ec.europa.eu/competition/mergers/cases/decisions/m235_en.pdf.
[87] *Mitsubishi. Supra fn.* 80. At. 633.

an arbitration agreement.

## C. Contract-related disputes: setting FRAND rate

As mentioned, one major FRAND-related dispute occurs when setting FRAND licensing terms including royalty rate for SEPs. The ECJ[88] and the EC[89] have recognised that the terms and conditions of FRAND licensing are arbitrable. Arbitration is more advantageous than litigation to settle disputes over setting FRAND royalty rate due to its expertise, flexibility, confidentiality, and finality[90]. Likewise, in ICT industry with multitude of patents in several jurisdictions, setting royalty rate through a single proceeding is preferable than costly patent-per-patent, country-by-country serial and parallel litigations[91].

It should be noted that evaluating various patent portfolios is a great challenge for both judges and arbitrators, as they consist of many patent families which are defined as groups of patents granted by different jurisdictions but about the same innovation. Due to their greater flexibility in scope, proceeding design, and decision criteria, it is argued that arbitral tribunals are in a better position to manage this challenge than courts which are basically designed for investigating individual patents. While courts are limited to territorial principle and to domestic SEPs of a portfolio, arbitration proceedings can be more flexible as they can include it as a whole. In addition to tremendously saving time and cost, arbitration prevents contradictory judgments that may result from court litigations.

Arbitration is also more advantageous over court in setting *global* FRAND rate. The UK courts[92] were the first in determining global FRAND rate. In the *Unwired*

[88] *Huawei. Supra fn. 12.* Para. 68.
[89] Brussels, 29.11.2017 - COM(2017) 712 final - 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. [hereinafter: EC, setting out the EU approach to SEPs]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0712. P. 11.
[90] Contreras, 'Global Rate Setting: A Solution for Standards-Essential Patents?'. Pp. 726-727.
[91] ICC Reply to the European Commission's public consultation on Patents and Standards, Feb. 15, 2015. Available at: https://www.iccgermany.de/fileadmin/user_upload/Content/Wettbewerb/ICC_Reply_to_EC_Consultation_on_Patents_and_Standards.pdf. P. 2.
[92] UKSC 2018/0214.

*Planet* case where the UK Supreme Court confirmed the ability of the UK courts to set terms for global FRAND licences, the court set a global royalty for the patents issued by its domestic patent office as well as for the other patents incorporated in the standard at issue. Despite criticisms[93], this approach has been followed by the US[94] and recently by China[95]. However, it is yet uncertain if the decisions over global FRAND rates set by an initial court are recognised by courts in other jurisdictions, given the fact that the national courts are always territorial within their own borders, and they are limited to their territory. Consequently, setting a global rate by courts may lead to early litigations too, since SEP holders and implementers instead of focusing on their negotiations may race for looking to forum shop, i.e., going to a court which gives the most favourable outcome.

One may compare setting global FRAND rate to anti-suit injunction which is itself a practice that has created a chaos in FRAND-related disputes[96], where parties go to the court which will give them the most favourable outcome and request anti-suit injunctions from their jurisdiction of choice to avoid being overtaken by parallel proceedings in other less favourable jurisdictions. Anti-suit injunctions have been raising significant concerns. Chinese courts profit this by granting anti-suit injunction to prevent patent infringement actions in other national courts, where they, in turn, react by granting anti-anti-suit injunctions to prevent enforcement of the original anti-suit injunctions[97]. We believe that setting a global rate by courts and issuing anti-suit injunction are both illegitimate interventions in foreign sovereignty.

In case parties admit the global rate, international arbitration can set it with no

[93] See some of the criticisms in Contreras, 'Global Rate Setting: A Solution for Standards-Essential Patents?'
[94] *TCL Commc'n Tech. Holdings, Ltd. vs. Telefonaktiebolaget LM Ericsson*, CASE NO: SACV 14-341 JVS(DFMx) (C.D. Cal. Mar. 9, 2018). At 50-52.
[95] *Guangdong OPPO Mobile Telecommunications Co Ltd vs. Sharp Corp* (2020). Available at: https://www.chinajusticeobserver.com/law/x/sharp-corp-v-guangdong-oppo-mobile-telecommunications-20210819.
[96] Webinar on FRAND Disputes: Court Jurisdiction vs. ADR, February 22, 2021. At: https://www.wipo.int/amc/en/events/workshops/2021/frand.
[97] Sophie Britton, 'AIPPI Panel Session 10 : Anti-Suit & Anti-Anti-Suit Injunctions', *Kluwer Patent Blog*, 2021 <https://patentblog.kluweriplaw.com/2021/10/27/aippi-panel-session-10-anti-suit-anti-anti-suit-injunctions/>.

territorial limitation nor intervention in national sovereignty, that can avoid potential forum shopping.

Although arbitration seems more appropriate for this type disputes, it is not free of challenge as discussed in the upcoming sections.

## 1. Essentiality assessment

FRAND rate highly depends on the essentiality assessment of SEPs which is a very technical, complex, and time-consuming issue. According to a pilot study for essentiality assessment of SEPs[98], the assessments are not a simple binary exercise but depend on multiple factors including (a) essentiality precise definition, what varies across SDOs; (b) the version of standard that is investigated; and (c) the meaning and interpretation of technical vocabulary.

In addition, the concept of essentiality differs from patent validity, patent infringement, patent enforceability, or patent value, even if they are related to each other and are all important in licensing negotiations[99]. Assessments may take 0.3 to 6 person-hours per patent and are usually carried out by technical engineers, patent attorneys and patent lawyers. Costs range from 300 to 10000 euros per patent[100].

Essentiality can be legally determined by courts only, therefore, if raised in an arbitration proceeding, it will be troublesome for the arbitrator.

## 2. InterDigital vs. Huawei

The *InterDigital vs. Huawei*[101] case is one of the FRAND cases settled through arbitration which well demonstrates our discussed challenges. Agreeing upon arbitration requires agreement on certain basic matters including the substantive law governing the dispute and the procedural law governing the suits of the arbitration.

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[98] Rudi Bekkers, Henkel, and others.
[99] *Ibid.* P.111.
[100] *Ibid.* P.114.
[101] *Interdigital Commc'ns, Inc. vs. Huawei Inv. & Holding Co.*, 166 F. Supp. 3d 463 (S.D.N.Y. 2016). [hereinafter: *Interdigital vs. Huawei*]

InterDigital is an IPRs owner which committed to certain SDOs to grant licence to certain patents on FRAND basis. Huawei is member of several SDOs. Having disputed what constitutes "reasonable" compensation, InterDigital spent several years in legal actions with Huawei for infringing certain InterDigital patents, over the meaning of the FRAND commitment and setting FRAND royalty rate or per-unit amounts. The dispute with Huawei involved actions in China, a competition law complaint before the EC, trials before the US International Trade Commission, and lawsuits in the District of Delaware[102].

After years of disputes, the parties finally, in 2013, agreed to settle their dispute before an Arbitral Tribunal in Paris under the Rules of Arbitration of the ICC[103](*lex fori*). The arbitration agreement stipulated that New York law would govern the interpretation of the agreement, and further provided that disputes which were not within the scope of arbitration can be brought before state and federal courts in the State of New York[104].

The parties being unable to determine the applicable law to the dispute, the arbitration agreement explicitly provided that no specific law would govern the main question of the dispute. They instead agreed to "*cite law from any jurisdiction*" in arguing what patent licence terms would constitute FRAND compensation[105].

The Arbitral Tribunal awarded InterDigital an initial royalty payment and ordered Huawei to pay the certain royalty[106]. InterDigital filed a petition before the District Court of New York for an enforcement[107], while Huawei filed an appeal before the Court of Appeal in Paris seeking to vacate the award[108] and cross-petitioned to stay the enforcement proceeding.

The District Court, having highlighted the failure of the arbitration agreement to stipulate substantive law for the central question of the dispute, stayed InterDigital's

[102] InterDigital, Inc., Quarterly Report 8–16 (Form 10-Q) (May 1, 2014), Available at: https://www.sec.gov/Archives/edgar/data/1405495/000140549516000071/idcc-q26302016.htm
[103] *InterDigital vs. Huawei*. *Supra fn*. 101. At 467.
[104] *Ibid.* At 468.
[105] *Idem*.
[106] *Ibid.* At 466.
[107] *Ibid.* At 469.
[108] *Idem*.

enforcement petition by stating that "*a stay is appropriate in this case to avoid the possibility of inconsistent results between this Court's determination on enforcement and the Paris Court's decision on vacatur*"[109]. The District Court noted that the New York Convention in Article V(1)(e), divides jurisdictions into the *primary* and the *secondary*[110]. The courts of the country in which, or under whose law the arbitration award law is made, have *primary* jurisdiction to determine the enforceability of the arbitration award, and have broad discretion to set aside arbitral decisions[111]. In contrast, a court with *secondary* jurisdiction may only decline to enforce an award for a limited set of specified reasons enumerated in Article V of the New York Convention. The District Court then concluded that the scope of review of the Award in France as the originating country is broader than the review available in the US; and France can also rely on its local law to set aside the Award[112].

Regarding the applicable law, the District Court declared that the arbitration agreement was governed by New York law only to the interpretation of the arbitration agreement. However, the substantive law, under which the tribunal determined what royalty rate was, was not New York law because the parties had agreed to cite to law from any jurisdiction[113].

New York was not primary jurisdiction under the New York Convention because the arbitration was not held in New York, and the law that the arbitrators applied was not New York law either. Given that New York courts had only secondary jurisdiction, the parties could only contest whether the US should enforce the arbitration award. The District Court exercised its discretion to stay InterDigital's enforcement action[114] on a basis that the award was suspended by a competent authority of the country in which or under the law of which the award was made, i.e., France.

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[109] *Ibid.* At 473.
[110] *Ibid.* At. 469.
[111] *Karaha Bodas vs. Perusahaan Pertambangan Minyak,* 335 F.3d 357 (5th Cir. 2003). At. 364.
[112] *InterDigital vs. Huawei*. *Supra fn*. 101. At. 470.
[113] *Ibid.* At. 469.
[114] *Ibid.* At. 472.

In 2016, InterDigital revealed that it prevailed in the Paris Court of Appeal decision, which denied Huawei's request by ruling that there were no grounds for annulment of the award. Shortly thereafter, Huawei indicated to InterDigital that it has filed an appeal of the Paris Court of Appeal decision to the highest court in France, Cour de Cassation. On April 26, 2016, the parties submitted a proposed order to the New York District Court, notifying the court of their agreements regarding payments under the partial and final arbitration awards. As it considered and followed an appeal of the Paris Court of Appeal decision, Huawei agreed to make payments (without prejudice to its right to a further appeal) of amounts which had become due under the arbitration awards. After the first payments in August 2016, InterDigital and Huawei signed a multi-year, worldwide, non-exclusive, royalty-bearing patent licence agreement[115].

As a result of their 2016 licence agreement, the companies settled all proceedings related to this arbitration. Accordingly, the parties agreed on a voluntary dismissal of the New York proceedings, which were closed on September 8, 2016. In accordance with the agreement, Huawei also asked the French Cour de Cassation to dismiss the Paris proceedings, which were then dismissed on October 13, 2016[116].

One may view the *InterDigital* as an evidence proving arbitration as complex and time-consuming as litigation particularly when parties want to keep fighting at the award enforcement stage. Nevertheless, we should bear in mind that setting FRAND rate is a very technical issue, and it may take long even when two parties are fully and truly willing to reach an agreement.

## IV. Competition law as a public policy barrier in enforcing arbitral award

Arbitral awards are binding and final, however, in specific circumstances, they may

[115] Available at: https://www.sec.gov/Archives/edgar/data/1405495/000140549516000076/R10.htm.
[116] *Idem*.

be annulled by courts of the seat of arbitration or declared unenforceable by courts in where the enforcement is sought.

Competition law plays a major role in those FRAND-related disputes where the enforceability of arbitration award is challenging because (a) the ECJ has ruled that EU competition law is a matter of public policy within the meaning of the New York Convention; and (b) one of the grounds to refuse recognition and enforcement of an arbitration award is where the award would be deemed contrary to the public policy of the country where such recognition and enforcement are sought[117]. Accordingly, what needs to be examined is that if a reviewing court in an EU Member State finds an arbitral award in violation of EU competition law (e.g., when it finds the royalty set is discriminatory, excessive or in any manner abusive within the meaning of Article 102 TFEU), can the court annul or refuse to recognise the award on the foundation of public policy?

As a matter of fact, according to the NY Convention, annulment and refusal of an award is possible if it is against public policy of the reviewing court. Therefore, the central question is whether the EU competition law is a part of the public policy in Member States. The *Eco-Swiss*[118] answers this question in favour of public policy, however, as shown in the following, there exist no harmonised application by the courts of Member States. Otherwise, the answer would be easy: YES, the reviewing courts can annul or refuse such an award. In addition, due to the lack of agreement on the definition of public policy amongst Member States, there are several inconsistencies between their courts as well as amongst the different levels of a court.

Additionally, the so-called minimalist and maximalist approaches of the award's scrutiny has led to a situation where some national courts do not review the awards on the merits[119], while some others review the award profoundly to make sure that

[117] Articles V(1) and (2) of the New York Convention.
[118] *Case C-126/97 Eco Swiss China Time Ltd. vs. Benetton Int'l N. V., EU:C:1999:269*. [hereinafter: *Eco-Swiss*]. Paras. 36–39.
[119] A. Mourre and L. Radicati di Brozolo, 'Towards Finality of Arbitral Awards Two Steps Forward and One Step Back', *Journal of International Arbitration*, 23.2 (2006), 171–88 <https://doi.org/https://doi.org/10.54648/joia2006011>. P. 172.

competition rules have been correctly applied by the arbitrators[120].

Here are some examples: In the Netherlands, the Court of Appeal of The Hague upheld a lower court's refusal to recognise the US arbitral awards in *Marketing Displays International Inc. vs. VR Van Raalte Reclame BV,* on the basis that the awards were considered incompatible with Article 81 of the EC Treaty (101 TFEU) and thus violated public policy. In France, in the *Thalès* case in 2004, the Paris court of appeal found that an arbitral award can be quashed only where its decision entails an *effective and flagrant* violation of international public policy. This approach was criticised as an undue limitation to the court's powers to review the award. The opposite approach was taken by the Belgian first instance court in the *SNF vs. Cytec* where the court reviewed the case on the merits and quashed the arbitral awards on the basis that the contract at issue was contrary to public policy. But later, the limited control taken by Thalès was endorsed in 2009 both by the Court of Appeal of Brussels in the *SNF vs. Cytec* and by the French Court of Appeal of Paris in *Halyvourgiki vs. Linde*. Both decisions confirm that courts should exercise restraint when entertaining a challenge based on an alleged breach of European competition law[121].

In Switzerland the *Eco-Swiss* ruling has been interpreted differently, as its Supreme Court stated that the ECJ qualified Article 101 TFEU as public policy when it "*constitutes a fundamental provision which is essential for the accomplishment of the tasks entrusted to the Community and, in particular, for the functioning of the internal market*"[122]. Therefore, the ECJ has in fact limited the scope of such qualification to the situations where the public interest of the *Community* is at risk[123], and one cannot draw from it a more general and undisputed principle which

[120] Damien Geradin, 'Public Policy and Breach of Competition Law in International Arbitration: A Competition Law Practitioner's Viewpoint', *TILEC Discussion Paper No. 2016-029*, October, 2016 <https://doi.org/10.2139/ssrn.2786370>. P. 3.
[121] The Court of First Instance of Brussels in the *SNF SAS vs. Cytec Industries BV,* set aside the award, and the Court of Appeal of The Hague in *Marketing Displays International Inc. vs. VR Van Raalte Reclame BV*, refused to enforce the award, both having found the awards in breaching of Article 101 TFEU.
[122] *Eco-Swiss*. *Supra fn*. 118. Para. 36.
[123] Decision of the Swiss Supreme Court ("Federal Tribunal") of March 8, 2006 in the case of *Tensaccia S.P.A vs. Freyssinet Terra Armata*. R.L.

all countries can claim to belong to. The Supreme Court stated that mandating the public policy of the EU in competition law domain requires internal procedural rules to enable domestic courts of Member State to set aside an award on the ground of disregarding the rules of national public policy[124].

The Swiss Supreme Court also highlighted that public policy is an undetermined legal concept, it is not sure that the same principles would be considered as fundamental on the entire planet, as the diversity of civilisations may perfectly well justify fundamental principles of different or event opposed nature. Despite it is usually interpreted as the core principle of a legal system, there is no consensus that competition law qualifies as fundamental rules so that it should be necessarily part of any legal order[125]. The Supreme Court stated that it would be presumptuous to take the view that European or Swiss concepts in the field of competition law should evidently be imposed to all the states of the planet as a panacea, because such concepts are tied to a certain type of economy and to a certain regime. Swiss law itself acknowledges that not all restrictions to competition are damaging and it excludes certain goods or services from free competition. The Supreme Court concluded that undoubtedly the provisions of competition laws, whatever they may be, do not belong to the essential and broadly recognized values which, according to the concepts prevailing in Switzerland, would have to be found in any legal order. Consequently, the violation of such a provision could not be considered as a violation of public policy that can raise the possibility of annulment or refusal.

Whether or not competition rules are assumed as a part of public policy, refusal to enforce an arbitral award depends on both the merits of the case and the standard under which a domestic court reviews the case. The ECJ in *Eco Swiss* held that based on the rules adopted by the Member States within the framework of their procedural autonomy, the review of international arbitral awards, if raises question of EU law, may be "*more or less extensive depending on the circumstances*"[126].

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http://www.swissarbitrationdecisions.com/sites/default/files/8%20mars%202006%204P%20278%202005.pdf

[124] *Idem.* Para. 3.1

[125] *Idem*.

[126] *Idem*. Para. 3.2.

The issue was raised again in *Genentech*: are arbitrators required to apply the EU competition law, or can they restrict themselves to what the parties have submitted? In 2016, the Court of Appeal in Paris asked for a preliminary ruling concerning the interpretation of Article 101 TFEU, in the context of an action for annulment of arbitral awards filed by Genentech Inc.

According to the French approach, reviewing an international arbitral award on the ground of the international public policy is possible where the question of public policy was raised and debated before the arbitral tribunal. The Advocate General (AG) Wathelet in *Genentech* observed that the minimalist approach of review taken by French courts reviewing arbitral awards was contrary to the effectiveness of the EU law. He favoured a comprehensive EU competition law assessment independent of the parties' submissions[127]. He argued that limiting the scope of the review of arbitral awards on the ground that the infringement of public policy was raised and debated before the arbitrators, is contrary to the effectiveness of EU law[128]. The principle of effectiveness or effective judicial protection obliges Member State courts to make sure that national remedies and procedural rules do not make claims based on EU law impossible in practice or excessively difficult to enforce[129]. In the American side, the US Supreme Court in *Mitsubishi* stated that "*while the efficacy of the arbitral process requires that substantive review at the award-enforcement stage remain minimal, it would not require intrusive inquiry to ascertain that the tribunal took understanding of the antitrust claims and actually decided them*".

The AG then stated that the system for reviewing the compatibility of international arbitral awards with substantive EU law through the public policy reservation shifts responsibility for the review downstream, namely to the courts of the Member States, rather than upstream, to arbitral tribunals. He refers to the judgement in *Gazprom* where the ECJ held that the arbitral tribunals "*constituted pursuant to an*

[127] Opinion of Advocate General Wathelet, 17 March 2016, Case C-567/14, *Genentech Inc. vs. Hoechst GmbH and Sanofi-Aventis Deutschland GmbH.* EU:C:2016:177. [hereinafter: Opinion of AG Wathelet, *Genentech*] Paras. 55–72.
[128] *Ibid*. Para. 58.
[129] Opinion of Advocate General, JÄÄSKINEN, 7 February 2013 (1), Case C-536/11, *Bundeswettbewerbsbehörde vs. Donau Chemie AG and Others*. Para.3.

*agreement*" are not courts withing the meaning of Article 267 TFEU[130] and cannot refer questions for a preliminary ruling[131]. The Advocate General then concluded that it is therefore for the courts of the Member States to examine the compatibility of arbitral awards with EU law where an action is brought before them for annulment or enforcement, or where any other form of action or review is sought under the relevant national legislation[132]. Similarly, the US Supreme Court had pointed out that the US national courts would have the opportunity at the award-enforcement stage to ensure that the legitimate interest in the enforcement of antitrust laws had been addressed.

The AG continued that the arbitrators' task is to interpret and apply the contract binding to the parties correctly. They, however, may naturally need to apply EU law as well if it forms part of the law applicable to the contract (*lex contractus*) or the law applicable to the arbitration (*lex arbitri*). Arbitrators are not responsible of reviewing compliance with European public policy rules, but the reviewing courts of Member States are responsible to undertake this task during an action for annulment or proceedings for recognition and enforcement[133]. Similarly, the US Supreme Court had stated that the arbitral tribunal is bound to effectuate the intentions of the parties. Where the parties have agreed that the arbitral body is to decide a defined set of claims which includes, those arising from the application of American antitrust law, the tribunal therefore should be bound to decide that dispute in accord with the national law giving rise to the claim.

The ECJ, however, in the *Genentech* case did not take any position regarding the standard of review which should be applied by Member States' courts in reviewing arbitral awards.

## V. Closing remarks and Conclusion

Although Arbitration is increasingly receiving attention in the eyes of technology

[130] Case C-536/13, Gazprom, EU:C:2015:316. Para. 36.
[131] *Eco-Swiss*. *Supra fn*. 118. Para. 40.
[132] Opinion of AG Wathelet, *Genentech*. *Supra fn*. 127. Para. 59.
[133] *Ibid*. Para. 61.

standards players, public authorities and policy makers, institutional bodies, and academia[134], in a way that it is progressively being equipped with multiple guidelines and practices, it is still engaged with some challenges that call for a higher degree of attention from public authorities and academia. This issue seems more crucial in Europe as it is argued that the EU has limited systematic and up-to-date empirical data on the extent of SEP litigation, and that the evidence on recent trends in SEP litigation in Europe are poor. It is even unclear how many cases are resolved through arbitration or through negotiations under the threat of litigation[135].

It should be noted that in our paper emphasising the challenges of arbitration in FRAND-related disputes was not to say that it could not or should not be seen as an effective mechanism in settling FRAND disputes, rather the goal was to describe the problems in order to explore relative appropriate solutions. If the EC and the US FTC encourage arbitration for settlement of FRAND related disputes, it is reasonably expected from them to provide clarification over the barriers of competition policy. For this purpose, the EC in particular can clarify some ambiguities such as (a) whether all types of violation of competition law, whether hardcore or not, constitute the same degree of public policy concern, or should a domestic court merely limit the public policy exception to the serious violations of competition law such as price-fixing, and (b) to what extent a domestic court can apply public policy exception in its revision.

We believe that FRAND disputes are international and mostly commercial, thus arbitration would be more favourable than court, due to the following advantages:

- As a "*one-shot dispute settlement mechanism*"[136], arbitration has the possibility to avoid multiple appeals and retrials which are detrimental to the international business and are frequently the case in multi-level court

[134] See, e.g., Kai-uwe Kühn, Fiona Scott Morton, and Howard Shelanski, 'Standard Setting Organizations Can Help Solve the Standard Essential Patents Licensing Problem', *CPI Antitrust Chronicle*, March (Special Issue), 2013.; European Commission, European Commission, Press Release, Antitrust: Commission sends Statement of Objections to Samsung on potential misuse of mobile phone standard-essential patents, IP/12/1448, 21 December 2012. Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_12_1448; and Lemley and Shapiro, 'A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents'.
[135] Baron, Geradin, and others. P. 192.
[136] Mourre and Radicati di Brozolo. P. 171.

litigations[137]. Arbitral awards are final[138] that is in conformity with parties' expectation and is essential for an effective dispute settlement mechanism as a vital means to the growth of international trade in a multidimensional framework[139].

- The existence of the New York Convention ratified by 168 countries, which allows the enforcement of international arbitral awards, while there exists no equivalent treaty that can allow for the reciprocal enforcement of civil judgments.
- Arbitration provides parties with the possibility to opt for experts who not only have legal knowledge but are also aware of technical and economic complexities of SEP/FRAND issues[140]. In fact, while in litigation, judges ask for external experts to provide them with scientific opinion, appointing experts of the filed as arbitrator seems to be a good shortcut.

We also agree with the following benefits numerated by the EC for resolving FRAND disputes via arbitration:

- More consistent outcomes as parties can no longer do forum shopping,
- Higher quality outcomes as a result of applicable competences,
- Specialism and cumulative knowledge by the arbiters,
- Fairer outcomes especially when licensing conditions are not discussed under the threat of injunction,
- More creative and more focused on problem solving than litigation which has

137 *Idem*.

138 Geradin, 'FRAND Arbitration: The Determination of Fair, Reasonable and Non-Discriminatory Rates for SEPs by Arbitral Tribunals'. P. 13. See also paras. 39-40 of the WIPO, Guidance on WIPO FRAND Alternative Dispute Resolution. stipulating that: "[b]y agreeing to arbitration, under the WIPO Arbitration and Expedited Arbitration Rules the parties waive their right to any form of appeal. An award under WIPO Rules is binding on the parties and enforceable internationally. However, in exceptional cases, parties may wish to consider whether under certain circumstances they wish to agree that final awards issued by the arbitral tribunal are subject to appeal to a different arbitral tribunal. Parties also can agree to limit such appeal to selected issues addressed in the award". Available at: <https://www.wipo.int/export/sites/www/amc/en/docs/wipofrandadrguidance.pdf>.

139 Mourre and Radicati di Brozolo.P. 171.

140 Geradin nevertheless, observes that the best FRAND arbitrators are not necessarily holding prior experience with SEP or IP matters, but the arbitrators good in numbers and calculation have superiority, see: Geradin, 'FRAND Arbitration: The Determination of Fair, Reasonable and Non-Discriminatory Rates for SEPs by Arbitral Tribunals'. Pp.8-9.

always been based on an adversarial model and once the dispute is over, the parties face no appeals, delays, continuing expenses, or unknown risks[141].

[141] Rudi Bekkers, Birkman, and others, *Patents and Standards A Modern Framework for IPR-Based Standardisation* (European Commission, 2014) <https://doi.org/10.2769/90861>. P. 178.

# *Conclusion*

The "EC Proposal on SEP Regulation"[1] was released in April 2023 just in days when this doctoral work was about to conclude. The nearness between the topics addressed by the EC Proposal and those discussed in this work promises that the present research has been successful in dealing with the main SEP subject matters.

As each chapter of this thesis has its own specific conclusion, here I avoid repeating them. Instead, I would like to provide those who may wish to carry on this line of research, with some comments which, I believe, should be taken into account at the stage of defining the scope of any future SEP research. Where these comments are linked to the EC Proposal subject matters, they are discussed more in detail.

## *I.* SEP as a distinct being

SEPs are SEPs, they are neither patents nor standards. It is true that they inherit certain characteristics from their parents, but it does not prevent them from developing their own unique characteristics. Though the above statement may seem very simple and basic, it is sometimes neglected in scholarly works where one parent receives much more attention than the other. Such an unbalanced attitude, which stems from the fact that researchers feel more comfortable in emphasising that aspect of SEPs which falls in their domain of expertise, makes their assessments biased. The inevitable result of such a biased assessment can be an unjustified right that the researcher may allocate to one side of the problem. For instance, when one is weighted in favour of IP rights, it is the SEP holders and their great role in the innovation which are exaggerated in his work, and any limitation to the holders'

[1] Proposal for a Regulation of the European Parliament and of the Council on standard essential patents and amending Regulation (EU)2017/1001, Brussels, 27.4.2023 COM(2023) 232 final. [hereinafter: EC Proposal on SEP Regulation]. Available at: https://single-market-economy.ec.europa.eu/system/files/2023-04/COM_2023_232_1_EN_ACT_part1_v13.pdf.

entitlement is labelled anti-innovation. On the other hand, if one is inclined toward the implementer, they emphasise their rights under the title of securing public interest or consumer welfare by claiming that the standard is essential for additional market entry.

None of these attitudes are helpful. Becoming SEP brings certain benefits, and it is exactly because of them that the patent holders are willing to put their patents in competition during the standard developing process. This process can be financially beneficial to them to the extent that they voluntarily commit to license their SEPs on FRAND terms whether on royalty free or on FRAND rate, while they basically had the option of keeping their exclusive patent rights, and licencing at whatever rate that they could, or keeping their patents for themselves. However, in assessing SEP/FRAND matters, one should not ignore the SEP holders' rights. They surely did a great job, and they should be compensated appropriately. Our highly SEP-integrated world requires that SEPs and SEP holders should be treated correctly in order to be incentivised for their next investment on SEP. If a legal system deprives SEP holders from their rights, they may be pushed to walk away from standardisation as they may be convinced that they are better off if they stay away from SEP and its over-regulated business. Nokia claimed that the high costs associated with intensive R&D efforts made some independent developers and suppliers in mobile cellular networks disappear from the business[2]. This includes some big names such as Nortel, Motorola, Siemens, Lucent, and Alcatel. One should not forget that this is a business with constrained profit margins where successfully navigating through the market challenges requires an established player with diversified revenue streams, and the ability to generate licensing income from the intellectual property it contributes to. Many prominent tech companies, including Amazon, Apple, Cisco, and Google, have chosen not to invest in developing mobile networks and standards[3], nor make any contribution in it in any

[2] Nokia claimed this at p. 3 of the *Nokia Comments on the DG Grow Call for Evidence for an Impact Assessment*, 2022 <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13109-Intellectual-property-new-framework-for-standard-essential-patents/F3257414_en>.
[3] *Ibid*, Appendix I.

substantial way just due to these difficulties[4].

One may be inclined to see the parties in a SEP debate through the classical opposing positions of the weaker and the stronger. However, we should note that the implementers of some SEPs are very often the actual holders of some other SEPs, and they are not weak enterprises or SMEs at all. In dealing with the implementer's rights, the important point is that their rights must be differentiated from the public interest, consumer welfare, and the rights of end user. The SEP implementers are firms with their own business interest and strategies, and simply advocating their rights does not necessarily converge with consumer welfare or public interest.

However, it is true that in some particular industries including IoT, there is a need to support the SMEs at the policy level like what the EC recently proposes[5] including that the SMEs receive free advice on incensing negotiations, and trainings from a competence centre on SEPs created within EUIPO[6]. The proposal also assigns a duty on SEP holders as suggesting that (a) they should offer FRAND terms to micro, small, and medium-sized implementers that are more favourable than what they offer to larger enterprises for the same standard, and (b) they should consider providing discounts or royalty-free licensing for low sales volumes regardless of the implementer's size[7].

As one of the main concerns of the present research, exploring ways for striking a balance between SEP holder and implementer must be reflected in any SEP research. The EU Council encourages the Commission to promote the effective sharing of IP, in particular, critical assets such as SEPs, while ensuring adequate and fair compensation for technology developers[8]. The success of a standard

[4] *Idem*. Nokia claims that in examining the participants of 3GPP meetings, where mobile standards are developed, one observes that there is a significant number of companies attending without actively contributing ideas and technology to the development process.
[5] EC Proposal on SEP Regulation. *Supra fn.* 1. P. 8.
[6] *Idem*.
[7] Article 62, EC Proposal on SEP Regulation. *Supra fn.* 1. The discounts or royalty-free arrangements must be fair, reasonable, and non-discriminatory.
[8] Council conclusions (12339/20) on Intellectual property policy and the revision of the industrial designs system in the Union, as adopted at its meeting on 10 November 2020. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020XG1110%2801%29.

depends on its wide implementation and as such, every stakeholder should be allowed to use it. The EC proposal on SEP regulation clearly states that the dissemination of technology should be for the *mutual* advantage of SEP holders and implementers[9].

## II. Type I or II Errors

Error Types play a crucial role in competition law enforcement and policy as they directly affect consumer welfare and market integration[10]. Type I errors, i.e., over-regulation/enforcement, mistakenly prohibiting procompetitive activities, create a climate of caution among firms, leading them to be less willing to engage in business activities due to the fear of being wrongly accused of anticompetitive behaviour. This can hinder business promotion, limit consumer access to products and services, and impede overall market integration. Type II errors, i.e., under-regulation/enforcement, mistakenly permitting anticompetitive activities, have their own adverse consequences as they make authorities fail to identify potential monopolies and harming consumers. Preferring Type I error to Type II error or vice versa is an old debate but still relevant in competition law context, which aims at preventing anticompetitive behaviour that harms consumers and businesses, while avoiding unnecessary intervention that stifles legitimate business activities. The costs of Type I and Type II errors need to be carefully considered.

In SEP context, this debate becomes more complex as innovation gets closer to an antitrust case. Overly aggressive enforcement can deter firms from engaging in procompetitive behaviour and pursuing innovative activities. If companies fear that legitimate conduct may be deemed anticompetitive, they may be less willing to take risk and invest in innovation.

[9] EC Proposal on SEP Regulation. *Supra fn.* 1. P. 10.

[10] This debate started by the work of Easterbrook where he focused on the limitations of what antitrust can effectively accomplish. When antitrust actions go beyond their capabilities, they can result in type I and type II errors, see: Frank H Easterbrook, 'Limits of Antitrust', *Texas Law Review*, 63.1 (1984), 1 <https://chicagounbound.uchicago.edu/journal_articles>;. The debate was highllighted later on by several scholars, incluing Monti, *EC Competition Law*.; and Jonathan B. Baker, 'Taking the Error Out of "Error Cost" Analysis:What's Wrong With Antitrsut's Right', *Antitrust Law Journal*, 80.1 (2015) <https://doi.org/10.4324/9781003235361-12>.

Type II errors (false negatives) in competition law enforcement can potentially impede innovation in SEP-related sectors including IoT. If dominant players engage in anticompetitive practices that go undetected, it may discourage new entrant startups from developing innovative SEP/IoT solutions. This could lead to reduced competition and less innovation in the long run. On the other hand, type I errors (false positives) that overly restrict collaborative efforts or cooperation in the development of industry standards can hinder interoperability and impede the growth of the IoT ecosystem.

*Per se* rules imply that Type I errors are tolerated, while safe harbours mean that we tolerate Type 2 errors[11]. Contrary to the US where there exist neither *per se* rules nor safe harbour regarding patent pools, in the EU, both are present, where the explicit safe harbour provisions set in the Technology Transfer Guidelines (TT Guidelines) are encouraged. However, in terms of the *per se* rules, the prohibition of the inclusion of non-essential/substitute patents into pools seems an explicit preference of type I errors which would lead to a chilling effect on business activity. As demonstrated in the patent pools chapter, the US approach is more inclined towards pro-innovation and free markets. It does not view inclusion in patent pools as anti-competitive *per se*. Instead, it advocates for a case-by-case analysis based on the rule of reason.

The outcomes of the research show that the EU needs to relook its current approach in ruling out the inclusion of binary patents whose nature is unclear as it depends on several parameters including the time of examination. Otherwise, it might fail to encourage SEP holders and implementers to come and innovate in the EU, make and sell their products in the EU, and for the case of European SEP holders and implementers, to be competitive in the non-EU markets[12].

Evidently, ensuring a balance between preventing anticompetitive behaviours and encouraging innovation, as well as minimising both Type I and Type II errors are the primary objectives of competition law, antitrust authorities and courts. In this

[11] Monti, *EC Competition Law*. P. 17.
[12] Therefore, I believe that my recommendations regarding patent pools are in line with the objectives of the EC.

context, the outcomes of this research suggest that at the legislative level, the policy makers should be careful of over-regulation to avoid creating a suppressive space against innovation and market dynamism. In case of addressing anticompetitive behaviours, courts (or antitrust authorities) can later evaluate the cases based on their real facts and in the context of the case circumstances in order to ideally make a free-error decision or evaluate which error Type can be less harmful as a whole.

In seeking an injunction in FRAND encumbered SEPs, the behavioural framework set by the ECJ in *Huawei* [13] suggesting reciprocal and mutual obligations for both parties which needs a case-by-case analysis, is a great example of Court's attempt to avoid or to minimise both the error Types. Neither a lenient approach (suggesting seeking injunction possibility without any condition), nor a strict approach (proposing absolute ban of seeking injunction for the SEP holders under FRAND commitment) are appropriate solutions.

## III. "*It is impossible to identify the soul of competition law.*"[14]

In every realm of law including competition law, the underlying objectives, which it intends to accomplish, influence every facet of its implementation and understanding. This becomes more determinative if the written text of the law lacks adequate clarity, as it is the case in terms of competition law application an interpretation in SEPs. In addition, not only there exists a disagreement with regard to the competition law objectives between the EC, the ECJ and Advocate Generals, but also the gaols which EC itself defines for its commissioners vary in time[15]. In such a circumstance and given the vast variety in the objectives defined for EU competition law, which range from securing efficiency, welfare, freedom and market structure to European integration and competition process, it is very likely that the analysis of an antitrust case in SEPs varies depending on the goals one sets. For example, one may tolerate patent pools' potential anti-competitive risk, if he

[13] Case C-170/13 *Huawei Technologies Co. Ltd vs. ZTE Corp*., EU:C:2015:477.
[14] Monti, *EC Competition Law*. P. 23.
[15] Konstantinos Stylianou and Marios Iacovides, 'The Goals of EU Competition Law: A Comprehensive Empirical Investigation', *Legal Studies*, 42.4 (2022), 620–48 <https://doi.org/10.1017/lst.2022.8>.

puts on the glass of efficiency rather than competition process. These different opinions are equally legitimate for as long as competition law is concerned.

The problem is that the lack of an unchanging set of goals often leads to situations where the law may seek different or even contradictory targets. Therefore, a SEP researcher should not be surprised if he spots different or contradictory regulations, guidelines, or court decisions. Such a researcher is recommended not to limit himself to a very objective in his analysis of a competition law case, but to assess the case comprehensively by taking as many differing goals as possible into account and to check how the result of his analysis may change depending on the goal adopted.

In its Proposal on SEP Regulation, the EC counts SEP holders' and implementers' encouragement to innovate, make and sell products in the EU as its main goals. Achieving these goals sounds possible but necessitates preferring these goals against the other goals sought by competition law, for example, with regard to patent pools' scrutiny, seeking injunction procedures or SEP licensing in IoT sectors.

## IV. Functionalism and technicality in legal approach

As an interdisciplinary topic, SEP problems require interdisciplinary assessments. Law is definitely able to resolve licensing issues, but in the SEP context, it ought to take the technical and economic considerations into account; thereby, the separation of the legal and technical experts is counterproductive. The fact is that the SEP literature is mainly produced by the legal and economic scholars who may inevitably lack an adequate technical foundation in their assessments, while they are technical experts who collaborate in SDOs in order to develop specifications for a standard. It is impossible to find a definite solution or approach in such an interdisciplinary matter as SEP without understanding and taking the requirements of each side into account.

The Commission expresses its concern about the high licensing transaction costs

and the uncertainty about the SEP royalty[16]. Due to the lack of sufficient information, implementers cannot often assess their SEP exposure far enough in advance to be able to consider the licensing costs when planning their business. On the other hand, SEP holders complain about long and expensive negotiations, especially with large implementers. There is currently very little information on SEP licence fees (FRAND royalty) in the literature. Thereby, implementers with little or no expertise on the subject find it impossible to assess the reasonableness of a SEP holder's royalty demand[17].

Based on a targeted survey for start-ups and SMEs whose results are published in the Proposal, around three quarters of respondents agreed that fair and reasonable terms and conditions might depend on functionalities of the standard implemented in a product[18]. And around 70 % thought these terms should be independent of the level of licencing[19].

The approach proposed in Chapter two for licencing level in value chains and setting a royalty rate basis was in fact an attempt to address these issues through incorporating SEPs' technical aspects into the solution for a legal and economic question about them. The main motif behind the proposal stemmed from the idea that the technical characteristics of a TCU must somewhere have their imprint in the way that we address the legal question of "who should be licenced?" and the economic question of "how much royalty should be exchanged?"

With all its benefits, FRAND remains a *subjective* idea upon which it is not easy to agree especially for the parties coming from different disciplines. Yet, as the proposed approach shows, the Internet, cellular, and communications standards have fortunately technical characteristics which can help future researchers determine efficient *objective* parameters based on which a real FRAND rate can be determined.

[16] EC Proposal on SEP Regulation. *Supra fn*. 1. P. 8.
[17] *Idem*.
[18] EC Proposal on SEP Regulation. *Supra fn*. 1. P. 7.
[19] *Idem*.

## V. Transparency

The Commission has acknowledged the need for transparency and predictability in SEP licensing[20]. This idea is also supported by the Council[21] and the European Parliament[22]. As discussed in Chapter one, in order to enhance transparency in patent pools investigations, the public availability of comfort letters and other EC examinations is crucial. In fact, the transparent business review letters in the US have provided its businesses with a higher degree of legal certainty compared to the EU. To achieve transparency, the Proposal suggests an EU-wide solution with a vast essentiality check per patent family, and the creation of a Competence Centre within EUIPO as a centralised alternative dispute resolution[23].

Although theses attempts are inspiring, the review of the Article 3 of the Proposal, counting the tasks of the Competence Centre, reveals that what very likely such a centre will look like is to be more an administrative office than a centre with real competence in IP. In addition, the Proposal obliges SDOs to provide certain information to the Competence Centre. According to the ETSI, providing such detailed information particularly on "*known implementations of the standard*" will place a significant burden on the SDOs[24].

Despite being beyond the scope of the current chapter to elaborate these problems in detail, I would like to mention that if the objective is to increase transparency in SEP licensing, then the proposition made in the Proposal asking for "*making existing information relevant to SEPs available to all stakeholders in a centralised and systematic way*[25]" not only is not the best way to achieve this objective, but

[20] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Making the most of the EU's innovative potential An intellectual property action plan to support the EU's recovery and resilience of 25 November 2020, COM(2020) 760 final.(hereinafter: EC Action Plan).
[21] Council conclusions on intellectual property policy, as approved by the Council (Economic and Financial Affairs) at its meeting on 18 June 2021.
[22] European Parliament resolution of 11 November 2021 on an intellectual property action plan to support the EU's recovery and resilience (2021/2007(INI)).
[23] EC Proposal on SEP Regulation. *Supra fn*. 1. P. 5.
[24] ETSI letter to Mr. Anthony Whelan (Digital Adviser, Cabinet of European Commission President). Anthony Whelan, *Proposal for a Regulation on SEPs – ETSI Views Dear*, 2023, DG-23-07/C <https://s3.documentcloud.org/documents/23780757/dg-23-07_proposal-for-a-regulation-on-seps-etsi-views56.pdf>.
[25] EC Proposal on SEP Regulation. *Supra fn*. 1. P. 18.

also it is unlikely to be even workable[26]. There are other ways available which are more effective including what suggested in Chapter one for patent pools and also the novel approach proposed in Chapter two for resolving the debates in terms of licensing level and royalty base in multitier IoT value chains.

## VI. Balancing vigilance: mitigating risks without dismissing opportunities

When one absolutely rules out a mechanism, it means that he does not believe in law nor the judicial system. In SEP, there are several matters including patent pools on which some have proposed absolute ban, or they guard toward them so that to convince a full prohibition. But why really may one need to fear of establishing patent pools in spite of the existing laws, regulations, and antitrust authorities? Neither such a fear nor the argument of who regard standardisation agreements as cartel-like are justified as these agreements have shown the great capacity in resolving problems for many years.

Doubtlessly, nobody wishes to shut his eyes to the potential and the actual anti-competitive risks. But we need to trust the law and the judicial system, though they may not be absolutely flawless. The tremendous growth of patent pools in the past years proves them to be good mechanisms for SEP licensing, especially where the SEP is implemented by SMEs which have little knowledge about them, their holders and the licensing mechanisms. Avanci is a good example[27], which is currently licensing SEPs form 59 patent holders (representing 80% of all the SEPs for e-call, 2G, 3G and 4G) to 47 automotive companies[28]. And it works well.

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[26] To review critical perspectives on this issue, see e.g., Florian Mueller, 'EU Proposal on Standard-Essential Patents Envisions "Competence" Center That Will Never Get to Build Competence on SEPs: Major Misnomer', *FOSS PATENTS*, 2023 <http://www.fosspatents.com/2023/06/eu-proposal-on-standard-essential.html>; Florian Mueller, 'U.S. Secretary of Commerce Expressed Biden Administration's "concerns" over EU SEP Regulation Proposal, Also Communicated Them to EU Commission: Senate Hearing', *FOSS PATENTS*, 2023 <http://www.fosspatents.com/2023/05/us-secretary-of-commerce-expressed.html>.

[27] See at: https://www.avanci.com/vehicle/4g/.

[28] Florian Mueller, 'Mission Accomplished for Avanci: Virtually Entire p Automotive Industry Licensed to 4G Standard- Essential Patent Portfolios of 51 Licensors--Now on to 5G', *FOSS PATENTS*, 2022 <http://www.fosspatents.com/2022/09/mission-accomplished-for-avanci.html>.

Patent pools must be under antitrust scrutiny, as they always have been. Nevertheless, their potential anticompetitive effects should not be interpreted in a way that it prevents their establishment. Competition law is strong as it is strengthened by various legal means to avoid or punish anti-competitive behaviours.

The same is applied to seeking an injunction in FRAND encumbered SEPs. A full ban of seeking injunctions proposed by many scholars is just not helpful, as a right must never be eliminated due to a mere fear of a likely abuse. A SEP researcher needs to always keep his rational approach in order not to be biased and weighted in favour of hold-up nor hold-out.

## VII. Research suggestions for the future

SEP/FRAND problems are vast, complex and evolving. This is already good news for whoever thinks of SEP as a research topic. Despite the great deal of work done, there still exist many unsolved matters in SEP including the following that need to be addressed by the future researchers.

### A. Jurisdictional studies

There is an urgent need to research SEP beyond the EU and US landscapes. The global economy is increasingly becoming interconnected and the established Asian economies including Japan, China, and South Korea along with the emerging economies in the Indian subcontinent and those in South America and the Middle East like Brazil, Turkey and Saudi Arabia are now playing a growingly significant role in the SEP arena.[29] This shift necessitates research in these jurisdictions to gain a comprehensive understanding of their regulations, guidelines, policies, and judgments pertaining to SEPs and the related matters. The expanding presence of

[29] Yo Sop Choi and Andreas Heinemann, 'Standard Essential Patents - A Comparison of Approaches Between East and West', *Queen Mary Journal of Intellectual Property*, 8.4 (2018), 313–32 <https://doi.org/10.4337/qmjip.2018.04.03>. This study highlights there is a need to examine the latest developments in competition law and policies worldwide concerning SEPs and FRAND, the analysis should also explore the differences and similarities in competition law among various jurisdictions.

these jurisdictions in SEP ownership and implementation underscores the need for a thorough examination of their approaches. This will shed light on the evolving landscape of SEPs and more importantly the challenges and the opportunities behind the SEP global evolution.

Analysing the regulations, guidelines, policies, and the judicial decisions taken in these jurisdictions will help build a foundation for more balanced, harmonized and globally inclusive approaches for treating SEP-related problems which will benefit stakeholders worldwide.

## B. Global FRAND

The idea of global FRAND has recently gained a significant momentum. Several countries have issued or are considering the issuance of guidelines to govern SEP licensing negotiations.

Courts in the UK, US, and China have already asserted their jurisdictions to determine global FRAND terms and conditions for specific cases[30]. However, the EC expresses concerns about the potential impact of this trend on the EU industry, as in the Proposal it argues that certain emerging economies are aggressively promoting their own standards, providing their industries with a competitive advantage in terms of market access and technology rollout[31].

However, given the borderless nature of standards, SEP licensing can rarely remain confined by the national boundaries. While the EC aims to ensure efficient SEP licensing, facilitating lawful access to standards and promoting broader adoption, it clarifies that there are no specific EU or national rule dedicated specially to SEPs,

[30] Judgment of the United Kingdom's Supreme Court of 26 August 2020, *Unwired Planet vs. Huawei*, UKSC 2018/0214, [2020] UKSC 37; Decision of the United States District Court for the Central District of California, *TCL vs. Ericsson*, Case No 8:14-cv-00341-JVS-DFM with consent of both parties. Chinese Supreme Court's ruling of 19 August 2021, *OPPO vs. Sharp*, Zui Gao Fa Zhi Min Xia Zhong No. 517, Order of the Wuhan Intermediate Court of 23 September 2020, *Xiaomi vs. Interdigital*, (2020) E 01 Zhi Min Chu 169 No 1; Order of the Wuhan Intermediate Court, *Samsung vs. Ericsson* [2020], Case E 01 Zhi Min Chu No 743.
15 Japanese Patent Office.

[31] EC Proposal on SEP Regulation. *Supra fn*. 1. Pp. 3-4.

apart from specific competition law-related guidance and court judgments[32].

In this context, it is essential to assess the global trend of FRAND licensing and the legal challenges it may pose particularly the following[33].

1. Is it in line with the principles of granting a FRAND licence for a SEP when an implementer is obligated to enter into a global licence encompassing all relevant SEPs, under the threat of a national injunction?
2. Does a SEP owner's insistence on an implementer entering into a global licence under the threat of an injunction align with the Article 102 of the TFEU?
3. Is it a reasonable approach for national courts to assume and exercise the authority to determine the terms of global licences as a means of resolving global FRAND licensing disputes?

## C. Anti-suit injunction

Recent cases involving SEP have predominantly focused on procedural aspects, particularly the use of anti-suit injunctions and anti-anti-suit injunctions. The EC Proposal identifies anti-suit injunctions as a significant concern for SEP holders[34]. Chinese courts have been granting consecutive anti-suit injunctions since the *Huawei vs. Conversant*[35] case, asserting their jurisdiction over FRAND lawsuits. These injunctions have effectively prevented the enforcement of foreign court injunctions and restricted the filing of patent infringement and FRAND lawsuits in China during ongoing FRAND disputes. The EU has expressed concerns about the

[32] EC Proposal on SEP Regulation. *Supra fn*. 1. P. 4.
[33] Nazzini raises these legitimate questions and finally does not recommend deviating from territorial jurisdiction in FRAND licenses. He argues that this departure can lead to distortions in the motivations of both SEP owners and implementers, resulting in FRAND licenses and negotiations that do not accurately reflect or align with the value of the underlying technology. Consequently, global FRAND licenses may impose excessive royalties or royalties for SEPs that are either invalid, non-essential, or not infringed. A system of national enforcement is more suitable for achieving a balanced approach that considers the interests of both SEP owners and implementers. Such a system can generate better outcomes in terms of their impact on social welfare and productivity. Nazzini, 'Global Licences under Threat of Injunctions : FRAND Commitments , Competition Law , and Jurisdictional Battles'.
[34] EC Proposal on SEP Regulation. *Supra fn*. 1. P. 6.
[35] The Supreme People's Court of the People's Republic of China, Civil Ruling, of 28 August 2020 in Cases No. 732, No. 733 and No. 734, between Huawei Technology Co. LTD and Conversant Wireless Licensing S. à r. 1.

compatibility of these injunctions with the TRIPS Agreement and has initiated discussions through the World Trade Organisation (WTO) on the matter of FRAND lawsuits[36]. All these issues highlight the escalating competition over jurisdiction in this field.

China's recent implementation of "Law Against Foreign Sanctions" demonstrates its commitment to countermeasure against actions perceived as detrimental to its development interests[37]. Given the significance of sectors like electronics and automobiles, which heavily rely on SEPs, it is unlikely that China changes its stance on jurisdiction over FRAND lawsuits in any near future[38]. The other jurisdictions have responded by issuing anti-anti-suit injunctions, but SEP holders, such as Conversant, have ultimately reached settlements with Chinese implementers, indicating the effectiveness of Chinese anti-suit injunctions in limiting legal proceedings initiated by SEP holders in other jurisdictions. Chinese courts have imposed substantial fines, reaching up to 1 million Chinese Yuan (about 140 thousand US dollars) per day, for violating anti-suit injunctions, significantly impacting the economic interests of SEP holders[39]. This compels SEP holders to carefully evaluate the cost-effectiveness of pursuing legal actions in foreign jurisdictions. Consequently, anti-suit injunctions have emerged as a crucial tool for SEP implementers in China to counter the actions of SEP holders in foreign jurisdictions.

[36] World Trade Organization, "China-Enforcement of Intellectual Property Rights, Request for Consultations by the European Union", WT/DS611/1/IP/D/43/G/L/1427, 22 February 2022. Available at: https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/DS/611-1.pdf&Open=True

[37] Wei Huang and others, 'A Review of the Development of SEP-Related Disputes in China and Outlook for the Future Trend', *CPI Competition Policy International*, 2022 <https://www.competitionpolicyinternational.com/a-review-of-the-development-of-sep-related-disputes-in-china-and-outlook-for-the-future-trend/#_ftnref19>.

[38] *Idem*.

[39] *Idem*.

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