

LICENSING STANDARD ESSENTIAL PATENTS IN THE AUTOMOTIVE SECTOR:
AN ANALYTICAL STUDY

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ABSTRACT

Licensing Standard Essential Patents [“SEPs”] has gained significant momentum in the ICT sector, and there has been a series of patent wars over their licensing on Fair, Reasonable and Non-Discriminatory [“FRAND”] terms due to ambiguity around the FRAND term. On the same lines, as technological embedding in automotive devices has grown, the licensing issues associated with SEPs have also mushroomed in this sector. This issue arose in the case of Nokia v. Daimler, which raised many questions regarding the licensing of interoperability standards in the automotive sector. Thus, this paper will analyse the licensing of interoperability standards in the automotive sector and the challenges they face, using case studies. Along with that, the paper would also provide insight into the actions taken by the sector to tackle the situation and would also talk about the situation in brief regarding licensing SEPs in the Indian Automotive Sector. This paper will focus on the current state of SEP licensing in the automotive sector, with the aim of resolving problems and paving the way for the future of automobiles, which will rely heavily on interoperability, such as connected, automated, or driverless automobiles. Also, the author notes that the approach used to calculate royalties in the telecom sector cannot be applied to the automotive sector due to its fragmented supply chain and suggests that a more specific framework for SEP licensing in the automotive sector should be enacted.

I. INTRODUCTION

The automotive sector across the globe is going through a transition phase, leading to a shift toward emerging technologies, including 5G, as various technologies are embedded in automotive devices. These technologies are standardised and are essentially used uniformly across the device for interoperability. SEPs are essential technologies used in automobiles, signifying a patent covering technologies that are required to be in compliance with the standards, and what comprises a standard is declared by Standard Setting Organisations [“SSOs”].¹ In other words, there is another mechanism for implementing the standard without infringing SEP rights. It is often seen that the term “standard essential patents” is used, but in essence, it is only specific or particular patent claims which are really necessary to a standard in the true sense. Patents often include a variety of claims, some of which could cover technology included in the standard and others might not. Here, the distinction plays a crucial role, as the licensing obligations and disclosure policies

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¹ Digvijay Singh & Rajnish Kumar Singh, *Licensing of Standard Essential Patents on FRAND Terms in India*, 24 JIPR. (2019).

apply to the desired components of the claims in relation to the patent, but not to the claims that are not essential. Thus, the more suitable terminology could be ‘standard essential claims of a patent’ instead of ‘standard essential patents’. But to avoid confusion and complexity, SEPs are used in the research.

There are many essential standards that are implemented by the automotive sector as well for the purposes of entertainment, navigation, connectivity, etc. These standards comprise Wireless technology (HaLow), Wireless Access in Vehicular Environment [“**WAVE**”] and Dedicated Short-Range Communications [“**DSRC**”].² For the inclusion of the SEP in a standard, many SSOs require SEP holders to make their patents available on FRAND terms to all implementers, so that the standard can be widely adopted and there are equivalent licensing terms for all willing licensees.³ FRAND commitments are made by participants in SSOs to grant a license to standardised products under their SEPs on terms that are FRAND or royalty-free (RF). These commitments aim to reassure manufacturers that they can sell products covered by SEPs if they obtain a license to do so. FRAND Licensing is usually used to prevent royalty stacking and hold-up. But what these FRAND terms mean is still vague and ambiguous. And due to this vagueness regarding FRAND terms, there are numerous cases in the ICT sector, often referred to as patent wars in the smartphone industry. But despite the plethora of cases in the ICT sector regarding FRAND licensing, there is still no clarity on FRAND interpretation, and disputes are often settled by the companies outside court. However, it can also be said that, within the ICT sector, the issue of FRAND terms is improving and appears settled due to various guidelines issued by the EU and the US. But with the emergence of technology, the other sectors are also affected in the same way as the ICT sector, particularly the automotive sector. A classic example is the famous *Nokia v. Daimler* case, which raised numerous questions about licensing SEPs in the automotive sector. So, this paper would offer insights into the situation of licensing SEPs on FRAND terms in the automotive sector and how it is different from the ICT sector. In light of the *Nokia v. Daimler* case, this paper will analyse the problems faced by the automotive sector in this regard and the steps it takes to address them. Lastly, this paper would suggest ways to prevent a similar situation, such as *patent wars*, from arising in the automotive sector as it did in the ICT sector.

² *Id.*

³ RAMAN MITTAL, LICENSING INTELLECTUAL PROPERTY: LAW & MANAGEMENT 171 (Satyam Law International, 1st ed. 2011).

II. STANDARD ESSENTIAL PATENTS IN THE AUTOMOTIVE SECTOR

The rapidly growing integration of ICT into vehicles is generating new challenges for patent licensing in general and for negotiating royalty payments for SEPs in particular. There is a drastic change in the automotive industry due to shifts in consumer preferences, emerging markets, new business models, and industry players.⁴ This sector seems to be influenced by new environmental and sustainability policy changes, along with upcoming laws and regulations related to security issues. All these forces give rise to disruptive technology trends such as electrification, interconnectivity, and driverless vehicles.⁵ It is predicted that the smart cars in the future would be at a stage where they would constantly exchange information with their environment. The Car-to-Car or Car-to-X communication system helps cars communicate with each other, with the infrastructure, or with the roadside. In the future, the automotive sector would heavily rely on the Internet of Things [“IoT”] technologies, which would be able to connect buildings, machines and other sensors or software.⁶

Multiple devices could be connected to each other, and their units rely on the technology standards specifications. By this, a common language is established for technologies which ensure cross-functionality and compatibility of varied technology systems. Standards often frame innovative technologies (for instance, LTE (Long Term Evolution), DVB (Digital Video Broadcasting), etc.). The integration of these standardised patent technologies creates economic risks for vehicle manufacturers.⁷ In the case of cellular communication standards like LTE, GSM, and UMTS, royalty rates can reach up to \$100 million per year.⁸ These standards would be very useful in the near future, as vehicles communicate with each other and the environment. In the present times, the standards that perform interoperability functions, such as LTE and WiFi, don’t significantly influence decisions when purchasing an automotive vehicle. But this would change in the future when there would be driverless vehicles, connectivity from vehicle to road, etc.

The blend of ICT and the automotive sector has led to the development of vehicular technologies such as shared mobility, automated driving, and electric vehicles. And to further facilitate or develop automobiles, the sector is increasingly equipped with devices; most cars are embedded with devices which allow them to communicate with the systems inside and outside the car. The

⁴ Juan Martinez, *FRAND as Access to All versus License to All*, 14 J. INTELL. PROP. L. & PRAC. 642 (2019).

⁵ *Id.*

⁶ *Id.*

⁷ Christopher S. Storm, *Standard Essential Patents Versus the World: How the Internet of Things Will Change Patent Licensing Forever*, 30 TEX. INTELL. PROP. L. J. 267 (2022).

⁸ Juan, *supra* note 4.

automation, connectivity, and electrification of a particular vehicle rely heavily on different technology standards. The standards relating to technology include near-field communication (NFC), 4G/5G for wireless communication, Digital Video Broadcasting (DVB) for digital television, radio-frequency identification (RFID), Qi for wireless charging, and much more.⁹

This integration of information processing, communication, and control processing jointly provides us with an enjoyable and convenient transportation experience. And this increasing production of connected and automated vehicles is leading to an increase in litigation and licensing in relation to SEPs.¹⁰

With the rampant growth in the standardised technologies being incorporated into cars, SEPs are also now very commonly used in the automotive sector. Companies that participate in standard-setting are required to license their patents on FRAND terms. However, in fields like the automotive industry, where products comprise multiple patented components, a common tussle arises between “license to all” and “access to all”. “License to all” means that the SEP holder must agree to license to any party who is willing to pay the licensing fee, irrespective of where in the supply chain that party is located. On the other hand, “access to all” licensing allows an SEP owner to decide where in the supply chain they will grant licenses, but permits the licensee to grant access to the suppliers. Due to multiple patented components in the automotive sector and a lack of awareness regarding SEP licensing, a license-to-all approach is preferred at the component level in the supply chain by the implementers.

III. ICT VERSUS THE AUTO INDUSTRY

In the auto industry, standard setting is linked with either setting the de facto standards that lie in the ambit of the lines of production for the manufacturers or with the ratification of the safety standards laid down by the legislation. In the ICT sector, when the standards are set, it passes the compatibility specification standards and could be said or described as a combined development of varied technologies.¹¹ Different companies gather and conduct meetings in the working groups relating to standard-setting and put forward their proposals for the innovative technology in order to get selected as a standard and for the incorporation of the same in complex or varied

⁹ Shaobin Zhu & Bo Tang, *Road to the Future: Sep Licensing and Litigation in the Automotive Field*. THE PATENT LAWYER (August 2022), <https://www.morganlewis.com/-/media/files/publication/outside-publication/article/2022/road-to-the-future-sep-licensing-and-litigation-in-the-automotive-field-the-patent-lawyer-magazine.pdf>.

¹⁰ *Id.*

¹¹ Tim Pohlmann, *Patents and standards in the Auto Industry*, IAM (March 31, 2017), <https://www.iam-media.com/article/patents-and-standards-in-the-auto-industry>.

standardised systems. In today's scenario, these technologies are widely used across devices like notebooks, smartphones, and tablets, but with the emergence of 5G technology, they could be integrated across verticals such as the infrastructure and automotive sectors.¹²

There is a differentiation not only in the development and use of standards between the ICT and Automotive Sector, but also in the mechanisms of patent licensing. Licensing of the patents is done across vertical levels in the automotive sector.¹³ A Tier-1 manufacturer in this sector won't be requesting to license the fee from an original equipment manufacturer ["OEM"], but would be incorporating the prices into the component prices.¹⁴ This act in the automotive sector gives liberty to the supplier, which will ensure that these components are free of the rights of third parties. In this sector, single-part improvement by an invention serves as the basis for royalty calculations in licensing negotiations. Hence, there is only a marginal influence of licensing costs on vehicle prices in this sector.¹⁵ On the contrary, the patent licensing in the ICT Sector emphasises the device and targets the OEMs, wherein the basis of royalty is on the device's average selling price. As a result, royalties are higher than under cross licensing.¹⁶ This has been a long-standing bone of contention. The holders of SEPs prefer to give a license to the manufacturer of the end-product based on the end product's value, but the end-product manufacturer may not agree with the royalty base by the SEP holder and the taking of a license. The SEP holder may argue that the correct person to charge the royalty base and serve as the licensee is the component supplier who supplies him with the SEP-integrated component, and that the suitable royalty base is the end product value itself.

On the other hand, the component suppliers who are located at different tiers of the chain may consider themselves as licensee, not for the sake of providing the 4G component for the end-product manufacture, but in fact to be able to develop and innovate freely and sell independently the same to other potential customers. The debate revolves around determining the reasonable royalty, and its determination requires identification of an accurate economic base on the basis of which the royalty base is applied. In essence, this dispute concerns two methods for determining royalty: the Smallest Saleable Patent-Practising Unit ["SSPU"] and the Entire Market Value Rule

¹² *Id.*

¹³ Keith Mallinson, *Revenue boost for automotive industry from cellular connectivity outweighs SEP licensing costs*, R.C.R. WIRELESS NEWS (Aug. 1, 2022), <https://www.rcrwireless.com/20220801/analyst-angle/revenue-boost-for-automotive-industry-from-cellular-connectivity-outweighs-sep-licensing-costs-analyst-angle>.

¹⁴ Tim Pohlmann, *The Role of Standard Essential Patents for the Auto Industry*, IPLYTICS (2021), https://www.lexisnexisip.com/wp-content/uploads/2023/07/IPlytics-2021_The-Role-of-Standard-Essential-Patents-for-the-Auto-Industry.pdf.

¹⁵ *Id.*

¹⁶ *Supra* note 13.

[“EMVR”]. SSPU is an economic and legal construct that requires royalties to be based strictly on the smallest component price that practices the patent claims. The proponents of SSPU contend that modern technological developments, as seen in the automotive sector, should focus on component licensing and should not take into account the value determined from the unpatented features. Conversely, under the EMVR, a patentee may use the entire value of the multi-component product as the royalty base, provided that the patented feature is the primary driver of consumer demand for the whole product. The proponents of EMVR argue that this is the most suitable method for royalty determination, as it is less complex to apply than SSPU and, importantly, does not undercompensate the innovator for the functional value their technology adds to the end product.

For the determination of royalties, different jurisdictions have taken different stances, for instance, in the United States, the courts have aimed to ensure that the patent holders are compensated only for the incremental value of the invention, creating a framework of apportionment to avoid the excessive rewarding of SEPs that gain value via the inclusion in an industry standard. Also, the federal court in *Ericsson v. D-Link*¹⁷ rejected the rigid “per se” SSPU rule, clarifying that the SSPU is there to assist the juries for the apportionment of damages and for avoiding the bias of end-product revenue, it is not an inflexible economic concept that rational firms are required to follow necessarily in the real-world negotiations. In *Cornell v. Hewlett*,¹⁸ Cornell initially sought \$900 million in damages, by applying EMVR taking into account the entire multi-billion-dollar revenue of HP servers and workstations as royalty base but the court dismantled the approach. The court stated that to rely on the entire market value of the product, the patentee must present suitable proof that the infringing components were the absolute basis for the demand of the consumers for the complete machine comprising all parts beyond the claimed invention. While US Courts have aimed at precise calculation of damages, the way of the apportionment, and avoiding the EMVR, the legal landscape in Europe, led by Germany, has focused on the negotiating parties’ conduct and the property rights by leveraging by way of injunctive relief. The basic standard for availing an SEP injunction in Europe was established by the Court of Justice of the European Union [“CJEU”] in the 2015 *Huawei v. ZTE* decision,¹⁹ which outlined a negotiation framework to strike a balance between patent rights and competition law.

¹⁷ *Ericsson, Inc. v. D-Link Sys., Inc.*, 13-1625, Fed. Cir. (2014).

¹⁸ *Cornell University v. Hewlett-Packard Co.*, 609, F. Supp. 2d 279, N.D.N.Y. (2009).

¹⁹ *Huawei Technologies Co. Ltd v. ZTE Corp.*, C-170/13, CJEU (2015).

The German Federal Court of Justice refined and, arguably, increased the burden on implementers in its landmark 2020 decision in *Sisvel v. Haier*.²⁰ The success of SEP holders in enforcing end-product licensing across European Courts has prompted significant criticism from implementers, particularly within the powerful European automotive and manufacturing lobbies. Directly to these concerns, the European Commission introduced highly debatable draft SEP regulation in 2023. This regulation aimed to overhaul the SEP scenario by introducing essentiality checks, establishing a public register of SEPs, and requiring the aggregate royalty determination method mandate before any patent infringement litigation can begin. This Regulation was well received by the automotive industry, but it drew criticism from global innovators and SEP holders. Critics believe this draft violated fundamental rights under the TRIPS agreement.

Thus, due to coordinated worldwide criticism, the regulation was abruptly withdrawn. In addition to this, many SSOs like the European Telecommunications Standards Institute's ["ETSI"] IP Policy do not explicitly state in the bylaws the process for the royalty calculation or determination of royalty of the SEPs. However, the ETSI do talk about availability of license on FRAND terms, according to clause 6.1 of the ETSI IPR Policy When an essential IPR relating to a particular standard or technical specification is brought to the attention of ETSI, the Director-General of ETSI shall immediately request the owner to give, within three months an irrevocable undertaking in writing that it is prepared to grant irrevocable licenses on FRAND terms.²¹ But the expectations of royalties of SEP holders on FRAND terms vary or differ from the ICT sector and the automotive sector. It is common to expect the royalties in the double digit in the ICT sector on the basis of the whole product market sales, as in the automotive sector, the marginal profits are comparably low.²² If the calculations are based on the modules instead of whole products, it could lead to inordinate costs for the vehicle manufacturers, as vehicles integrate multiple modules, which could lead to multiple payments of royalties.²³ And it is contended that this licensing model would not be economically viable for car manufacturers.²⁴

Many SEP Holders argue that the value of a standard should be determined on the basis of the use case of the particular product. In today's scenario, connectivity or interoperability is often used in exceptional cases like emergency calls, which are at times even enforced by regulatory actions,

²⁰ *Sisvel v. Haier*, KZR 35/17 & 36/17, BGH (2020).

²¹ ETSI Directives, ETSI Intellectual Property Rights Policy, Annex 6 (2022).

²² Jean-Sébastien Borghetti et al., *FRAND Licensing Levels under EU Law*, EUR. COMPETITION J. 220 (2021).

²³ *New Framework for Standard Essential Patents – Have your say*, AENEAS (April 21, 2024), <https://aeneas-office.org/2022/04/11/new-framework-for-standard-essential-patents-have-your-say/>.

²⁴ *Id.*

for instance, e-Call.²⁵ It is thus argued that royalty rates of licensing negotiations of SEPs should be done on the parameter of “SSPPU”, which is commonly termed as the baseband chip.²⁶ But this practice ignores the incremental value of a device’s interconnectivity. While this value is high in the smartphone industry, the situation in the automotive industry is not as clear as it should be. There are clear rules for SEP licensing and for the usage of injunctive relief, which are laid down by the European Court of Justice [“ECJ”] and the US Department of Justice [“DoJ”], but there are no clear-cut guidelines to calculate FRAND licensing terms.²⁷ The interpretation of the rules set by the courts differs across various jurisdictions, which means that while granting an injunction is out of question in some of the countries, there is a possibility in other countries, such as Germany, in which the infringing manufacturers are mostly under an obligation to give apt payments relating to security even before the commencement of the proceedings of the court. Consequently, this situation has led to unpredictable costs and legal uncertainty for many car manufacturers.²⁸

IV. CURRENT STATE OF SEP LICENSING AND LITIGATION

As the automobile sector enters the realm of automated and connected vehicles, some holders of SEPs have started taking royalties from the car manufacturers. Among car manufacturers, some are not accustomed to the licensing paradigm for SEPs on FRAND terms; hence, they are slow to embrace this shift.²⁹ But in the automotive sector, as SEPs are increasingly licensed, SEP holders and suitable licensees have begun approaching the Courts in the United States and Europe to resolve issues. In the ICT sector, it is pertinent that SEP holders are granted licenses at the end product level, e.g., at the level of a smartphone. This practice acts like a precedent in the ICT sector because the reliance on smartphones is heavily dependent on the standard implementations, which are well covered by SEPs. But in the automotive sector, it is argued by some of the car manufacturers that licensing of the SEP should be done at the level of the component as compared to the end-product level, as connectivity for interoperability is an additional feature rather than a feature upon which the car places reliance for performing primary functions, i.e., the transportation of the passengers.³⁰ One of the most high-profile SEP licensing disputes in this regard is between Nokia and Daimler.

²⁵ Keith, *supra* note 12.

²⁶ *Supra* note 13.

²⁷ Jorge L. Contreras, *A Brief History of FRAND: Analysing Current Debates in Standard Setting and Antitrust through a historical lens*, 80 ANTITRUST L. J. 39 (2015).

²⁸ *Id.*

²⁹ Neha Chaudhari, *Standard Essential Patents on Low-Cost Mobile Phones in India: A Case to Strengthen Competition Regulation?*, 11 SOC. LEGAL REV. 41 (2015).

³⁰ *Supra* note 13.

A. Nokia v. Daimler Case Study

In 2019, Nokia filed an infringement suit against Daimler in German Courts for infringement of several SEPs. The argument which was put forward by Daimler and its supplier was that the licensing activity is not FRAND as Nokia refused to license the patents to one of the suppliers of Daimler. In the late 2020, a couple of German Courts ruled in the favor of Nokia, stating that it was found out by the courts that Daimler infringed two of the Nokia SEPs and issued Germany-wide injunctions on Mercedes sales.³¹ But these injunctions issued were never enforced. Further, a settlement was announced between Daimler and Nokia on June 1, 2021. This settlement comprises of Daimler taking a license to Nokia's portfolio of wireless communications SEPs. Prior to the settlement, a German Court referred to a series of questions to the CJEU, comprising of one of the questions as who in the supply chain is entitled to a FRAND license.³² But under the settlement reached between Nokia and Daimler, the CJEU did not have the opportunity to rule on this issue.

On one hand, before the settlement, Daimler and Nokia were trying to resolve their disputes in German Courts; on the other hand, Continental took its grievance against AVANCI to US Courts, arguing that refusal of AVANCI to provide a license on FRAND terms to Continental as a component manufacturer is considered an anticompetitive act which is against the Sherman Antitrust Act.³³ On June 21, 2022, the US Court of Appeals for the Fifth Circuit affirmed the district court's dismissal of Continental's antitrust claims under state law.³⁴

B. Continental Automotive Systems, Inc. v. Avanci Case Study

Continental's antitrust suit comprises a monopolisation claim under US law, contending that certain companies that were part of the AVANCI pool abused their monopoly power arising from the standard-setting process by excluding certain technology users and extracting high royalty rates.³⁵ The main issue in this case was whether the SEP holders could insist on OEMs' licensing or whether licenses could also be offered to component manufacturers in the supply chain.³⁶ But the US Court dismissed this suit on the ground that the conduct did not breach the antitrust laws,

³¹ Clark Gordon, *Nokia and Daimler Settle Standard-Essential Patent Licensing Dispute, Potentially Impacting Auto-Industry FRAND Licensing*, AKIN GUMP STRAUSS HAUER & FELD LLP (June 08, 2021), <https://www.jdsupra.com/legalnews/nokia-and-daimler-settle-standard-3453076/>.

³² Christof Koolen, *Connected Cars and FRAND Licensing Traffic Jams: The CJEU Referral in C182/21 Nokia v Daimler*, SSRN (2021).

³³ *Supra* note 9.

³⁴ *Id.*

³⁵ Continental Automotive Systems, Inc. v. Avanci, 20-11032, L.L.C. 5th Cir., (2022).

³⁶ *Id.*

and it should be dealt with contractually among the appropriate companies. As per the US judge, the conduct to violate FRAND obligations is not anticompetitive for a SEP holder, and to the extent the licensor refused to negotiate with car parts manufacturers or only in an agreement to do so at an equivalent price at which they license to car manufacturers, this alleges at a chance of concerted action and the best parallel conduct,³⁷ not violation of antitrust laws. The Continental alleged that SEP holders had their patents incorporated into industry standards by deceiving and making FRAND commitments they never intended to keep to the standard-setting organisations. In this suit by Continental, the judge further commented that Continental had not claimed that its inability to obtain FRAND licenses from AVANCI had prevented it from selling the components to OEMs that used Avanci standards.³⁸

In the line of the level of licensing the value chain management, a policy debate emerged in regards that whether SEP holders are required to offer licenses to all the players in the value chain (termed as “license to all or LTA”) or whether the SEP holders are free to decide as to where to license in the value chain as long as the other players are provided with access (termed as “access to all” or ATA).³⁹ A recent analysis of EU law was done, and it was found that “neither patent, competition laws nor general principles of EU law required an LTA approach from SEP holders.”⁴⁰ Subsequently, the proponents of LTA expressed their views on this debate. But this endless legal battle over the difference between a license and access will never solve this debate, as the licensing level is a proxy war on a prima facie case for the main contention, price. As long as price is seen as a function of the licensing level, these never-ending legal battles of licensing would continue.

V. INDUSTRY RESPONSES TO CHALLENGES ARISING FROM SEP LICENSING

As a result of the litigation between the patent holders and the car manufacturers, the SEP owners and the car manufacturers have responded to patent owners for excessive royalties, particularly in terms of the following measures and initiatives:

A. Fair Standard Alliance

Fair Standard Alliance [“FSA”], based in Europe, was launched in November 2015, and it remains fully active to date. It seeks to promote the principle of licensing of SEPs on FRAND terms. This

³⁷ Andrew Moir et al., *Views on an evolving automotive Industry - Standards and Essential Patents*, LEXOLOGY (Jan. 13, 2021), <https://www.lexology.com/library/detail.aspx?g=dd70eb28-27fd-407a-bf98-2361a94b6142>.

³⁸ *Id.*

³⁹ Bowman Heiden, Jorge Padilla & Ruud Peters, *The Value of Standards Essential Patent and the Level of Licensing*, 4 IP COUNCIL (2021).

⁴⁰ *Id.*

Alliance claims that by asserting excessive, unfair, and unreasonable SEP licensing practices, innovative industries are threatened, new market entrants are blocked, and, as a consequence, potential economic growth across sectors is affected. The alliance comprises Sierra Wireless, HP, Air Ties, u-blox, Micromax, Telit, Juniper Networks, Volkswagen, Google, Peiker Acoustic, BMW, and Daimler as members.⁴¹

FSA has attained influence via advocacy rather than direct legislation, shaping the FRAND policies through submissions and endorsements. Recently, FSA celebrated the European Parliament's November 2025 vote supporting the legal action against the withdrawal of the EU Commission's SEP regulation, which was proposed for transparency. FSA also endorsed the DOJ's reversal of the SEP guidance of 2013 and Biden's 2021 Executive Order promoting competition in standards without the risk of hold-up, and currently supports fair FRAND implementation of Japan's METI Guidelines.

B. Car 2 Car Communication Consortium

This is another initiative which is Europe-based. The main objective of this consortium is for the harmonised or well-structured implementation and deployment of a cooperative intelligent transport system ["ITS"] in Europe. This consortium was able to achieve a royalty-free frequency band in the range of 5.9 gigahertz in order to align safety-related services with a similar spectrum of allocation in Australia, the United States, Mexico and Canada.⁴² It promotes harmonised cooperation among telecom operators, manufacturers, and infrastructure providers. The composition of this consortium comprises, *first*, car manufacturers as members, namely Renault, BMW, Toyota, Volkswagen, Audi and Daimler; *second*, the consortium comprises automotive suppliers as members namely Kapsch and Bosch, Delphi, Valeo, Denso and Continental; *third*, the suppliers from the telecommunication sector were also a part of this consortium, namely Huawei, Qualcomm and LG.⁴³

C. MirrorLink

Another Car Connectivity consortium is MirrorLink, which is developing an open standard for smartphone-centric car connectivity. The composition of this consortium comprises car manufacturers and cellular communication manufacturers as members. Car manufacturers:

⁴¹ *Supra* note 9.

⁴² *Id.*

⁴³ Karan Dhoble et al., *Car to Car Communications using IOT*, 6 IRJET 6 (2019).

Toyota, Chevrolet, Honda, and Volkswagen; cellular communication manufacturers: HTC, Samsung, and Sony.⁴⁴

D. Avanci

Another initiative is to form AVANCI to combat this tussle between car manufacturers and SEP Holders. Avanci is a new patent pool formed by the joint licensing initiative to attract large SEP Holders from the cellular communications industry. And it has already attracted a large number of SEP Holders, including ZTE, Qualcomm, Sony, Interdigital, and Ericsson.⁴⁵ This patent pool aims to create a single agreement between the licensees and the licensors. As a result, manufacturers would soon be able to rely on a single marketplace for licensing SEPs, rather than approaching individual technology owners to request, negotiate, and pay for licenses.⁴⁶ However, Avanci's single-marketplace model does not cover all SEPs, and its long-term effectiveness will become clearer over time.

Nevertheless, this patent pool could increase transparency regarding ownership distributions, while the unit prices of this pool could serve as a point of reference in SEP negotiations. This Avanci patent pool solves the problem of double marginalisation, thereby reducing overall SEP royalty rates. This multiple marginalisation refers to a situation in which there is no transparency into patent ownership, and licensors may overestimate the value and share of their SEP portfolio.⁴⁷ A cumulative license from multiple SEP holders would exceed economic feasibility in the market. This patent pool covers 60% of all LTE SEPs and sets unit prices, providing transparency in that regard, even though SEPs outside the pool may be licensed at a comparatively higher price.⁴⁸

VI. SEP LICENSING ON SUPPLY CHAIN MANAGEMENT

The dispute over the licensing of SEPs on FRAND terms dominates standard-essential industries like the telecommunications sector. But this trend of domination has rapidly spread from the telecommunications sector to the automotive sector; its traces can be seen in Europe and the United States. A trend notably seen in the automotive sector is that SEP holders are not licensing

⁴⁴ Juraj Micek & Jan Kapitulik, *Car-to-Car Communication System*, PROCEEDINGS OF THE INTERNATIONAL MULTICONFERENCE ON COMPUTER SCIENCE AND INFORMATION TECHNOLOGY, 627 (2023).

⁴⁵ Matthew Bultman, *Avanci Is Turning Automakers' Patent Licensing on Its Head*, BLOOMBERG LAW (July 5, 2024) <https://news.bloomberglaw.com/ip-law/avanci-is-turning-automakers-patent-licensing-on-its-head>.

⁴⁶ ETAuto, *Ford signs Patent License Agreement with Avanci*, ECONOMIC TIMES (June 2, 2022), <https://auto.economictimes.indiatimes.com/news/auto-technology/ford-signs-patent-license-agreement-with-avanci/91956022>.

⁴⁷ *Id.*

⁴⁸ Mathew, *supra* note 39.

their SEPs to rival component suppliers, but are licensing them to product manufacturers to maximise their interests.⁴⁹ This tussle in the Supply Chain Management is leading to increased rift between the SEP holders and the car manufacturers.

The concept of supply chain refers to the alignment of firms that bring products or services to market.⁵⁰ The supply chain comprises manufacturers, suppliers, transporters, warehouses, wholesalers, retailers, other intermediaries, and even customers themselves. Any product in the consumer market, from its evolution as a raw material to finished products, undergoes a series of transactions in the business market.⁵¹ The main issues which are prevalent in the SEPs licensing in the supply chains are (a) whether the SEP holder has any freedom to give a license to any of the standard implementers in the supply chain; (b) what is the basis for deciding the royalty band of licensing SEPs on FRAND terms.⁵²

To address these issues, it is important to recognise that FRAND commitments do not restrict SEP holders in selecting a licensee in the supply chain. The SEP holders are required to provide a license on FRAND terms if the rival component suppliers apply for it.⁵³ This statement was made by the Ninth Circuit of the United States in *FTC v. Qualcomm*,⁵⁴ but this statement or opinion of the Ninth Circuit could lead to increased royalty stacking and patent hold-up, which in turn would lead to a disruptive impact on future SEP licensing.⁵⁵ As previously discussed, FRAND is an abbreviation for fair, reasonable and non-discriminatory licensing terms. This is the patent policy of the Standard-setting organisations (SSOs) to regulate patent holders who direct the use of their patented technology for its incorporation into industrial standards. Under this licensing scheme, patent holders commit to license their SEPs to all standard implementers on fair, reasonable, and non-discriminatory terms. And the SEP holders have no right to refuse to license their SEPs to any of the standard implementers in the supply chain management.

⁴⁹ Huang-Chih Sung, *Impacts of FRAND Licensing of standard essential patents on the supply chain management of standard-implementing industries*, MAASTRICHT UNIVERSITY (May 20, 2022), <https://www.maastrichtuniversity.nl/blog/2022/05/impacts-frand-licensing-standard-essential-patents-supply-chain-management-standard>.

⁵⁰ Mihai Felea & Irina Albăstroiu, *Defining the Concept of Supply Chain Management and Its Relevance to Romanian Academics and Practitioners*, 15 (33) AMFITEATRU ECON. 74 (2013).

⁵¹ *Supra* note 40.

⁵² *Id.*

⁵³ Mihai, *supra* note 44.

⁵⁴ Federal Trade Commission v. Qualcomm Inc., 969 F.3d 974, 9th Cir. (2020).

⁵⁵ *Id.*

At the same time, when the automotive industry is evolving, with interoperability increasing in automobiles, telecommunication giants such as Nokia are also moving from licensing SEPs in the telecommunication sector to licensing in the automotive sector. To maximise its income from patent royalties, Nokia chose to opt for patent licensing from the car manufacturers instead of a communication components supplier.⁵⁶ But some car manufacturers refused to take the patent license by putting forward an argument that Nokia should have entered into negotiating the patent license with the component suppliers. Then, Nokia further initiated ten patent infringement lawsuits in Germany, putting forward an argument they have right to seek for the license from any of the standard implementer from the supply chain management. Under the patent exhaustion doctrine, patentees are authorised to collect royalties from one of the manufacturers in the supply chain. It is reasonable for the patent holders to opt for end-product manufacturers, as SEP licensing aims to maximise royalty collection. For the remaining manufacturers, the SEP holder chooses to grant a covenant-not-to-sue [“CNS”] rather than provide a patent license in the supply chain.⁵⁷ CNS is a negative contractual promise by the patentee to forgo litigation against a particular party for specified acts, without granting rights, and only granting immunity from the suit by that patentee. This negative contractual promise fails the ETSI policy of “license to all willing implementers” and leads to injunctions and royalty stacking, consequently burdening downstream with the cost of compliance and advocating upstream licensing for efficiency.

VII. INDUSTRY DYNAMICS IN THE INDIAN AUTOMOTIVE SECTOR

In India, cases in the automotive sector related to SEP licensing are not prominent, as connected, automated, or driverless cars are still in development. However, the situation regarding SEP licensing should be clear in India, as Indian automotive manufacturers are proactively shifting from legacy mechanical architectures to software-defined solutions, driving a surge in domestic intellectual property generation. This has led to a surge in patent filings by automakers and the expansion of their IP portfolios. In addition to this, the vehicular safety tools like Anti-lock Brake Systems and vehicular norms are becoming compulsory for the developing countries, including India.⁵⁸ Despite this progression, vulnerability in IP still subsists. OEMs in India have strong IP portfolios, but they remain dependent on standardised cellular technologies developed by telecommunication companies abroad, which results in many SEPs in vehicles. This asymmetry, wherein OEMs in India must secure SEPs, exposes them to global SEP licensing campaigns. The

⁵⁶ *Supra* note 40.

⁵⁷ *Id.*

⁵⁸ S.P. Patra, & K.D. Raju, *Standardization and Standard Essential Patents for Public Good: Application in Automotive Industry*, 27(1) SASI (2021).

automotive sector's supply chains operate across multiple tiers (discussed earlier), and the OEMs advocate licensing at the component level, which is strongly opposed by the SEP holders under the doctrine of patent exhaustion. Capitalising on the value chain stalemate, AVANCI has emerged as a dominant aggregator of SEPs in the automotive sector. For the automotive sector in India, the economic implications of AVANCI are severe, as the flat-rate royalty structure is very regressive. The Indian automotive sector cannot operate in isolation due to its reliance on foreign telecom companies, but the question that is often debated is whether issues related to SEP licensing can be adjudicated in India. The judicial precedents have, to a certain extent, answered it by delving into the issue of Pro-Tem security deposit in *Dolby International AB v. Lava International Limited*,⁵⁹ where the court held that Dolby had established a prima facie case of essentiality, infringement, and validity. In the case of *Telefonaktiebolaget LM Ericsson v. Lava International Ltd.*,⁶⁰ the court relied on and rather scrutinised the conduct of the implementer during negotiations, found purposeful delays by LAVA, and subsequently declared it a willing licensee. In addition to this, in *CCI v. Ericsson*,⁶¹ the court stated regarding the CCI's jurisdiction that it is to be "kept open to be agitated in some other appropriate case".

Considering that the Indian automotive sector is largely implementer-driven, these judicial precedents and the regulatory void between the CCI and the High Courts are highly significant. In the United States, the approach for licensing SEPs is considered institutionally fragmented, relying on judicial innovation and focusing on the security-driven supply chain exclusion. On the other hand, the European Union has long been the preferred jurisdiction for settling disputes due to the mechanics of FRAND adjudication. Currently, it is surrounded by speculation following its withdrawal from the SEP regulation, but companies still prefer the EU for its fragmented approach to FRAND adjudication.

The European Union has already established safety tools like Combined Brake Systems ["CBS"] and ABS as a mandate since 2012. In the automotive sector, the majority of patents relating to vehicular safety are owned by organisations such as Nissan, Honda, Bosch, etc. and as a consequence of the same, these standards are monopolised by market players like them, which ultimately slows down the technology absorption at the grassroots levels of large markets in India.⁶² To address this problem, there is a need for a dedicated authority in India that could be involved

⁵⁹ *Dolby International AB v. Lava International Ltd.*, 2025 SCC OnLine Del 4881.

⁶⁰ *Telefonaktiebolaget LM Ericsson v. Lava International Ltd.*, 2016 SCC OnLine Del 4581.

⁶¹ *Telefonaktiebolaget LM Ericsson (PUBL) v. Competition Commission of India*, 2016 SCC OnLine Del 1951.

⁶² *Id.*

in the current government's policy-making and the determination of essential patents in value chain licensing.⁶³ This would ensure that with the advent of automated and driverless vehicles, India does not face the same SEP licensing challenges that have emerged in the ICT sector.

However, automated and driverless vehicles will increasingly rely on interoperability standards in the near future, but the vehicular safety standards, which are mandatory in India, are facing issues in relation to the licensing of SEPs because there are different bodies that are involved in framing standards for vehicular safety in India, but there is no coherence between them. For instance, in India, the transport sector is managed by the Ministry of Road Transport and Highways ["**MoRTH**"] for road safety, under which the field of associated IP regulations and patents is governed by the Ministry of Commerce and Industry ["**MCI**"].⁶⁴ However, there exists no formal charter between these agencies, namely the Indian Patent Office ["**IPO**"], governed by the Indian Patent Act, 1970, and the AISC under the Motor Vehicles Act, 1988, and the Central Motor Vehicles Rules (CMVR), 1989.

The AISC develops technical standards, which are formalised as Indian Standards by the Bureau of Indian Standards ["**BIS**"]. As mentioned, there is no charter or collaborative mechanism between BIS or AISC and the IPO for the development of automotive safety standards, as the concerned authorities operate under different ministries of the Indian Government.⁶⁵

As a result of this lack of a coherent system across the agencies, the detrimental effect is the failure to provide a cost-effective solution to the existing safety issues.⁶⁶ This issue must be addressed effectively, along with the establishment of a dedicated regulatory framework, in order to ensure that standard-setting can be carried out efficiently in the automotive sector, which would fulfil current vehicular requirements as well as the evolving demand for standards governing connected, automated, and driverless vehicles. As AI-driven technologies increasingly shape the future of the automotive industry, it is imperative to address vehicular safety standards and establish a coherent regulatory framework to facilitate the effective implementation of connectivity standards.

⁶³ Souresh Bhattacharya, *Supply Chain Management in Indian Automotive Industry: Complexities, Challenges and Way Ahead*, 5 IJMVSC (2014).

⁶⁴ Patra, *supra* note 52.

⁶⁵ *Id.*

⁶⁶ *Id.*

VIII. CONCLUSION

There is a transitional change which could be observed across different verticals of the economy, from drastic development from feature phones to smartphones, and the new business models, market participants, and platforms changed the manner in which profit distribution among companies was made.⁶⁷ Licensing of SEPs in the automotive sector is also bearing the brunt of technological integration. The two issues that arise in relation to licensing SEPs in the automotive sector are: *First*, the method for calculating the royalty; *Second*, the level of the value chain at which the license could be granted. In order to address these concerns, it is necessary to understand the functioning of the automotive sector, which differs from the telecommunications sector. For instance, in the ICT sector, patented components are embedded in end products and sold to the market as a single functioning device.⁶⁸ A user can't buy a Smartphone without modem chips.⁶⁹

Hence, it is appropriate in the Smartphone industry to apply the "entire market value" rule to set the entire Smartphone as the royalty base for chip-level patents.⁷⁰ Although in the automotive sector the patented chips are embedded in cars and sold as connected vehicles, they may not constitute a single functioning unit, as the chip is for connectivity while the car is primarily used for driving. In addition, connectivity or interoperability is only a car's add-on feature and does not primarily form the basis for a customer's choice of a car. Hence, it is questionable to apply the EMVR to connected vehicles.

With the emergence of 5G technology, the automotive sector would move towards automated, driverless cars and more connected cars. There would also be shifts in the distribution of profits in the automotive industry, as the need for connectivity increases. This connectivity in cars has the potential to transform the automotive industry's value chain. This potential change would pose many challenges, and to address them, vehicle manufacturers need to navigate the complex licensing landscape of the ICT industry and ensure they have the right IP strategy. For this, they must have a clear understanding of standardisation activities in the automotive industry. These standards, properly set today, will become the fundamentals of the technology platform for future automotive technologies and applications.

⁶⁷ *Supra* note 10.

⁶⁸ ASHISH BHARADWAJ, *EVOLVING JURISPRUDENCE IN STANDARD ESSENTIAL PATENTS, MULTI-DIMENSIONAL APPROACHES TOWARDS NEW TECHNOLOGY*, (119-183 1st ed. Springer Publications,) (2017) (ebook).

⁶⁹ *Id* at p. 155.

⁷⁰ *Supra* note 40.

Further, the telecommunications industry must recognise that royalty-calculation practices followed in the telecommunications sector cannot be directly imposed on the automotive industry, as the two sectors operate differently. So, they are required to understand the car manufacturers' value chain. All stakeholders in both markets are required to establish economically viable mechanisms that create more incentives for innovation and ensure a level playing field, thereby permitting new business models to enter the market.⁷¹ In the Indian Automotive sector in this technology era, Indian OEMs must adopt a proper corporate strategy and avoid delaying licensing negotiations, given India's judicial precedents. In addition, the supply chain may be restructured; i.e., Indian OEMs operating in export markets must audit their telematics supply chains with immediate effect. Further, to strengthen the automotive sector in India, there is a need for a comprehensive national policy and a co-regulatory framework governing SEP licensing in the automotive sector.

⁷¹ *Id.*