Views on an evolving automotive industry

Standards and essential patents

The automotive industry is unquestionably evolving at considerable pace whether through advances in connectivity and autonomy in vehicles, developments in the way that consumers access and use vehicles or changes driven by the 'electric revolution' and the industry disruption caused by the COVID-19 pandemic.

Through our series of articles, "Views on an evolving automotive industry", we will look at some of the legal, regulatory and compliance issues that arise from or have been magnified by these unprecedented changes.

In this fourth article of the series, **Andrew Moir**, **Ina vom Feld**, **Frédéric Chevallier**, **David Webb** and **Laura Adde** of our London, Düsseldorf and Paris IP teams consider some of the key issues surrounding standard essential patents or SEPs for those in the automotive sector. These include, in particular, how standards work, their role in the automotive sector, how fair, reasonable and non-discriminatory (FRAND) licensing operates and the varying approaches across Europe.

Connectivity is an increasingly important feature for vehicles and will be essential for the operation of autonomous vehicles. Connectivity through mobile networks, such as 3G, 4G and in future 5G, requires traditional automotive manufacturers to incorporate technologies from the telecoms industry into vehicles. These technologies are part of complex standards, and are protected by large portfolios of patents known as SEPs. Similarly, new standards are being developed such as Dedicated Short Range Communication (DSRC) specifically to facilitate communications between vehicles and their surrounding infrastructure.

The licensing framework surrounding these SEPs is complex and requires owners to license on FRAND terms. Participants in the automotive sector need to be aware of the key issues surrounding FRAND licensing, and the particular difficulties that arise in the context of the automotive industry. The Supreme Court has recently ruled that UK courts have jurisdiction to determine the terms of such FRAND licences worldwide, making the UK a key jurisdiction for FRAND disputes. The recent German Supreme Court decision has also provided important guidance, particularly as there have been a number of connected vehicle cases in the German courts in 2020.

1. What are standards and why are they important?

Standards are a way to ensure that technologies from different vendors work together. They are key to certain industries – such as the telecoms industry. For example, in telecoms there are standards covering the technology in the 3G, 4G and 5G mobile networks. By agreeing on a particular standard it means that all network operators can use the same underlying technology and be comfortable that their network will operate with the handsets produced by any mobile phone manufacturer.

A body that produces a standard is called a standard setting organisation (SSO). A standard is typically produced by a range of industry players contributing (often patented) technology to the standard. The potential upsides for companies having their patent protected technology incorporated into a standard are huge, as anyone seeking to implement the standard will inevitably infringe the patent. Such patents are known as standard essential patents (SEPs).

However, there is a risk that owners of SEPs (SEP holders) would try to take advantage of their position to either exclude competitors from the standard entirely or to charge excessive licence fees for use of their patents. To counteract this, SSOs typically require SEP holders to give undertakings when their technology is incorporated into the standard that they will license the associated SEPs on fair, reasonable and non-discriminatory (FRAND) terms.

As discussed above, standards are critical to the functioning of mobile phone technology, and they also appear in a range of other technologies such as Wi-Fi and video coding/decoding (codecs). However, the prevalence and importance of standards is likely to grow in the coming years as connectivity of cars and other devices becomes commonplace. Indeed, standards will be critical to the functioning of connected autonomous vehicles (CAVs).

2. What role do standards play in the automotive sector

Digital transformation and rapid development of technology are reshaping the automotive sector.

The current role of standards

Vehicles are being fitted with features requiring mobile network connectivity. For example, there are a number of connected car features that are currently being used through 3G and 4G technology. 3G and 4G networks enable numerous commonly-used functions in cars, including mobile internet access, live traffic data, fault reporting and diagnostics and the ability to control vehicles remotely and to track their location. 4G technology brings a higher bandwidth, allowing increased use capacity as well as greater reliability and is

being further developed to support even Cellular V2X (Vehicle to Everything) functions.

Cellular V2X (C-V2X) technology includes vehicle to vehicle (V2V), vehicle to pedestrian (V2P), vehicle to infrastructure (V2I), and vehicle to network (V2N) communication. These functions can use 4G (and in the future 5G) networks to share data about speed and position with other vehicles or pedestrians and enable cars to connect with infrastructure systems (for example allowing vehicles and traffic managers to share data and coordinate their actions). Such functions can also currently be performed by Dedicated Short Range Communication (DSRC) systems, although these require vehicles to be in close proximity to each other or the surrounding infrastructure in order to operate and are not standardised across different countries. 4G can also provide data analytics on the various apps and features used by customers, as well as vehicle performance/diagnostics, and share that data with manufacturers and fleet owners.

Standards in the future

Uses for 5G

Gartner predicts that, by 2023, the automotive industry will be the largest market opportunity for 5G internet of things (IoT) solutions, representing 53% of the total 5G IoT endpoint market. In addition, it is projected that the share of 5G-connected cars worldwide will grow from 15% in 2020 to 74% in 2023. This figure is predicted to reach 94% in 2028, when 5G technology will be used for Cellular V2X. While V2X utilising 4G networks already exists, 5G connectivity offers far greater potential given the volume of data that can be transferred and the speed of that transfer.

In its recent action plan, the European Commission has identified FRAND licensing of 5G SEPs, particularly in the automotive sector, as an area of focus. It states that its goal will be to "facilitate industry-led initiatives to reduce frictions and litigations". It is also considering wider regulatory reforms, including potentially "the creation of an independent system of third-party essentiality checks in view of improving legal certainty and reducing litigation costs." Reform in this area could have a significant impact on how SEPs are licensed in the automotive sector.

Connected & Autonomous Vehicles

The operation of CAVs is fundamentally dependent on standards. This is primarily because they will require access to either mobile network and/or Wi-Fi standards to interact with road infrastructure and other CAVs. However, there are likely to be additional standards specific to CAVs that will also arise in the next decade or so as they start to become a more common feature on the roads and interaction between CAVs produced by different OEMs is required. This is likely to lead to a highly complex and challenging licensing landscape which OEMs will need to navigate.

The adoption of CAVs is part of the Digital Agenda for Europe, and there have been a number of relevant initiatives and consultation papers. One of the latest updates was the rejection of the Commission's proposed legislation favouring Wi-Fi technology, with twenty-one Member States voting against the regulation. This outcome was welcomed by a number of manufacturers that favour 5G technology in the automotive sector (see our blog post for further detail). The Council is now expected to redraft the legislation and return it to be voted on by the Member States.

Whether to use Wi-Fi or 5G to enable connectivity of CAVs is a key question for the coming years and will have an enormous impact on OEMs, as well as the infrastructure of our roads and cities. Ideally a global standard would be adopted to ensure that there is maximum interoperability regardless or the country in which the vehicles is intended to operate (much like the ability of mobile phones to connect to networks in countries other than those where they were sold).

As is the case in the telecoms industry, much of this standardisation will need to be driven by manufacturers rather than national governments. The owners of SEPs relevant to those standards, whether traditional telecoms companies or manufacturers in the automotive sector, will play an important role in shaping the future of CAVs. How those standards are licensed is of crucial importance and we consider some of the key factors to be aware of further below.

Charging points and battery technology

As well as telecoms and inter-vehicle communications, standards also are relevant in other areas. The interoperability and standardisation of charging points are some of the key considerations for EV infrastructure, particularly for the realisation of long-distance travel (you can find our in depth article on some of the challenges in relation to EV charging infrastructure here).

There are currently several groups of standards worldwide in relation to EV charging points: IEC in Europe, SAE and IEEE in the USA, and CHAdeMO in Japan. The IEC standards cover, for example, the overall standard operation for EV conductive charging systems; a standard for wireless power transfer systems; and plugs, socket outlets, vehicle connectors, and vehicle inlets that are used for conductive charging of EVs. The IEC is currently working on the development of a number of additional standards, including further standards for EV wireless power transfer systems; an EV charging roaming service; EV conductive power supply systems; and EV battery exchange infrastructure safety requirements.

As EVs become a common feature on our roads, and the associated charging infrastructure becomes critical to the operation of our transport networks, these standards are likely to grow in importance. SEPs associated with those standards will therefore become valuable assets, and licensing negotiations surrounding those SEPs will be of critical importance to vehicle manufacturers. It will be interesting to see whether the licensing model adopted is similar to that seen for the telecoms SEPs or whether new approaches are tested. SEP holders will be very different entities to the traditional telecoms companies, which may point towards licensing models being adopted that are tailored for the automotive industry.

3. How does patent licensing work for standards?

The traditional FRAND licensing model

The traditional approach to FRAND licensing seen in the telecoms sector is for individual handset manufacturers and network operators to negotiate separate licensing agreements with each SEP holder. There are typically thousands of SEPs that will be relevant to a given standard and the vast proportion of them tend to be owned by a handful of entities. Those entities may be telecoms companies themselves, although there are also a number of non-practising entities (NPEs) that have acquired large SEP portfolios.

In the telecoms sector there has not been any significant pooling of SEPs. In other words, there is no 'one-stop-shop' that a licensee can approach for all of their licensing needs. The practice has also been to license only the end manufacturer of the phone handset, rather than individual component (eg chip) manufacturers. As a result, the licence fees are typically set as a percentage of the handset price (rather than a percentage of the, much cheaper, component price). The percentage of the handset price represented by FRAND royalties has generally been around 5% for 3G-enabled models, and around 9% for 4G-enabled models.

Licensing issues in the automotive sector

Who is the licensee?

In the automotive sector it is standard practice for the manufacturer of a component relying on a particular piece of patented technology to take a licence of that technology. The manufacturer will then typically provide an IPR indemnity to the end vehicle OEM.

However, a different approach has so far been taken for SEPs, with SEP holders unwilling to license component manufacturers in the supply chain. The insistence on licensing only to the OEM can result in a royalty rate set by reference to the price of the final vehicle rather than the much smaller cost of the individual connected component.

It is an area of ongoing dispute between OEMs and SEP holders as to whether component manufacturers are entitled to a licence, or whether the SEP holders can choose to license only the OEMs.

Nokia v Daimler (case ID: 2 O 34/19) case study

The issue of who should be the relevant licensee was brought to the fore in the *Nokia v Daimler* case. In August 2020 the Mannheim Regional Court issued an injunction in relation to certain SEPs owned by Nokia (part of the Avanci patent pool), potentially preventing the sale of a substantial proportion of Mercedes Benz cars in Germany.

In that case Daimler had argued that Nokia should license the relevant component manufacturers rather than licensing Daimler itself. This view was supported by a number of Daimler's suppliers. However, the Court held that Daimler had not shown itself to be a willing licensee and, in accordance with the German FRAND case law, granted an injunction.

The Mannheim Court refused a referral to the Court of Justice of the European Union (CJEU), despite an intervention from the German Federal Cartel Office requesting this. The Düsseldorf Regional Court, however, in a parallel case dealing with another Nokia patent, in November 2020 referred questions to the CJEU, requesting in particular the position on whether and under what circumstances there is a duty to license at the supplier stage if the suppliers are willing to take a licence. Alongside this the court referred the following questions:

- how can parties fulfil the requirements set out in *Huawei v ZTE* (discussed below) after litigation has been commenced; and
- what are the requirements for an implementer to be considered a willing licensee?

In another German case against Daimler, *Sharp v Daimler*, the Munich Regional Court ruled that Daimler may not sell certain cars with connectivity modules in Germany, including "Mercedes Me", "Connect Business", and "Mercedes PRO Connect". According to the decision, Daimler infringed one of Sharp's LTE patents. In October 2020, the parties settled the dispute and Sharp signed a licensing agreement with Daimler.

Royalty rates and valuation

Linked to the issue of SEP holders insisting on licensing only OEMs is how the royalty rate for such a licence should be determined. In the telecoms sector the network connectivity of a mobile phone is crucial to its operation and there is therefore a clearer argument for royalty rates to be determined in relation to the full handset cost.

However, in the automotive sector connectivity may play a relatively minor or ancillary role and therefore contribute much less to the overall value of the vehicle. In those circumstances it is harder to justify why the royalty rate should be set by reference to the total cost of the vehicle.

In different vehicles there may be very different value propositions for the connectivity. At its starkest, you could have a vehicle where its connectivity is purely to run an entertainment system – a 'nice to have' but not essential. On the other hand, a CAV requires connectivity in order to be able to function at all. It is unclear to what extent SEP holders are willing to take this different value proposition into account when setting licence fees but it is an issue that will become increasingly important as consumers demand connected vehicles.

There is a middle ground though. For example, another possible royalty base might be the cost of the entertainment unit or engine control unit. In any event, the royalty base is only half of the royalty calculation – one must multiply that by the royalty rate. The real question therefore is whether the SEP holders are gravitating towards the cost of the vehicle as a means to inflate licensing revenues, or whether it is reflected in a corresponding drop in royalty rate.

A solution to this problem could be to charge a flat fee rather than a percentage royalty for the licence regardless of which entity in the supply chain is being licensed.

Patent pools and licensing platforms

In a bid to simplify the licensing landscape, since 2016 the Avanci consortium of telecoms companies has offered a "one-stop shop" licensing platform for OEMs to get a single licence which covers the majority of 2G, 3G and 4G SEPs. Avanci also plans to roll out a 5G licensing platform for CAVs – a flat-rate 5G licence from Avanci will cover the 2G, 3G, 4G and 5G SEPs for all of the patent owners who join the Avanci patent pool.

Following some early competition concerns from OEMs and Tier 1 and Tier 2 suppliers, Avanci's proposed 5G platform recently gained approval from the US Department of Justice. However, despite this "green light" some prospective licensees are still concerned about Avanci's insistence on end-manufacturer licensing – it refuses to grant licenses to willing licensees (such as suppliers) which operate higher in the supply chain. This practice has already resulted in a 2G, 3G and 4G antitrust complaint filed by German car parts maker Continental, in May 2019.

***Continental Automotive Systems, Inc. v. Avanci, LLC et al* (case ID: 3:19-CV-02933) case study**

Continental's antitrust suit included a claim for monopolization under US legislation, contending that certain companies that were part of the Avanci pool had abused the monopoly power arising from the standard-setting process to exclude certain users of the technology and extract high royalty rates. In essence, the issue was whether SEP holders could insist on licensing only OEMs, or whether they must also offer licences to component manufacturers in the supply chain.

The suit was dismissed by a US court in September 2020, on the basis that the conduct did not breach antitrust laws and should be dealt with contractually between the relevant companies. According to the judge, "it is not anticompetitive for a SEP holder to violate its FRAND obligations", and "to the extent the [licensor] refused to negotiate with [car parts manufacturers] or only agreed to do so at the same prices at which they license to [car manufacturers], this alleges at best parallel conduct and the possibility of concerted action", not an antitrust violation.

In its suit, Continental also alleged that the SEP holders had their patents incorporated into the industry standards by deceiving the standard setting organisations through FRAND commitments they did not intend to keep. The judge observed that whilst some courts had found this behaviour to be anticompetitive, she disagreed, and that "even if such deception had also excluded defendants' competitors from being included in the standard, such harms to competitors, rather than to the competitive process itself, are not anticompetitive".

The judge further commented that Continental had not claimed that its inability to obtain FRAND licences from Avanci had prevented it from selling components to OEMs that used Avanci standards. Continental had therefore not shown that it had suffered any damage, and since the OEMs were paying the licence fees rather than Continental, Continental may be able to produce car parts at a lower cost.

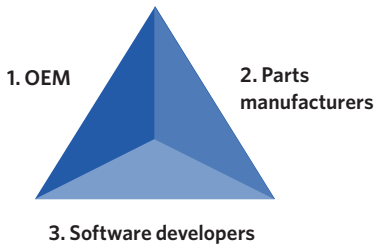
Despite the potential benefits of patent pools (including increased licensing efficiency, faster adoption of new technology, and fewer disputes), many feel that a 5G pool which is not made available to all participants in the automotive industry would harm competition, innovation and job creation. A patent pool which is made available to both end manufacturers and parts makers could offer a potential solution.

However, it is important to keep in mind that a licence from Avanci does not currently cover all SEPs relevant to the various telecoms standards. Therefore, even if an OEM is able to negotiate a licence with Avanci, there is still a risk of other SEP holders bringing infringement actions. While it may be acceptable to telecoms companies used to FRAND licensing negotiations to agree separate licences with multiple SEP holders, it is not an ideal position in the automotive sector where connectivity is less of a core feature of the vehicle. Additional SEP holders have been joining the Avanci pool over the last few years and perhaps in the future Avanci truly will act as a one-stop shop for all relevant telecoms licences for the automotive sector.

How might licensing differ for CAVs?

The problem of who the licensee should be is further complicated by the "triangle" of players in the CAV industry:

The triangle



Introducing connectivity and autonomous systems into vehicles means that software developers may also be potential licensees: successfully implementing CAVs on the road will increase the importance of connected elements and will rely on 5G connectivity, LIDAR sensors, and other emerging technologies, meaning that any given vehicle will require licensed technology from a large number of different SEP holders. This may be from traditional telecoms SEP holders as well as new CAV-specific SEPs developed in the automotive sector and held by competitor companies.

Further, as CAVs become increasingly complex, the number of components and systems increases and so too does the number of parts manufacturers and software developers involved.

No solutions to the problem of which entity/ies in the CAV ecosystem should be the licensee, have yet emerged. Whilst licensing technologies to relevant parts manufacturers may seem like an attractive option, there is, of course, a risk that in practice tying royalty rates to component parts will increase the costs of those individual components, meaning that any savings on the part of the OEM may not be as large as expected.

Currently, technology covered by telecoms SEPs makes up a comparatively small proportion of the value of a new car: a car with an "optional extra" of wireless mobile phone connectivity, for example, is not of substantially greater value than a new car without it. Going forwards, however, it may well be the case that more of the inherent value in a CAV will vest in its autonomous and connected software and systems than in its electrical and mechanical parts. If this happens, would it then make sense for the entity(ies) which are responsible for giving the CAV its autonomy (the CPU manufacturer, for example, or the operating system software developer), to pay the royalties? Alternatively, might we see a move away from traditional OEMs collaborating with parts makers and software developers towards conglomerates which design and build all of the hardware and software in-house, and effectively become sole licensees?

4. The risk of litigation and the approach in Europe

The UK

There has been a substantial volume of FRAND litigation in the telecoms industry in the UK in recent years, although to date no FRAND litigation relating specifically to the automotive sector.

The recent Supreme Court decision in Unwired Planet has confirmed that the UK courts are able and willing to determine the terms of a global FRAND licence. In other words, to determine licence terms covering both UK and non-UK SEPs. It is therefore likely that in future SEP holders will seek to bring FRAND proceedings in the UK against manufacturers in the automotive sector in order to avoid the need to litigate in each jurisdiction separately.

This trend has already been a feature of FRAND litigation in the telecoms sector.

Unlike other European jurisdictions, the UK courts have shown a willingness to set licence terms themselves, rather than merely deciding whether each party's offer is fair and reasonable.. The UK's approach to determining a FRAND royalty rate is to first look at comparable licences and then to cross-check this against a 'top-down' assessment (where the court considers the total royalty the implementer must pay and then determines the proportion attributable to that particular SEP holder's portfolio).

Germany

There have been quite a number of FRAND-related proceedings in Germany over the years, which were initially limited to the telecoms sector, but recently extended to the automotive sector (including the connected car litigations against Daimler referred to above).

In a number of decisions the courts have specified the principles underlying FRAND obligations in more detail. In a recent decision, the Federal Court of Justice took a stand in the *Sisvel v Haier* case on the FRAND regime set out by the CJEU and ruled that potential SEP infringers must clearly and unambiguously declare their willingness to enter into a licence agreement on FRAND terms "whatever terms are in fact FRAND".

In addition, the Munich Regional Court granted (and the Higher Regional Court Munich confirmed) in the context of the *Nokia v Daimler* litigation, an anti-anti-suit injunction against Daimler's supplier Continental, preventing Continental from seeking an anti-suit injunction in the US. The rationale of the decisions was that the anti-suit injunction in the US would unlawfully impair the possibility to enforce the patent in Germany.

Due to the strength of the German car industry, further FRAND-related infringement suits can be expected related to connected car technology in Germany.

France

FRAND litigation in France has not so far provided much case law guidance, notwithstanding the amount of litigation in the telecoms sector. This is because some cases have settled before a decision was issued, and also because alleged SEPs have been ruled either invalid or non-essential. Nevertheless, it appears that the French Courts will also have jurisdiction to set global FRAND licence terms.

French Courts have also confirmed the availability of anti-anti-suit injunctions in SEP cases, in order to ensure – on the basis of the French IP Code and the protection granted by the European Convention of Human Rights – that SEP holders have the right to enforce their French SEPs before the French courts.

With the automotive sector also being a strong and important industry in France, there is a high likelihood that SEP holders will in future bring FRAND proceedings in France against the automotive companies headquartered there.

5. Practical tips for licensing

The 2015 CJEU case of *Huawei v ZTE* sets out a practical framework for parties to follow when engaging in FRAND licensing negotiations. The below table summarises this guidance:

SEP holder obligations
Alert the infringer, designating SEPs in question and specifying how they have been infringed, prior to commencing proceedings
Provide specific written FRAND offer, specifying royalty and way it will be calculated
Implementer obligations
Respond "diligently" to the SEP holder's offer "in accordance with recognised commercial practices in the field" and "in good faith"
"Promptly" submit in writing a "specific counter-offer that corresponds to FRAND terms"
Avoid "delaying tactics"
If the SEP holder rejects the counter-offer, the implementer should provide security (eg bank guarantee or depositing funds), taking account of past acts of infringement
Express right of the infringer to challenge the validity and/or the essentiality of the SEPs in question or to reserve the right to do so in future

It is, however, important to keep in mind that the guidance on *Huawei v ZTE* has been interpreted differently in different European jurisdictions. For example, in the UK compliance with the precise steps set out by the CJEU is not mandatory. The only step that a SEP holder must take before commencing proceedings is to notify the implementer of its SEPs. Provided that step has been taken the court will take account of the conduct of the parties more generally, although the CJEU guidance provides a safe harbour.

The position in Germany is quite different. The general position is that the SEP holder must alert the implementer of the alleged infringement, the implementer must declare its willingness to take a FRAND licence and the SEP holder then make a FRAND offer before litigation is commenced. However, the Düsseldorf Regional Court has recently submitted questions to the CJEU in the *Nokia v Daimler* litigation (referred to above), including the question of whether it is possible for parties to remedy any failure after the start of the litigation.

In France, although there is no binding precedent that has implemented the *Huawei v ZTE* CJEU decision, it is highly likely that French Courts will rely on it as providing general guidance on what to focus on when assessing whether the SEP holder and the implementer have complied with their FRAND obligations.

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