

# IP AND THE AUTOMOTIVE SECTOR



SPECIAL REPORT

Gowling WLG is a global 100 legal practice, with more than 1,400 legal professionals across 19 cities in the UK, Canada, Europe, Asia and the Middle East. Focused on key global sectors including automotive, tech, energy, infrastructure and real estate, the firm provides clients with deep sector expertise.

Gowling WLG's market-leading automotive industry group brings together technical excellence in regulatory, corporate, intellectual property, employment, dispute resolution, real estate, commercial and competition law. With one of the largest and most highly regarded IP practices in Canada, leading practices in the UK and Russia, expert teams in Germany, China and Dubai and a global network of IP associates, Gowling WLG's IP practice supports its clients in jurisdictions across every continent.

The firm's specialist AutoTech team advises clients on innovative business strategies in a constantly changing and increasingly competitive landscape. Gowling WLG is the only law firm involved in the largest UK consortia, UK Autodrive, launched under the UK government's driverless cars initiative to support the introduction of self-driving vehicles in the UK.

## FOREWORD

**U**nprecedented challenges facing the automotive sector demand urgent re-evaluation of existing IP strategies.

The car industry faces, simultaneously, the emergence of connected and autonomous vehicles, regulatory pressures to eliminate the internal combustion engine and uncertainty over tariffs within Europe, with the US and potentially elsewhere.

Connected and autonomous vehicles in particular may require great changes in the approach to IP.

Autonomy requires innovations in artificial intelligence, mapping, sensors and connectivity. It has also triggered new market entrants, many pursuing radical new business models based around mobility as a service. This threatens the attractiveness and economics of private car ownership, while no-one can be sure which approach will win out. The viability of driverless ride hailing, for instance, may yet be dented by regulation, a lack of appropriate infrastructure, financial uncertainties around induced demand and competition from business models monetising search or content delivery. And that is assuming full autonomy is technically possible and accepted by the public.

These changes, together with electric drivetrain and alternative fuel cell development, have required massive investment by incumbents in new research and development and in buying up or into promising “platforms” for future revenues and customer relationships.

Much of the current investment is in areas that IP protects poorly or patchily from jurisdiction to jurisdiction: computer programs, computer-generated technology, data and business models. This may place more emphasis in the future on trade secrets, confidentiality and copyright. A move from selling products to selling mobility and related services will require car makers to refine and expand their current branding or co-brand

with service providing partners. The iPod and the iPhone demonstrate the importance of design rights in user interfaces and new form factors when technology revolutionises existing products. Autonomy may drive similar changes in all aspects of vehicle design.

Finally, the relative IP peace of the automotive sector is in question. New entrants may not be interested in the sector’s tradition of informal agreements and cross-licensing between equals, which have avoided much litigation in the past. Connectivity, and potentially autonomy, will increasingly require vehicles to work the inventions in “standard essential” patents. Such patents have been the basis for litigation in the telecommunications sector and their owners are increasingly looking at the automotive sector. Balanced positions recently taken by various regulators regarding the enforcement of standard essential patents place the development of licensing models largely in the hands of the market.

It has never been more important for the industry’s players to identify and protect IP, to check freedom to operate and to review approaches to licensing.

Everyone in Gowling WLG’s leading Automotive and IP teams would like to thank James Nurton and Natalie Canter for their dedication and insight in corralling the abundance of material that underpins this report. We also thank the many leaders in their fields who gave their time to be interviewed and to discuss the preliminary findings. Naturally, in order to share their experiences and predictions freely, most have done so on condition of anonymity.



**Matt Hervey**  
Director, Intellectual Property,  
Gowling WLG

## METHODOLOGY

**T**his report focuses on the questions that automated driving technology poses for intellectual property, and how those questions might be addressed by industry participants, regulators and courts. As of mid-2018, it is too early to make confident predictions but we can look at how IP issues have been tackled in other industries (such as smartphones) for guidance. The report is based largely on in-depth interviews with representatives of car manufacturers, telecoms companies, automotive industry suppliers, lawyers and patent attorneys, some of whom spoke anonymously. We have also drawn on published research by patent offices and others, and the results of an online survey completed by 219 IP professionals: the results of this are shown and analysed throughout the text.

Other topics that emerged during the research will be tackled in shorter side bars. These include: design rights, trade secrets and data protection.

The research for this report began in November 2017 and was completed in June 2018, and was conducted in association with Gowling WLG. In addition, a Steering Committee comprising representatives from across the industry was established and met to discuss some of the preliminary findings in April 2018. This meeting was invaluable in establishing the framework for this report and the main points to focus on. We are grateful to all those who took part in the research.

## Managing Intellectual Property

IN ASSOCIATION WITH



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# IP and the automotive sector

**T**he connected car has arrived and autonomous technology is coming. There are many questions yet to be answered: when will fully autonomous vehicles be on the roads?

Which countries and companies will lead the way? Who will win and lose from their introduction? Will autonomous vehicles gain public acceptance? But there are some certainties: huge investments are being made; research and development is booming; and the new technologies and business models will raise fundamental questions about intellectual property strategies.

Adding up data from 160 deals including investments, partnerships and acquisitions, the Brookings Institution estimated that at least \$80 billion had already been invested in “self-driving cars” by 2017. According to CB Insights, venture capital and strategic corporate investors put \$4.5 billion into autotech in 2017, three times the amount invested in 2016. Three-quarters of this investment went into autonomous vehicles.

This investment is being made by traditional car companies; new entrants such as Tesla; ride hailing companies such as Uber and Lyft; and

those from outside the industry, such as Waymo and Apple. A selection of recent announcements provides a snapshot:

- In June 2018, Toyota announced investment of \$1 billion in Grab, a south-east Asian ride-hailing start-up.
- In May 2018, Softbank invested \$2.25 billion for a 19.6% stake in Cruise, GM’s autonomous unit, valuing the unit at \$11.5 billion. Cruise expects its vehicles to join ride-sharing fleets in 2019.
- Also in May, Waymo, owned by Google, announced a partnership with Fiat, under which it will buy up to 62,000 autonomous Fiat Chrysler minivans.
- In March 2017, Intel agreed to acquire automated driving company Mobileye for \$15.5 billion.
- In 2017, Microsoft announced a patent licensing agreement with Toyota covering connected car technologies.
- Also in 2017, Ford agreed a deal with Amazon allowing users to control certain aspects of their car via the voice-based service Alexa.



A Waymo minivan. Since 2009, Waymo autonomous vehicles have driven more than six million miles. It would take the average American driver 300 years to cover the same distance.

There are at least three key challenges for IP arising from developments in the industry. First, the research and development is expensive and involves radical departures (artificial intelligence, light detection and ranging (LiDAR) etc), but it is not always clear how best to use IP to protect this investment. Second, the technology is evolving and in many cases will be owned or implemented by new entrants to the industry: this will threaten existing business models and require technology licensing on a large scale. Third, as the list of announcements above demonstrates, collaboration is going to be key to success – between partners as well as across the industry – and, combined

**“The biggest challenge we face is that the smartphone patent wars are coming to the automotive industry.”**

with requirements for interoperability, this will almost certainly lead to the use of existing and new industry standards and fair, reasonable and non-discriminatory (FRAND) licensing.

As we will see, there are already initiatives underway to license the platform technologies, and considerable lobbying about the best way to do so. But many in the industry fear that the path will not be smooth, and that the evolving circumstances will lead to fights in and out of court. “There is a high probability of litigation with each other. We will find out in the next couple of years,” as one in-house counsel said. Another in-house lawyer, at a leading automotive manufacturer, added: “The biggest challenge we face is that the smartphone patent wars are coming to the automotive industry.”

#### **What do we mean by autonomous?**

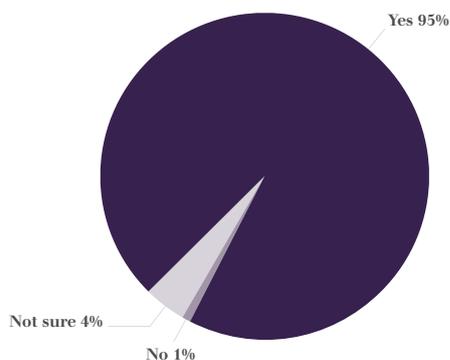
Many drivers believe the introduction of autonomous vehicles is a long way off. But in fact much of the technology behind them is already familiar, such as systems to keep cars in a lane and at a safe distance from the car in front.



**Table 1: Levels of autonomy**

SAE level	Name
0	No automation
1	Drive assistance
2	Partial automation
3	Conditional automation
4	High automation
5	Full automation

**Figure 1: Do you think IP rights will play a more important role in the development of the automotive sector over the next 5 years?**



Standardisation body SAE International has a classification system from 0 to 5 which has been widely adopted (see table 1). Levels 0-2 involve a human driver monitoring the driving environment, while levels 3 to 5 have an automated driving system monitoring the driving environment. Vehicles with adaptive cruise control, parking assistance and lane keeping assistance fall into level 1 and are already widely available. According to an analysis published by Bloomberg in May 2018, Waymo is planning to launch a pilot programme of driverless vans in Phoenix this year while GM is planning a ride-hailing pilot without steering wheel or pedals in 2019. While many other manufacturers are investing the level 4 and level 5 technology, these two companies are “the clear leaders”, according to Bloomberg.

Inevitably the higher levels of automation require much more hardware on board – in the form of sensors, cameras and navigation and road position systems on the vehicles. One crucial technology is LiDAR. LiDAR technology is expected to generate \$1.6 billion in revenue in 2022 and \$31.5 billion in 2032, according to analysis by the EE

Times. Between 2007 and 2017, LiDAR patent publications grew by 21% a year. “Three years ago, our IP programme was minimal. We have now built our patent portfolio substantially and internationally,” says one source in the LiDAR industry.

### **A connected world**

Equally important, even at the lower levels of automation, are technologies that enable communication. In April 2018, for example, it became mandatory for all new cars sold in the EU to have eCall installed. eCall automatically dials the emergency services when a car is involved in an accident, providing Galileo coordinates, airbag deployment and impact sensor information. It is estimated that up to 20% of cars on the road today incorporate connectivity of some kind.

At levels 4 and 5, connectivity will be essential: vehicles will need to communicate with other vehicles on the road, with stationary objects (such as traffic signals) and with remote centres that will track vehicle behaviour, collisions and near misses. Such technology may soon become vital for safety, security and navigation. In addition,

## What is 5G?

Now under development and expected to be launched from about 2020, 5G is set to provide benefits including device-to-device communication, which is crucial to the Internet of Things. The standards for the various technologies that will make up 5G – enabling reduced latency, increased volumes of connections, improved battery life and greater download speeds – will be established during 2018–2020. The first full technical specification for

the 5G wireless open standards was released by standards body 3GPP in June 2018.

Owners of 5G standard essential patents are likely to include a large number of European, US and Asian technology companies, while the technology is likely to be implemented in objects throughout the home and workplace, as well as vehicles and mobile devices. This makes for a very different market to earlier generations of mobile technology, where there were just a handful of patent owners and the

technology was mainly used in mobile phones.

5G is the fifth generation of mobile technology to be introduced since the early 1980s. A McKinsey study estimates that the economic potential of IoT applications will be up to €9 trillion a year by 2025 in developed countries.

The 5G Automotive Association (5GAA) was founded in September 2016 and now has more than 80 member companies from the automotive and ICT industries.

## Going green

Communications and autonomy are not the only areas where IP rights are set to play an important role in the automotive industry. At the same time as manufacturers are investing in automated driving technology, there are also revolutionary developments in fuel efficiency, battery technology and aerodynamics.

These are largely being driven by legislative initiatives to cut emissions and promote clean technology. In the UK and France, for example, governments have set a target of 2040 to end sales of petrol- and diesel-fuelled cars. Some cities plan to bring in bans

even sooner. In Germany, a court ruled in February that individual cities can go ahead with bans on diesel cars. China's vice-minister of industry and information technology last year said the country would ban fossil fuel cars "in the near future".

These initiatives are prompting investment in battery and charging technology to power the next generation of vehicles. Meanwhile, in the short term, manufacturers are developing new technologies in filters, engine control systems (so that, for example, some cylinders can be switched off when not required) and reducing the weight of vehicles by using

materials such as magnesium alloys and carbon composites.

As both governments and consumers increasingly emphasise the environment, vehicles will be redesigned from the front bumper to the back. And even the most fundamental elements of the industry can be improved: in June 2018, the European Inventor Award was presented to Agnès Poulbot and Jacques Barraud for a tyre tread design that reduces fuel consumption and CO2 emissions and increases the life of tyres by up to 20%. Michelin patented this technology in 2013, nearly 120 years after the same company rolled out the very first removable tyres for automobiles.

communications will be important for enhancing the user experience (especially as, at the higher levels of automation, vehicle occupants will need things to do with their time). This could include providing live information, entertainment and shopping during the journey.

### The role of intellectual property

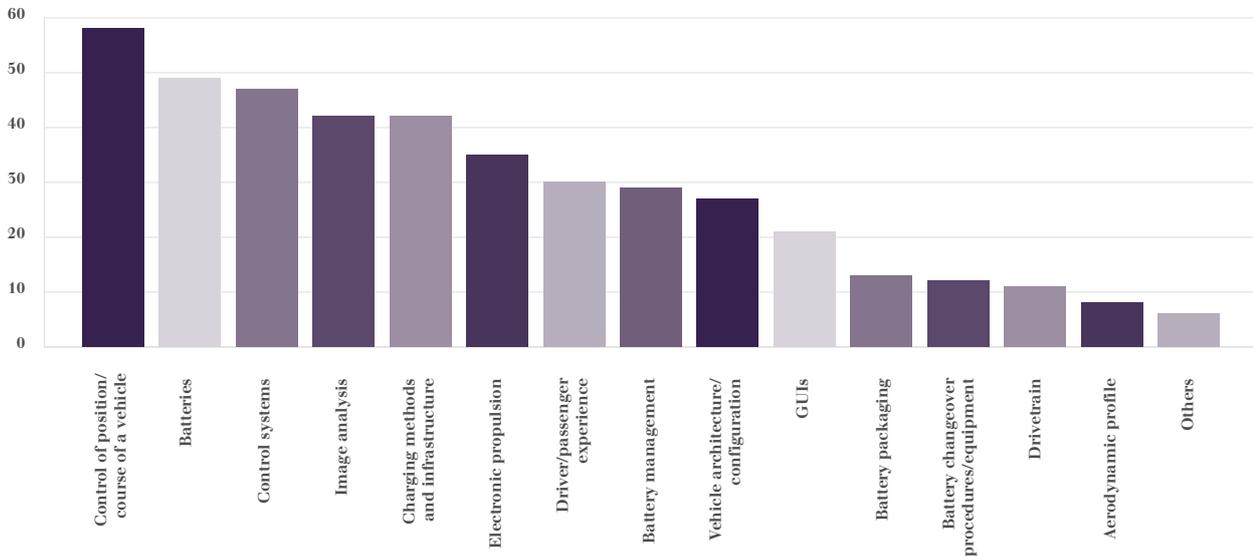
In the online survey conducted as part of the research for this report, 95% of respondents predicted that IP rights will play a more important role in the sector (see figure 1) with the focus being on technologies relating to autonomous vehicles and communication: the top four categories identified were control of position/course of a vehicle; batteries; control systems; and image analysis (figure 2). Patents were seen as the most

significant area of intellectual property, with more than 80% of respondents saying they will be important for autonomous vehicles, but it was notable that many respondents also identified other IP rights or means of protection as likely to be important (figure 3).

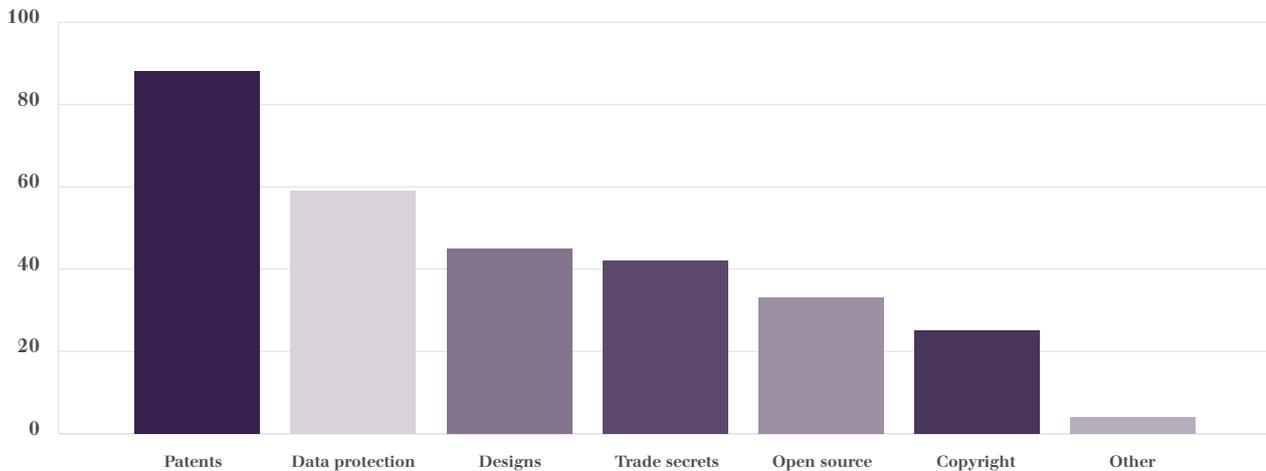
### Trends in patent filing

Both our online survey and anecdotal evidence support the thesis that patenting activity is soaring in the automotive sector. Chart 4 shows that 65% of respondents see patent filings increasing, compared to 1% who believe they are decreasing. "The ecosystem is developing rapidly ... Our patent portfolio is six times the size it was three years ago," an in-house counsel for one tier one supplier says, adding: "If you have valuable patents

**Figure 2: In which of the following technologies do you think IP rights will play an important role in the next 5 years? (%)**



**Figure 3: Which of the following will be important for autonomous vehicles? (%)**



early in development with broad application, then you are well positioned ... Everybody entering the field is heavily engaged in patenting activity.” Another says: “Since 2015 we have dramatically increased patent applications and geographical coverage, and 50% of our filings are in new technical areas.”

This trend reflects several influences. First, there is simply more money being invested in research and development, and R&D is expanding into new areas. Second, as one in-house counsel says, there is “enormous disruption” as new entrants develop and patent relevant technology. Third, and partly in response to this, auto companies need to ensure they are on an equal footing with their competitors, including in terms of patents. “We are building our portfolio both

organically and through acquisitions,” said a lawyer at a leading European manufacturer. A number of original equipment manufacturers (OEMs) have reportedly hired staff from IT and telecoms companies to boost their R&D in this area.

**Crunching the numbers**

Identifying trends in automotive patenting is hard to do. This is partly because of the great diversity of patentable technologies and the variety of companies involved in research, and partly because many technologies that are likely to be relevant to the auto industry are also going to be relevant in other fields, and may be categorised accordingly. As with all patent data, there is also the risk of information being out of date: patents are

## What role will trade secrets play?

Perhaps the highest-profile dispute regarding automated vehicles so far has been the trade secrets case between Waymo and Uber in the United States. This case was initiated by Waymo in January 2017 and settled in February 2018, with Uber offering Waymo's parent Alphabet 0.3% of its equity (worth about \$245 million at the time) along with some other undertakings. The dispute concerned allegations that former Waymo engineer Anthony Levandowski had downloaded and copied some 14,000 documents and

subsequently communicated with Uber. The litigation, being heard before Judge William Alsup in the Northern District of California, started with broad claims of patent infringement and trade secret theft but had shrunk before it was settled. Nevertheless, a lot of information was revealed in court filings – probably more than either side would have liked.

The case attracted much media attention, thanks partly to the possibility of some explosive witness evidence in court, and there was some speculation that this was merely the first of many similar disputes in the industry. But in fact the opposite may be the case. As one US trade secrets specialist says: “Reverse engineering is rampant and easily

available in the auto industry, and most of what you do is going to be put out into the market. Protecting things by secrecy is not going to be terribly practical, so secrecy will not overtake patenting.”

Trade secrets might not be important for products that have been put on the market – but may still have a role to play during internal development as new processes are developed. They will also likely be one means to keep control of the large amounts of data needed to train and derived from artificial intelligence systems, which will be crucial for autonomous vehicles. “There are practical problems with enforcement of trade secrets,” says Matt Hervey of Gowling WLG. “But trade secrets could be the key to protecting AI.”

published at least 18 months after being filed, so (for example) analysis of publication data in June 2018 reflects what was being filed at the beginning of 2017.

However, there is a lot of useful information in a report, “Patents and the Fourth Industrial Revolution (4IR)”, published by the European Patent Office and the Handelsblatt Research Institute in December 2017. This analysed and classified European patent applications relating to

autonomous objects filed up to the end of 2016. It found that 5,000 such patent applications were filed at the EPO in 2016, and that the annual rate of growth was 54% (compared to an average growth in patent filings of 7.65%). The top five applicants from 2011 to 2016 were Samsung, LG, Sony, Nokia and Huawei. In the 1990s, 4IR patents represented less than 1% of all applications at the EPO; in 2016, they accounted for about 5.3% of applications.

Figure 4.7: Vehicle applications and enabling technologies

Figure 4.7.a  
Enabling technologies in Vehicle inventions

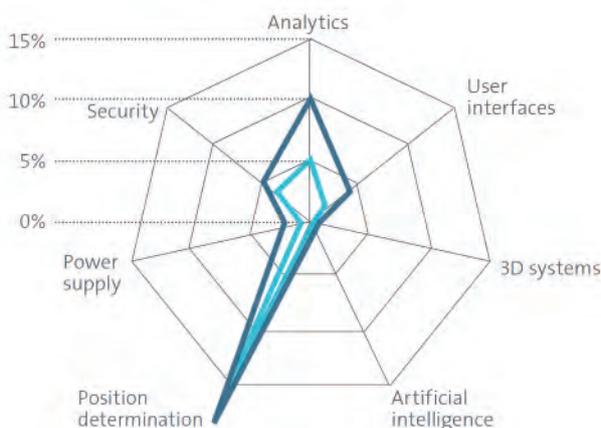
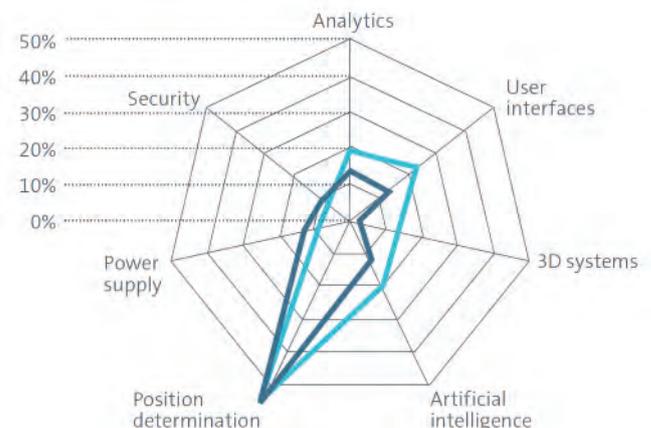


Figure 4.7.b  
Vehicle applications in enabling inventions



Source: European Patent Office

Within 4IR, patent applications for inventions in “vehicles” have risen sharply in the past six years, and reached 1,104 in 2016. Among the top 25 4IR applicants, the best represented in the “vehicles” category were Toyota (3.6% of applications), LG (2.9%), Nokia (2.8%), Qualcomm (2.7%), Honeywell and Boeing (both 2.6%). German applicants are particularly prominent overall, with Upper Bavaria alone accounting for 2.5% of vehicles applications within 4IR. The report also found that:

Position determination is by far the most important enabling technology in inventions related to Vehicles, with a stable presence in about 15% of all inventions in this field (Figure 4.7.a). Conversely, more than half of inventions in Position determination are actually related to Vehicles, which is therefore the main driver of innovation in this enabling field (Figure 4.7.b). Analytics, and to a lesser extent Security and User interfaces, are increasingly integrated in applications for Vehicles. Only a small fraction of inventions in Vehicles are related to Artificial intelligence or 3D systems (Figure 4.7.a). However, they represent 20% and 15% respectively of inventions in Artificial intelligence and 3D systems, and are therefore important drivers of innovation in these two enabling technologies.

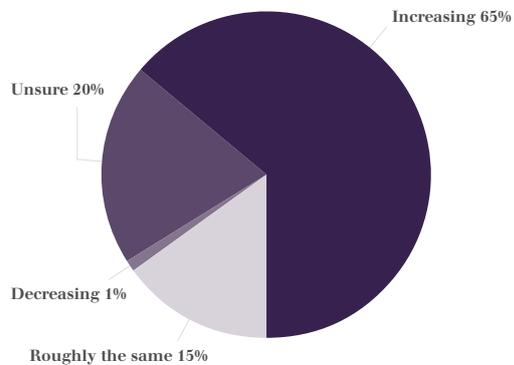
Other analysis supports the EPO findings. For example, a study of published patent applications by IP firm Reddie & Grose found that patents for “autonomous vehicles” grew from just over 600 in 2007 to 2500 in 2016, with the top five filers being Toyota, Hyundai, Alpine, Bosch and Honda. However, when the results were broken down according to classification, a mix of traditional OEMs and new entrants was revealed:

- The top filers for “control of position/course of a vehicle” were, in order: Google, Ford, Toyota, GM, Bosch.
- For “image analysis”, the top five were Samsung, Toyota, Fujitsu, Honda and Denso.
- For “electric propulsion with power supplied within the vehicle” the top five were Toyota, Honda, Hyundai, Nissan and Bosch.

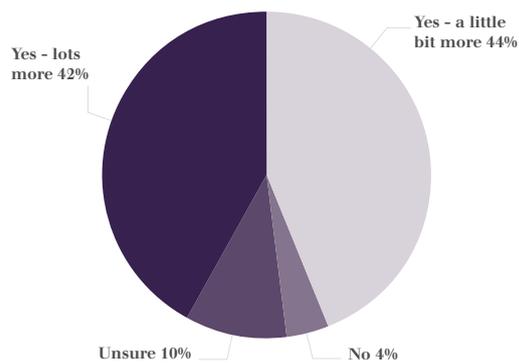
### Licensing models

The diversity in ownership of patents relevant to autonomous vehicles leads to one of the key challenges now facing the industry: the companies that assemble, manufacture and sell vehicles do not necessarily own the technologies that will be central to their development in the coming years. “Cars are already here and don’t have connectivity technology of their own. Patent owners want a reasonable royalty, but car companies are used to their suppliers taking care of IP issues,” explains one high-tech in-house counsel. However, there is cooperation

**Figure 4: Judging by your experience, is the number of patent filings in the automotive sector:**



**Figure 5: Do you expect to see more litigation over IP rights in the automotive sector?**

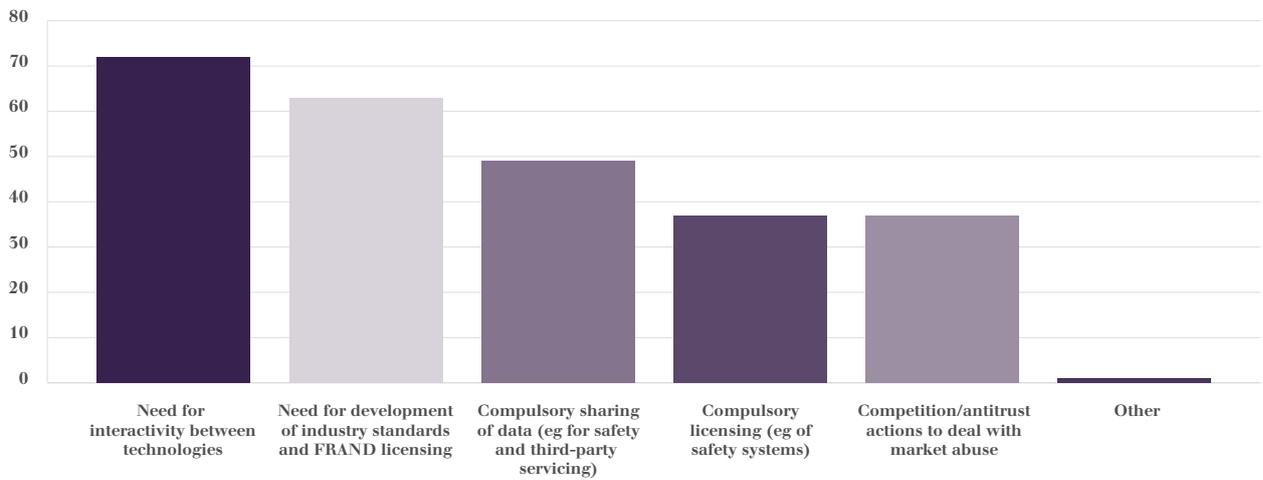


between the different industries at various levels, such as in the 5GAA (see box). “We’re talking to the auto companies a lot more. They are very good at providing the use cases. We can tell them the restraints, so there is useful interaction between us,” says one counsel at an ICT company.

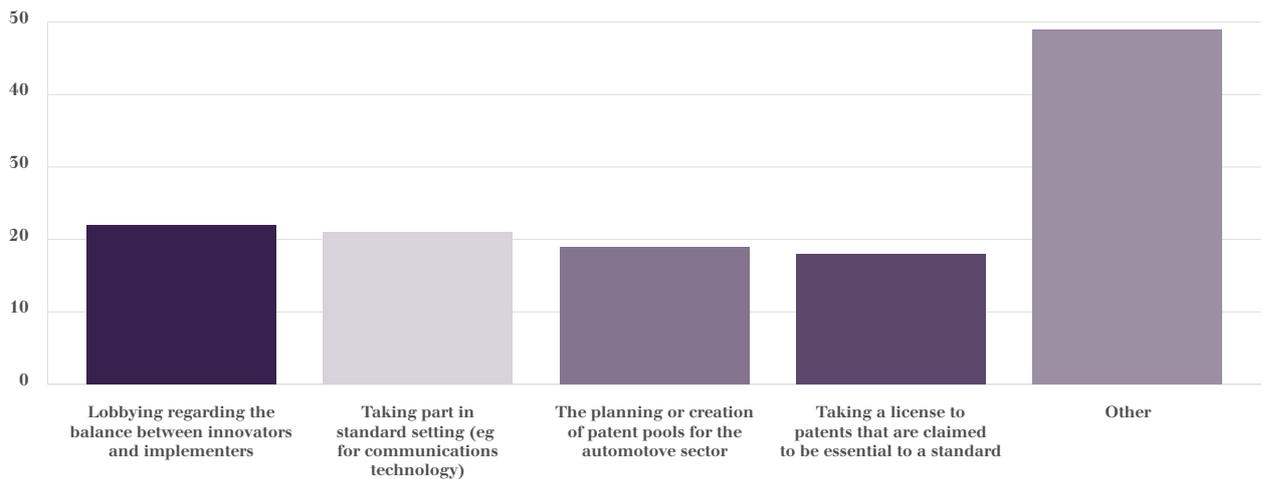
Figure 6 reveals that issues to do with sharing and exploiting technologies are seen by many practitioners as among the most likely to arise with autonomous vehicles, while figure 7 shows that about a fifth of respondents say they plan to be involved in standard setting, with a similar proportion planning to be involved in patent pools and taking a licence to SEPs.

IP disputes in the automotive industry have traditionally been relatively rare for a number of reasons. One was that companies tended to invent around others’ IP rights. And, in cases where licensing was necessary, disputes could often be resolved amicably. Moreover, safety-critical technology was licensed at little or no cost. The patent on the three-point seat belt, invented by Nils Bohlin of Volvo in the 1950s, was not enforced: as Volvo managing director Alan Dessell

**Figure 6: Which of the following do you think are likely to arise with autonomous vehicles? (%)**



**Figure 7: Have you been, or do you plan to be, involved in any of the following? (%)**



said: “The decision to release the three-point seat belt patent was visionary and in line with Volvo’s guiding principle of safety.” Other technologies were cross-licensed between competitors under what one industry participant describes as “a type of gentlemen’s agreement”. Moreover, IP licensing would typically be taken care of in the supply chain, meaning components were provided to manufacturers with warranties. The new world of autonomous vehicles changes all of that.

**Computers on wheels**

Much of the technology driving autonomous vehicles is owned by IT, telecoms and software companies. Some of this technology will provide a competitive advantage and may not be licensed, but much of it is likely to relate to how cars communicate and share data. Some will inevitably be essential to standards for interactivity, communication, safety and security. How to license those patents is something that has been exercising manufacturers, IP lawyers and regulators over the

past couple of years. “Standard essential patents (SEPs) and how they work in the automotive sector is the growing focus in this industry,” says Matt Hervey, a director in the IP team of Gowling WLG in London.

The EU, US and Japan have each recently provided some guidance on this issue.

Following unprecedented lobbying from both the automobile industry and by patent owners and “implementors”, the European Commission published a communication on SEP licensing in November 2017. This set out key principles “to foster a balanced, smooth and predictable framework for SEPs”. The Communication provided guidelines on transparency, FRAND licensing and enforcement but stopped short of taking a position on some of the most controversial issues in the standards debate.

At about the same time, on November 10 2017, US Assistant Attorney General Makan Delrahim gave a speech at the USC Gould School of Law’s Center for Transnational Law and Business



UK Autodrive is one of three projects that are part of the UK government's Introducing Driverless Cars competition. It is carrying out road trials in the cities of Milton Keynes and Coventry, using cars provided by partners Ford, Jaguar Land Rover and Tata Motors European Technical Centre, as well as self-driving pods such as this one.

Conference in Los Angeles. He used this speech to address the role of standard-setting organisations (SSOs), saying: "I worry that we as enforcers have strayed too far in the direction of accommodating the concerns of technology implementers who participate in standard setting bodies, and perhaps risk undermining incentives for IP creators, who are entitled to an appropriate reward for developing break-through technologies. The duelling interests of innovators and implementers always are in tension, and the tension is resolved through the free market, typically in the form of freely negotiated licensing agreements for royalties or reciprocal licences." Criticising some US court decisions, and urging "fresh thinking about the implications of SSOs and the proper role of antitrust law", Delrahim concluded by saying that "concerns over possible innovator hold-up should not override the dangerous prospect of implementer hold-out".

Finally, on June 5 2018, following an extensive consultation process, the Japan Patent Office

also published its "Guide to Licensing Negotiations involving Standard Essential Patents", a 50-page document discussing licensing negotiation methods and royalty calculation methods. This guide acknowledged the "lack of convergence over certain points" adding: "That convergence will eventually emerge as technologies and markets continue to evolve and cases of dispute resolution accumulate, while new issues too will inevitably emerge."

#### A balanced approach

In its communication, the European Commission said the evidence suggests that "the licensing and enforcement of SEPs is not seamless and may lead to conflicts". To address this, it provided guidance in three areas: (1) Increasing transparency on SEPs exposure; (2) General principles for FRAND licensing terms for SEPs; and (3) A predictable enforcement environment for SEPs.

The Commission did not take a position on some issues that were aired during the debate

## Design disputes

Design rights play an important role in the automotive sector, but there is inconsistency in particular in relation to the protection of spare parts. A report commissioned by the European Commission in 2016, as part of its review of the EU Design Directive, found that “the economic evidence suggests that there is no broad economic justification for maintaining spare parts protection” and recommended that “legislative amendment at the EU level appears necessary”. However, no changes to the Directive have yet been proposed.

In the US, the Automotive Body Parts Association (ABPA) recently sought a declaration that two of Ford’s design patents are

invalid or unenforceable. In an order denying the ABPA’s motion for summary judgment on February 20, Judge Laurie J Michelson of the US District Court for the Eastern District of Michigan said: “[T]he ABPA argues that designs for auto-body parts are simply not eligible for patent protection because consumers seeking to repair their vehicles do not select body parts for their design and because the designs were dictated by the body parts’ function.” In the alternative, the ABPA argued that such design patents are unenforceable because the rights are exhausted upon the first sale. In a victory for Ford, the judge rejected both arguments.

In our survey, 45% of respondents thought that design rights would be important for autonomous vehicles, and there has indeed been a lot of litigation

over designs in the US, Europe and in particular China. Moreover, if lessons are to be drawn from the smartphone industry, then it should be noted that many of the high-profile disputes, including that between Apple and Samsung, included claims of design infringement. As Matt Hervey of Gowling WLG says: “The iPod and then the smartphone created new form factors and user interfaces. A lot of the litigation focused on design rights as a result of that”

It is likely that there will be disputes over the shape of cars, the look of graphical user interfaces (GUIs) and other user tools developed for autonomous cars. But the consensus among those interviewed for this report was that design rights, though valuable in certain respects, are unlikely to play a role in the evolution of the industry.

leading up to the Communication. An important area of disagreement is use-based licensing. SEP owners argued that, for example, a vehicle that requires constant connectivity makes greater use of wireless communication than a fridge that connects once a day, and should therefore pay a greater royalty. Another source of contention was: who needs to take a licence – the supplier or end-user manufacturer? It looks like it is left to the market, or the courts, to decide these questions. “The approach taken by the Commission – and by the US Assistant Attorney – has returned the pendulum for and against SEP holders to the centre,” says Matt Hervey of Gowling WLG in London.

One of the first attempts to create a market solution was the establishment of Avanci in 2016. The Dallas-based company, which describes itself

**“The approach taken by the Commission – and by the US Assistant Attorney – has returned the pendulum for and against SEP holders to the centre.”**

as a “patent licensing clearinghouse” for the Internet Of Things, offers licences to essential patents owned by its 11 members. These include Ericsson, Qualcomm, ZTE, BT, Vodafone, Panasonic and Sharp, and more members are expected to be added. It has a fixed-price royalty model based on the value the technology brings to a device and promises that the price will never increase if further essential patents are added to the licence. For vehicles, the royalty rates are \$3/vehicle (eCall only), \$9/vehicle (3G, 2G and eCall) or \$15/vehicle (4G, 3G, 2G and eCall). Prices for 5G have not been set yet. In December 2017, Avanci announced that it had signed a licence agreement with BMW, which “will to a large extent be handled through its supplier for telematics units”.

Avanci says its proposal offers simplicity, transparency and predictability to the auto industry. But one source estimates that at present it only covers about half of all essential patents and several major patent owners are not members. Other licensing organisations include Sisvel – which offers patents owned by companies including Airbus, KPN, Mitsubishi and Orange – and Via Licensing (an independent subsidiary of Dolby Laboratories). And then there are companies such as Nokia that own many patents but have not joined any licensing pool.

As one in-house counsel says: “Relatively few people in the auto industry understand patent licensing. With so many offers out there,

it will take a lot of work to convince people they should be paying.” And, even if they accept the principle, there are further questions: what changes when 5G arrives? What happens if you already have a licence from a patent owner and that company then joins a group such as Avanci? “Many patents are already licensed, and you don’t want to be paying double!” says one industry source.

On one side of this debate is the Fair Standards Alliance, which campaigns for “a fairer and more transparent SEP licensing ecosystem” and counts BMW, Ford, Honda and Volkswagen among its members. Its concerns are that implementers are going to end up over-paying for technologies, have their supply chains disrupted and be subject to endless litigation. On the other side is IP Europe, which represents patent owners such as Airbus, Ericsson, Nokia and Orange as well as a number of SMEs. It argues in favour of use-based licensing, and points out (as one source put it) that connectivity will soon be as essential to a new vehicle as an engine is.

### Battles looming

The lack, so far at least, of clearly defined licensing models, combined with the development of new technologies and new entrants leads many in the industry to speculate that the era of the “gentlemen’s agreement” will inevitably be replaced by one marked by assertions of patent infringement and battles in court. As one in-house counsel at a major manufacturer said: “The wireless consortiums will have to sue. I’m concerned it’s going to be me that gets sued.” In our survey, 86% of respondents said they expected to see either a little bit more or lots more litigation over IP rights in the sector (figure 5). “Car companies will try to hold out for as long as possible. Patent holders will be unreasonable enough and we will have litigation,” comments one in-house counsel.

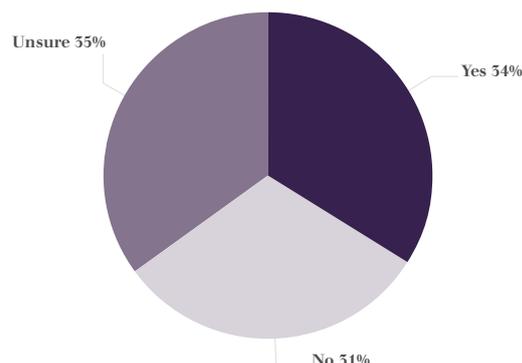
The first such skirmish came when Broadcom filed a series of patent actions against auto manufacturers. On May 8 this year the US chip-maker sued an OEM in the US district court in Marshall, Texas, alleging infringement of six of its patents. It followed this with a complaint before the US International Trade Commission on June 7 alleging that various companies imported and sold infotainment systems that infringed several patents covering the receipt of satellite signals and the control of TV systems in vehicles. It has also emerged that Broadcom has filed actions in Germany against two German OEMs, as well as several of their suppliers, alleging infringement of 13 patents for wireless communications in vehicles. The first hearings in the cases took place in Mannheim on June 12 and 29 2018. Observers throughout the industry will be watching how these cases develop and what lessons they provide for other patent owners and manufacturers.

## Does the IP system need changing?

Perhaps surprisingly, given it was a survey of IP practitioners, one-third of respondents to our online questionnaire thought IP laws need updating for the auto industry (figure 8). No fewer than 50 suggestions were given for improvements. These included the following (some of which are inevitably in contradiction):

- Patentability of computer software must be clarified in both Europe and the US
- Guidelines on collaboration should be clarified
- Current means of protection need to be longer and wider in scope
- Anti-counterfeiting measures need to be improved
- Protection term should be shorter
- The patent application process should be speeded up
- Data must be effectively protected
- Clearer principles on FRAND calculation, principles, proportionality and indemnity in the supply chain
- Harmonisation of laws
- IP laws need to be adapted to effectively protect AI
- Term of patent protection should be reconsidered
- IP laws need to be updated to include provisions to protect experimental data

Figure 8: Do you think IP laws need to be updated to facilitate automotive technology development?



## Data is the key

One thing that everyone agrees on is that autonomous and connected vehicles will generate enormous amounts of data. From travel patterns to information on collisions and near misses, all of this data will be of value and some of it will be closely guarded and some of it will need to be shared, either on a voluntary or compulsory basis. “Automated cars will constantly collect data on the most apparently benign things, such as the outside temperature,” says one former in-house counsel at a large auto company. “Who owns that number?” Our survey (figure 10)

showed that respondents were divided over whether it should be the manufacturer, car owner, driver, government or an independent organisation. Such questions are largely outside the scope of this report, and are covered more thoroughly in “Are You Data Driven?” published by Gowling WLG in 2017.

Nevertheless, they are issues that IP practitioners are increasingly likely to be called upon to address. As one says: “Data protection is becoming the biggest issue. Who owns it? How is it used? We will soon have data for hundreds of characteristics for every vehicle, all of which can be used in some way. This will

require some high-level agreements”

Patrick Arben, a partner of Gowling WLG, says that companies are going to be more aware of the importance of keeping data secure and gaining consent from users following recent media coverage and the implementation of the General Data Protection Regulation in May 2018. “The threat posed by a data breach and civil claims from data subjects is serious,” he says, but adds: “If your infrastructure builds in privacy by design, then you should be fine. If on the other hand you overlay security systems after the event then you may be creating greater vulnerability.”

## Five key questions

With the automobile industry changing rapidly, there are many uncertainties about how different it will be in a decade’s time. And how the industry develops could have an impact on IP strategies. Here are a few issues that our interviewees agreed are likely to shape the way companies protect, exploit and enforce their intellectual property:

- How will business models change? For most of its life, the car industry has been dominated by private ownership of vehicles. Will connected and autonomous cars change this, and make it less necessary for individuals to own their own? Will the

growth of car sharing and ride hailing accelerate this trend? What impact will this have on manufacturers dealerships and insurers?

- How will data and artificial intelligence be protected? Which IP rights will play a role? As in smartphones, will there be competing open source and proprietary models?
- How will the value and recognition of trade marks be affected? If cars merely become a means of getting from A to B and the driver does not own the vehicle, will consumers still be attracted to particular brands? And where basic technology is standardised, how will brands stand out? What impact will such changes have on trade mark strategies?
- As the technology behind

vehicles changes, will that affect the importance of design rights? As new forms emerge (for example, pods and other vehicles without manual controls) will companies rush to register new designs? And if so to what extent will these be protectable and enforceable?

- Will different jurisdictions develop in different directions? The rollout of fully autonomous vehicles will depend heavily on infrastructure and government regulation, so will some countries move faster than others or enable different technologies or business models? What will happen where countries share land borders (for example in Europe or North America) – will common standards need to be agreed?

One of the concerns in the auto industry is that with so much money going into autotech research, patent owners will be under pressure from investors to monetise their assets – and this makes patents likely to be asserted. “At some point these patents will hit the street,” says one in-house counsel. “It’s time to sound the alarm!” Another says: “I expect the patent trolls to come back strongly.” Indeed, interviews with OEMs during

the research for this report indicate that patent assertions from outside the industry have increased notably in the past couple of years, and the OEMs are braced for many more.

Patent assertions are something that car companies are going to have to learn to deal with. But litigation over SEPs poses particular challenges. It is widely accepted that the higher levels of automation will require some cross-

industry standards. As one in-house lawyer at a high-tech company said: “If there’s a really good safety feature that will have to be shared. And to enable them there will have to be interactions between vehicles on the road. That implies some sort of FRAND obligation.” As yet, these standards are yet to be set, it is not clear which patents will be relevant to them, or who will require licences. Disputes over these questions are inevitable.

Luckily, there may be some lessons from the smartphone industry, which has seen many years of litigation addressing questions such as: when is a patent essential to a standard? When is an injunction appropriate in a FRAND case? And, where a patent is found to be essential, what is a suitable royalty rate? Three recent cases shed some light on these questions.

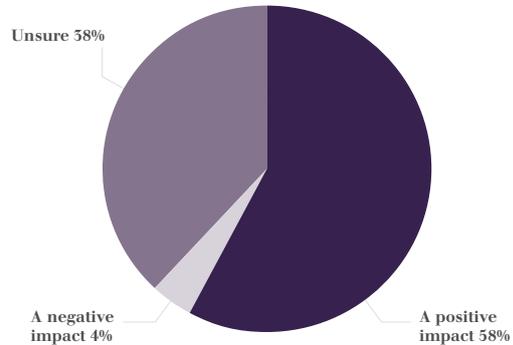
In the UK, the detailed *Unwired Planet v Huawei* judgment given by Mr Justice Birss in April 2017 addressed both patent and competition issues raised by Unwired Planet’s assertion of a number of SEPs against Huawei. The judge concluded that there was one FRAND rate and that a licence should be agreed on worldwide terms. He also set out the precise royalty rates that he believed were FRAND in this case and made it clear that the court had the power to order an injunction if a licence were not agreed. Huawei has appealed these findings: there was a hearing in May 2018 and the Court of Appeal’s judgment is expected later this year.

*Unwired Planet* is one of several cases in the past year concerning FRAND and the licensing of SEPs. In December 2017, Judge James Selna of the Central District of California gave his judgment in *TCL v Ericsson*, the fourth case to determine a FRAND rate in the United States but the first regarding a large multi-standard portfolio and the first to address what is meant by “non-discriminatory”. The judge rejected the patent owner’s proposed royalty rates, saying “Ericsson’s patent portfolio is certainly not as strong or essential as it has claimed”, and setting his own rates for its 2G, 3G and 4G portfolios. Like Birss, he took an international perspective and reviewed comparable licences in order to reach his conclusion. Ericsson has appealed the ruling.

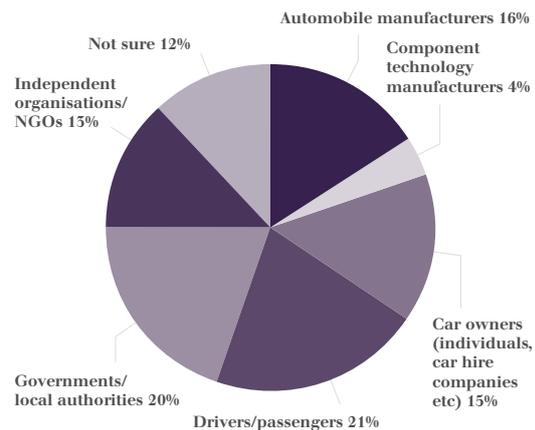
Finally, in China, the Shenzhen Intermediate People’s Court took a slightly different approach in *Huawei v Samsung*, handed down on January 11 2018. Finding that Samsung infringed Huawei’s SEPs, and that the patent owner had met its FRAND obligations, the Court granted an injunction covering China, criticising Samsung over its approach to the licensing negotiations. There are further cases pending between the parties in both China and the US.

Will these decisions, and others now pending before courts, provide a model for the auto industry? They will undoubtedly be studied by both

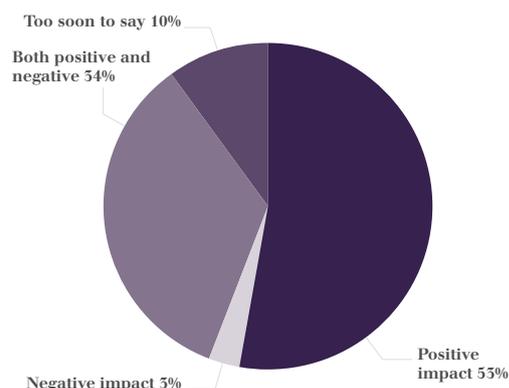
**Figure 9: What impact will Free and Open Source Software have on the development on autonomous vehicles?**



**Figure 10: Automotive technology is likely to lead to large amounts of data being collected from road users. Who should control that data?**



**Figure 11: Overall, what impact do you think IP rights are likely to have on the development and rollout of autonomous vehicles?**



**“If there’s a really good safety feature that will have to be shared. And to enable them there will have to be interactions between vehicles on the road. That implies some sort of FRAND obligation.”**

licensors and licensees. As several interviewees noted, the key jurisdictions for auto patent litigation are likely to be Germany, the US and China so cases in these countries will be looked at particularly closely. But much will depend on what standards are agreed, the nature of the portfolios asserted and information on comparable licences (where available). At least one in-house counsel at an OEM questions whether parallels can be drawn directly with the smartphone sector: “Smartphones are a special example in a special industry. There are lots of other licensing models for SEPs.”

### A test bed

Take up of automated and connected vehicles will depend on many things – safety, accessibility, security, public acceptance – but solving the IP problems will be crucial to ensure that efficient, trusted and cost-effective vehicles are available. Perhaps reassuringly, more than half of respondents to our survey thought that IP rights will have a positive impact in this area (figure 11) though a similar proportion felt that free and open source software would also have a positive impact (figure 9). If the IP challenges discussed in this report are not adequately addressed, then the rollout of this new technology will be delayed or disrupted. All those involved therefore have an incentive to find solutions, and to react as the industry adapts – for example if ride-sharing becomes commonplace and individuals no longer see the need to own their own car, or if vehicle manufacturers adopt different business models. “One of the real challenges is the *transition* from driven to driverless cars,” says Matt Hervey of Gowling WLG. “How do you get to the point where all cars are autonomous?”

Addressing these questions will support not just the auto sector but potentially others as well: similar challenges will also be faced by many other industries once 5G systems are rolled out and the Internet of Things arrives. If it is successful, the auto industry may become a model for the successful development and licensing of IP rights.

## Further reading

The following documents are referred to in the text:

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EPO/Handelsblatt Research Institute, “Patents and the Fourth Industrial Revolution”: [www.epo.org/news-issues/news/2017/20171211.html](http://www.epo.org/news-issues/news/2017/20171211.html)

European Commission, “Communication ... setting out the EU approach to standard essential patents” (PDF): <https://ec.europa.eu/docsroom/documents/26585/attachments/1/translations/en/renditions/native>

Makan Delrahim, speech at USC Gould School of Law’s Center for Transnational Law and Business Conference: [www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-usc-gould-school-laws-center](http://www.justice.gov/opa/speech/assistant-attorney-general-makan-delrahim-delivers-remarks-usc-gould-school-laws-center)

Japan Patent Office, “Guide to Licensing Negotiations involving SEPs”: [https://www.jpbo.go.jp/torikumi\\_e/kokusai\\_e/seps-tebiki\\_e.html](https://www.jpbo.go.jp/torikumi_e/kokusai_e/seps-tebiki_e.html)

5G Automotive Association: [5Gaa.org](http://5Gaa.org)

European Commission, “Legal review of industrial design protection in Europe”: [ec.europa.eu/growth/content/legal-review-industrial-design-protection-europe](http://ec.europa.eu/growth/content/legal-review-industrial-design-protection-europe)

Gowling WLG, “Are you data driven?”: [gowlingwlg.com/getmedia/00546f3a-9074-47f8-b50b-fcd048e89095/162405-are-you-data-driven.pdf.xml](http://gowlingwlg.com/getmedia/00546f3a-9074-47f8-b50b-fcd048e89095/162405-are-you-data-driven.pdf.xml)

EPO, “European Inventor Award 2018”: [www.epo.org/learning-events/european-inventor.html](http://www.epo.org/learning-events/european-inventor.html)

McKinsey & Company, “Are you ready for 5G?”: [www.mckinsey.com/industries/telecommunications/our-insights/are-you-ready-for-5g](http://www.mckinsey.com/industries/telecommunications/our-insights/are-you-ready-for-5g)

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