Hogan Lovells

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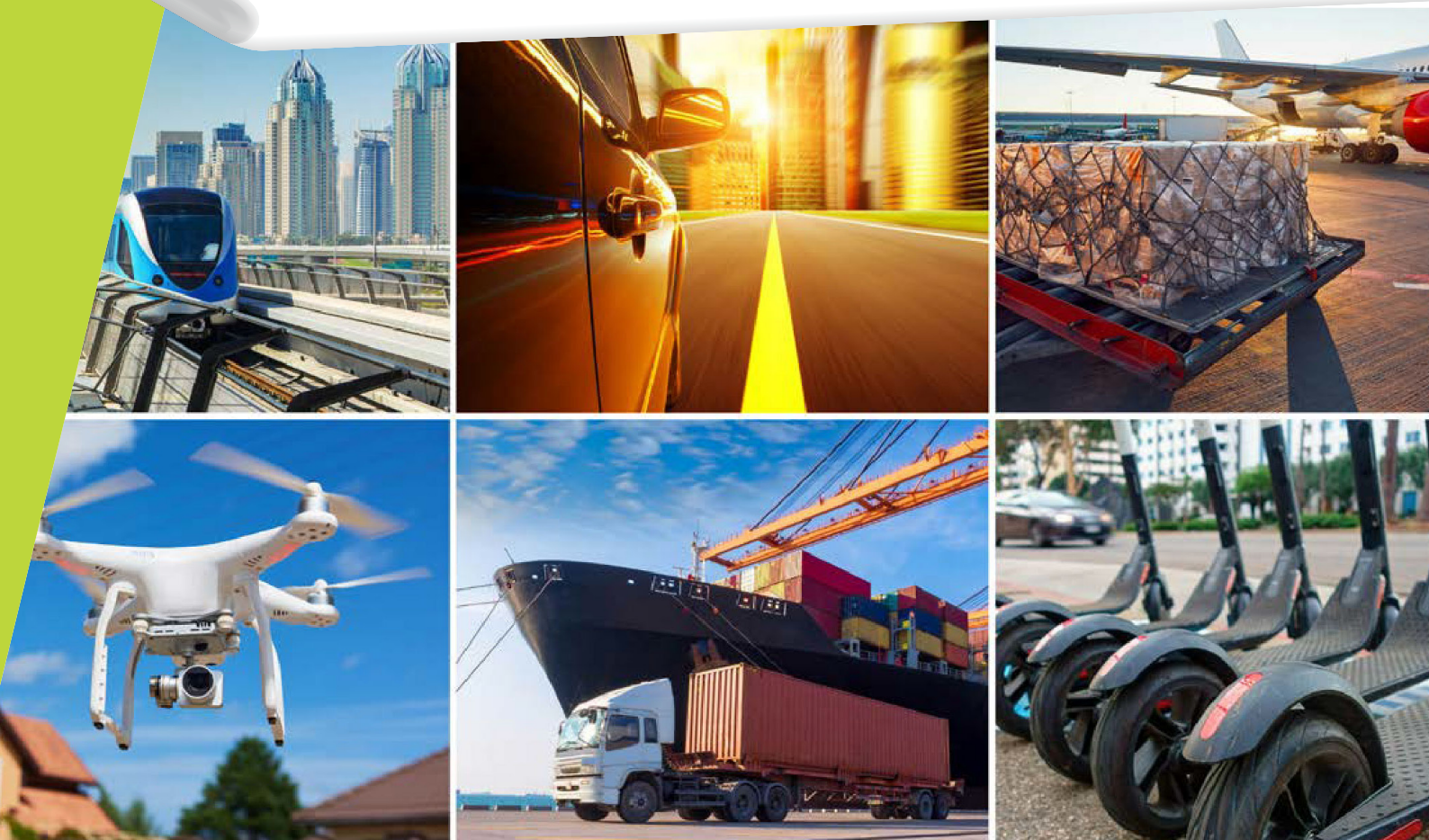


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The UK's future electric vehicle charging infrastructure: A new asset class for investors and new business models for market players

Published 5 November 2018

Alex Harrison was a former energy partner at Hogan Lovells in London. He advised clients on power generation, greenfield and brownfield project development, project and structured financing, electricity regulation, electricity and emissions trading, and acquisitions and disposals across the renewables, low carbon and thermal power sectors. He also advised clients in relation to energy transition, aggregation and digitalisation issues; on the electrification of vehicles (EVs), transport and heat; and on the development, financing and regulation of grid network infrastructure assets. He is profiled as a "rising star" by The Legal 500, which commented that he "tips the scales in transactions".

The UK has published its Road to Zero Strategy, a policy roadmap for the UK's decarbonisation pathway to zero emission vehicles (ZEV). In this hoganlovells.com interview, Alex Harrison, a former energy partner in the Hogan Lovells London office, explores the crucial role that electric vehicle (EV) charging infrastructure will play in ensuring that the UK is able to meet its 2040 commitment to end the sale of all new conventional petrol and diesel cars and vans by 2040. He also discusses the country's 2050 aspiration that almost every car and van on the UK's roads will be zero emission and how this will create new business models and a new EV charging asset class for investors and lenders.

How is the UK's Road to Zero Strategy supporting the rollout of charging infrastructure for EVs?

Harrison: The UK's Road to Zero Strategy sets out the policy measures that the UK intends to bring forward to support the uptake of zero emission vehicles including EVs. Those measures include ensuring that there is adequate electric vehicle charging infrastructure rollout so that that a lack or perceived lack, of charging infrastructure is not an impediment to peoples' decision to switch from fossil fuel-driven vehicles to EVs.

One area on which the UK government has been focused is the challenge of rolling out charging points into the built and leased environments. For example, whether to require EV charging points to be installed in petrol stations and large fuel retailers or in newly built commercial and residential buildings. Also, on the technical side, the UK government is looking at things like the interoperability of EV charging points to make sure they can be used by all vehicles, will function with a range of different users and will integrate properly into the grid.

So there is a level of technical harmonisation, and then a series of carrot-and-stick measures: some "carrot" to incentivise people to play in the market by giving them grants that reduce the cost of putting charging infrastructure on their premises and some "stick" to require the deployment of EV charging infrastructure in certain circumstances.

In terms of the infrastructure, what is the major challenge? Is it not having the technical harmonisation in place or is it the cost and complex logistics of installing charging stations to meet the demand?

Harrison: I think the challenge of scaling EV charging is one of the most interesting areas in the market, because there is wide recognition that the EV revolution is happening and that the market will grow very quickly. The UK government is envisioning that by 2050 every vehicle in the country will be zero emission. For that transition to work in that timeframe, a big question for me is to what extent will the market be able to deploy the charging infrastructure needed to support those vehicles and to what extent will government need to intervene to make that happen?

This is a new area, a new asset class, a new type of infrastructure. There are a number of people out there now, trying to deploy charging solutions and there is a range of different types of technology, sizes and speeds for charging infrastructure and a range of revenue streams and business models that businesses can target. At the moment we do not know how many charge points we will need, what type they will be — rapid, fast or slow — or where they will be located. Nobody has a clear view on that now because it depends in large part on the number of electric vehicles that are

purchased and how quickly, how the range of those vehicles increases, how quickly charge times fall and whether users have access to residential or workplace charging. If we are able to charge our vehicles at home and they have ranges in excess of 300-400 miles, we may need to charge them on the road much less than we currently do.

In simple terms, if you are on a long journey and you are in need of a refill, you will want a rapid charging solution, which is going to give you most of a full charge within 20 or 30 minutes. If you are planning to charge at home or in your office while you work, you may be happy to have a slow charge overnight or during the day. Somewhere in the middle is a series of fast charging business models. For example, if you go to the supermarket or a car park, to charge while you are there in one to four hours depending on the speed of the charging infrastructure and your-anticipated dwell time.

What we are therefore likely to get is a mix of slow, fast and rapid charging solutions. The optimal balance of those across the country and the optimal locations is difficult to predict at this stage. That is one of the things that make rolling these models out on a commercial footing more difficult, because you have to predict what level of demand and what type of competitor landscape for supply will evolve.

Why do you view the EV charging infrastructure as a new asset class?

Harrison: Ultimately, we are looking at a multibillion-pound opportunity to deploy capital to support the rollout of this infrastructure. Those people in the market who are looking for investment opportunities in and around infrastructure will see this as a new opportunity to deploy capital into the space. Depending on the risk profile of the underlying investments, that may be private equity, venture capital or classic infrastructure fund investors such as pension funds or insurance companies. They will be attracted to this sector because of the potential pipeline of projects and because the sector will have many of the fundamentals that core infrastructure assets have, but with a slightly different risk profile.

To give you one example, motorway service stations have historically been thought of as quasi monopolistic infrastructure assets with stable and predictable footfall. It is not clear at this stage what the impact of EVs will be on that footfall and therefore it is harder to predict the long-term demand for the charging and retail services in those locations. On one view, demand may increase if EV ranges are low and charge times are higher than conventional refueling. On the other hand, |demand may fall if EV drivers have access to alternative chargepoints, for example, at home, if EV ranges are high and if there is a material price differential between the cost of rapid and slow charging.

Who are the key players in the EV charging market?

Harrison: There is a wide range of corporates developing and manufacturing the charging infrastructure itself; a wide range of charging solution providers delivering slow, fast, rapid and integrated energy management solutions; and a wide range of customers looking to purchase one-off charging solutions or seeking to partner with preferred suppliers to deploy charging solutions on their behalf. Then there are those who will finance the growth of the market from an equity and debt basis. There is a huge energy market interface and opportunity, with the distribution and transmission network and a technology interface around the development of smart charging, charge point aggregation, and vehicle-to-grid (V2G) services. And ultimately there is the automotive interface with the vehicles themselves.

One of the most exciting places where the EV charging market may grow rapidly is through the deployment of charging solutions for fleet operators, for example, for last mile deliveries or ride sharing providers that have a captive set of vehicles that they are electrifying and need to charge overnight, during the day or otherwise out on the street. The private sector is well placed to deploy and finance charging hub solutions on behalf of these operators.

What is the relationship between connected cars and autonomously driven vehicles and the evolution of EV charging infrastructures?

Harrison: There is a big part of this journey that focuses on what we call ACES, the automation of a driverless future, the car's connectivity, its electrification and the fact that an increasing number of users will share rather than own their ride.

There is a big role for the charging infrastructure that is needed to support the transition — particularly the energy market and the electricity infrastructure that is needed. There are a number of energy market-specific aspects to that, like the impact on the grid from the charging infrastructure. Is there a risk that all those charging points threaten the stability of the grid or increase the cost of balancing the grid? Could they contribute to actually improving the balancing of the grid by smoothing and time-shifting demand and providing balancing and frequency control services through vehicle-to-grid electricity supply? That is definitely an area of opportunity and risk.

Can you say a bit more about the role EVs could play in supplying power?

Harrison: One of the really fun energy aspects of this is what can be done with this charging infrastructure to provide power and balancing services to the electricity grid or to corporate consumers behind the meter.

Most people, when they think of EV charging, think of the power flowing in only one direction — from the grid into the cars. But there is a huge economic opportunity to flow power in both directions — not only to charge the battery when needed, but also to dispatch power from the battery to the grid or behind the meter at times when the car does not need the battery.

A good example of the behind the meter potential is a long-stay car park at an airport, where vehicle volumes and dwell time are known in advance. The airport or a local business could use the power from those cars at times where there was system stress or peak load on the system. And in doing so, those businesses could save themselves money by avoiding being exposed to the highest electricity prices that occur at the peak and also to the highest system costs that are charged for being on the system at those peak times. So there is an arbitrage opportunity for businesses to effectively go off-grid to some degree, at those points of peak by relying on self-generated power.

That is one reason why there is such a fundamental energy component to the charging story, because it is not just physical infrastructure that is "dumb", in the sense of providing power in one direction at a static point in time. Smart charging will allow sophisticated demand and supply management, both when to charge the car but also in terms of possibly pushing power the other way and back onto the system or behind the meter. This will create revenue generating opportunities that could subsidise the cost of the battery, the car or the power.

And if I look forward into the near future, what is going to happen is that instead of buying electricity from an electricity supplier, as we do now, we are likely to be buying a managed electricity service from an integrator, aggregator or utility. This will connect power supply with power storage, power generation through for example solar panels and energy efficiency management through smart appliances and devices. The market is getting much more sophisticated in terms of plugging all those devices together and creating energy efficiency and saving consumers money by doing so.

Alex Harrison
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Why automotive companies in the connected car and autonomous driving industry need to review their trademark portfolios

Published 16 July 2018

With the momentum building in the trend towards connected and autonomously driven vehicles, automotive companies should review their trademark portfolios to ensure that their key marks are covered for goods and services in this space.

Andreas Renck, Alicante Office Managing Partner at Hogan Lovells, sees the established practice of classification of goods and services provided under a given brand as the foundation of any trademark portfolio. Companies in the United States and Europe use the World Intellectual Property Office's Nice Classification (NCL) to classify their trademarks and thus ensure their protection. NCL comprises 45 categories under which applications can be classified; Classes 1 through 34 are for products and 35 through 45 are for services. Under these classes, each mark must be designated for specific products and/or services.

In this hoganlovells.com interview, Renck discusses emerging issues that are impacting the traditional trademark registration process, and offers tips to help automotive companies protect their brands as the automotive and mobility industry continues to expand.

How are connected cars and autonomously driven vehicles changing the way automotive companies register their trademarks?

Renck: Of the NCL 45 classes, automotive companies have tended to register their brands only in a few classes that are clearly related to the sector. Traditionally, automotive model brands have been registered in Class 12 for vehicles and 37 for repair services alongside a few other related classes such as 7 for motors and engines, 9 for batteries, 11 for headlights or 39 for rental. However, if we open up to autonomous driving and e-mobility, a number of additional classes need to be considered. Electronic equipment and related vehicle tracking services, for example, fall into Classes 9 and 39. Similarly, Class 38 coverage should be assessed, which is for telecommunications and would normally be occupied by telecommunications companies. Even if the class number is already included under existing registrations, further items under that class may need adding.

Companies in this space may need to review their portfolios periodically. The constant evolution in the sector means it is not 100 percent clear how autonomous driving will function in the future. As I mentioned, at some stage automotive companies may, in part, be operators of telecommunications systems within their own autonomous driving services.

A further key consideration when assessing classification is trademark hijackers, who will also be attempting to register automotive brands in bad faith for classes that could one day be a piece of the puzzle, with the sole intention of financial gain in return for transferring the trademark ownership.

You said that car companies had registered primarily for Classes 12 and 37. What do those classes cover?

Renck: Let us be clear that this is a historical perspective. Class 12 covers vehicles — specifically, apparatus for locomotion by air, land and water but even in the past it did not give cover-all protection as the class excludes certain key parts for the automotive industry. Of course, when our team works with an automotive portfolio we do not just have cars and trucks in mind, evolving tech in the sector such as drones are also covered as well as construction vehicles, other aviation, and nautical craft, etc. Then you have Class 37, which covers building construction, repair, installation and maintenance services that can be closely related to this business sector.

Patent troll litigation is a hot issue in the United States. If automotive manufacturers do not properly protect their trademark portfolios, do you expect similar challenges?

Renck: There is a parallel scenario, for example, where an automotive manufacturer's brand or house mark is "hijacked" by a third party for unprotected goods or services, the manufacturer is no longer able to stop the third party from using the trademark through litigation-based IP registration ownership.

To give a concrete example, an automotive manufacturer could in the future offer car-sharing services, but what if they do not register their house brand for car-sharing services? Then they risk encountering issues in offering that type of service in a certain jurisdiction. Jurisdiction is a big consideration here; even if the services are protected in the United States or Europe, other jurisdictions — specifically in South America, where trademark hijacking is very common — the manufacturer can avoid issues through extending protections there.

Granted, filing trademarks in those jurisdictions can be much more expensive than in the U.S. or Europe, so companies must assess risk around the world in the context of their business model and hit a balance of protection to avoid such issues in the future.

What service offerings do you provide to help companies review their brand portfolios?

Renck: Companies come to us, we look at their portfolios and we identify gaps for certain marks and classes in the different jurisdictions. We can do a global search of their portfolio and see whether they cover the most important classes in the actual e-mobility or self-driving space. We also talk to clients before conducting this search and re-examine which business areas they are developing in this sector and how far each of these brands may be used for that type of good or service. A very specific search is carried out in relation to each of the brands they have and may use. Of course, review does not always imply further filing. Some of the company's brands may not ever be used for autonomous driving, e-mobility or connected vehicles and will actually be limited to a specific use. This said, the house brand should always be protected as broadly as possible.

Beyond brand hijacking, are there any other risks that automotive companies should know about to ensure their portfolio protection program is adequate?

Renck: Yes, another area that will be important once the portfolio is put in place is to ensure that companies register new trademarks or marks with extended protection with the relevant customs offices around the world. Any offerings in this space that infringe the trademark rights of a given automotive brand can then be stopped at the borders, even where the brand has not yet been fully rolled out for autonomous driving, e-mobility or connected vehicles.

This is an integral part of our service: filing customs applications for clients around the world to enable customs enforcement agencies to seize infringing products.

Should automotive companies review their existing coexistence agreements?

Renck: Yes, this is another issue that comes to mind that automotive companies should include when they are moving into new areas of the mobility space. Where parties own similar or identical trademarks, but operate in different business areas, coexistence agreements can avoid infringement actions. For example, one party may agree to only use the mark for vehicles and the other party only for electronic products. Previously, agreements were based on the traditional automotive classes as mentioned but now companies in the automotive space could encounter problems if, for example, they agree not to use a trademark for communications and this then becomes a key service in their offering.

With this in mind, automotive companies should closely review current coexistence agreements to make sure that if they expand into new areas, especially in relation to their house mark, they do not infringe those previously signed agreements.

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Automakers and suppliers in the U.S. and EU grapple with increased scrutiny, new emissions requirements and evolving guidance from authorities

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In this hoganlovells.com interview, Joanne Rotondi, a partner in the Hogan Lovells Washington, D.C. office and Sabine Schütte, a senior associate in the firm's Munich office, discuss recent regulatory impacts on auto manufacturers and suppliers. They note that a lack of guidance from authorities on how to implement new emissions policies and disclosures and political uncertainties as to how requirements will be addressed, are adding to substantial information gaps for regulated entities.

There has been a sustained heightened awareness around the importance of compliance with emissions requirements. What are your clients' primary concerns?

Rotondi: In the United States, the emissions-related cases from 2015 are having a secondary impact, primarily on the light duty vehicle emissions side, in the sense that there is greater scrutiny by the agencies and authorities. Every automobile manufacturer and supplier is experiencing heightened scrutiny and additional requirements from authorities, so every manufacturer and supplier need guidance in this regard.

How clear are the guidelines for disclosure to authorities of CO2 and greenhouse gas (GHG) for mobile sources?

Rotondi: The events of the past two years have resulted in a fairly quick sea change for the automotive industry. Very quickly, suppliers and manufacturers were looking at their internal processes and re-evaluating how they assess product compliance and provide disclosures to the authorities.

Regulatory compliance counseling is something we have always done for clients at Hogan Lovells. On these topics, there is some guidance publicly available to manufacturers, but a lot of it is outdated and does not address the interface with newer requirements in the United States, which relate to CO2 and GHG regulations for mobile sources.

At the same time, after the emissions-related events of 2015, authorities are saying that they need a lot more information and disclosure on these types of technologies, but they are not providing much guidance on what that is. There is a huge gray area there and a lot of room for interpretation and many questions in the industry.

Why are disclosures to authorities and compliance with CO2 emissions such a challenge in the United States right now?

Rotondi: Disclosures and compliance, particularly with CO2 emissions related requirements in the United States for mobile sources, are a challenge. And part of what is making it a challenge in the United States is the uncertainty surrounding how the current administration is implementing CO2 emissions related requirements.

What have you observed in the European Union (EU)? Do things continue to be heavily regulated or is there some uncertainty, like there is in the United States?

Schütte: I think there are a lot of similarities to the United States, but there are differences, also. Before the emissions issues in 2015, there had been a legal framework in place, but there was not too much focus in the European Union as to nitrogen oxide (NOx) emissions of passenger cars. Now and since September 2015, everyone pays attention to emissions, in particular NOx and CO2 emissions. It is not only authorities and lawmakers — who introduced a new law on emissions testing in September 2017 — it is also on the political agenda on the national level and the European level. So it has had a big impact.

As regards to uncertainties, I think there might be even more in the EU than in the United States, as there had been no real focus on emissions in the past with guidance from authorities comparable to the United States. In the EU, they are beginning to develop a focus and more detailed guidance, but it had been a challenge for everyone in the past two and a half years — for the authorities and for the people applying the law. So there is a huge gray area with a lot of room for interpretation for which manufacturers and suppliers seek guidance on, and we have been providing advice on these specific questions from the beginning in 2015.

What is the most important new aspect of these new EU emissions laws?

Schütte: First of all, the EU has improved and strengthened the applicable test procedures for emissions. Since September 2017, there has been mandatory real driving emissions (RDE) testing. This means that vehicles will be tested on the road with portable emissions measurement systems instead of only being tested in a laboratory test cycle. In addition, there is a new laboratory test cycle which shall ensure more realistic test results for criteria pollutants as well as CO2 and fuel consumption.

Also, manufacturers now need to disclose their emissions strategies to type-approval authorities — which was not a requirement in the past.

And finally, there will be a major overhaul of the EU type-approval system itself. This was already planned before the emissions issues in 2015, but it was then decided that a more far-reaching reform is needed. A respective draft regulation shall raise the quality level and independence of EU type-approval /testing before a car is placed on the market as well as increase checks of vehicles that are already on the market. That said, the most important change is the introduction of direct EU oversight. Under current rules, the EU sets the legal framework, but national authorities are responsible for ensuring and overseeing manufacturers' compliance. In the future, the Commission itself will be able to carry out checks on vehicles, trigger EU-wide recalls and impose fines of up to €30,000 per vehicle when the law is broken.

The legislative process is expected to be finalised soon and the new regulation will then be directly applicable in all Member States and become mandatory on 1 September 2020.

Is there an increased risk that the disclosures automakers and suppliers make to the authorities will be reviewed with increased scrutiny?

Schütte: Right and even the political level may have an impact here. In the past year, the authorities have been being investigated, too. From the European parliament to the national parliaments, the authorities themselves were being investigated to see if they acted correctly, so they are kind of attentive to not doing something wrong. At the same time, they have to handle the new laws which introduce new testing procedures and several new requirements as set out above and which get into very great detail. This pressure is then transferred to the automotive industry, which has to deal with it.

So the secondary impact of the emissions cases in 2015 involves a political aspect?

Rotondi: Yes, absolutely. And even though the Trump administration has taken a more flexible approach on climate change and GHG regulations than prior administrations, at least on the mobile sources side, there are still a number of manufacturers being investigated and certainly being scrutinised both by the U.S. Environmental Protection Agency (EPA) and also by the state of California. So we have this dichotomy, where the current administration has a less rigid approach for some emissions but not all and then, on the other extreme, there is the California approach, which is almost overcompensating.

So investigations in the United States are continuing and are almost a certainty if you are trying to sell a diesel vehicle in the United States. That is not just focused on GHG, but also NOx, as Sabine mentioned and fine particulate matter (PM2.5), which is really more relevant for older diesel cars.

And I completely agree with Sabine: federally, in the United States, we do not have the same political focus right now, but state-wise, certainly with California, we have that political element as well. The EPA and California authorities are still proceeding and essentially demanding a lot more from manufacturers, who are then, in turn, demanding a lot more from their suppliers. So there is a sort of walking-on-eggshells feeling now for our clients.

What kind of environmental impact will connected cars and autonomously driven vehicles have globally?

Rotondi: At the moment, connected and autonomous vehicles is an emerging space primarily affecting safety regulations and requirements. I am not saying it will not affect the environment — it likely will, particularly with regard to fuel economy and CO_2 regulations. As vehicles get more autonomous and more connected, the thought is, driving gets more efficient and you see less congestion and fewer emissions in an average drive. So, less traffic, in theory, means better miles per gallon.

Schütte: Yes, I agree. But as you said, Joanne, connected and autonomously driven cars are both an opportunity and a challenge for the car industry from an environmental perspective. When the carmaker decides how the vehicle behaves, it is an opportunity, but also the expectation that vehicles are more fuel efficient and CO_2 efficient.

What are some of the safety benefits associated with connected cars and autonomous vehicles (AVs)?

Rotondi: Both our manufacturer and supplier clients are definitely coming to us with questions regarding U.S. safety regulations that are primarily before the National Highway Traffic Safety Administration (NHTSA). Federally, NHTSA and the Department of Transportation (DOT) are leading on the autonomous vehicle front with regard to the safety aspect and there is a lot of speculation on where that is going. They have initiated an autonomous driving rulemaking process.

How might the upcoming midterm review in the United States affect emissions standards?

Rotondi: The midterm review (aka Mid-term Evaluation) is a process that requires the EPA and NHTSA to assess the fuel economy and GHG emissions standards for light duty vehicles for model years 2022 through 2025. Those standards are being reviewed right now. And that is a long process. It is statutorily required that the agencies have to review them by April 2018. The EPA just recently announced that it would withdraw the Obama-era determination for MY 2022-2025 GHG standards because it was based on outdated information. EPA and NHTSA will now work to produce a new rulemaking on the standards. So I think that, if anywhere, that is where we are going to see this interplay between environmental, emissions and connectivity.

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Product liability, safety and compliance: What you should know before launching an innovative product

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Before any new product is released into the market, companies should assess its product liability, safety and compliance. But the launch of an innovative product presents a unique set of challenges: typically, they involve state-of-the-art technology, engineering and design. When products break new ground in making something easier or allow users to do something they have never been able to do before, new safety and quality standards and expectations might also have to be assessed and established.

Sebastian Polly, a partner at Hogan Lovells in Munich, discusses liability, safety and compliance issues associated with the launch of innovative products and how addressing these issues early in the process can help avoid litigation later on.

What is the definition of an innovative product?

Polly: When my team and I work on cutting-edge technology, particularly in the automotive, consumer goods and electronics industries, we typically refer to a company's product as innovative if it does something better, different or new. In the automotive and mobility industry, for example, innovations are currently often linked to autonomous or automated driving as well as to connectivity, electrification and mobility services. In the consumer goods and electronics industry, it may involve products such as 3-D printing, augmented reality (AR) or virtual reality (VR). These examples illustrate that innovation is often something that — not long ago — people were imagining from a science fiction perspective.

What are some of the liability challenges that companies face when launching innovative products?

Polly: We want to make sure that if we place an innovative product on the market, we protect a.) the company, b.) its brands and c.) its decision makers. The latter is particularly crucial because we need to ensure that the people who actually sign off on an innovative product's marketability do not take any unnecessary personal risks. In particular, this is one of the main challenges.

Regarding product liability, there are tests like "alternative feasible design," "reasonable safety expectation," and "state of the art". However, if a product is innovative, there is often no previous experience or existing standard. Hence, anticipating potential requirements is already a challenge in itself.

For example, if a company wants to put an autonomous vehicle on the market, what is the reasonable safety expectation? Is it enough if the vehicle is as good as an average driver? If not, how good does the vehicle actually have to be?

In doing so, product liability and product safety generally go hand-in-hand: if you have a safe product, its manufacturer is typically not liable for it; if you have an unsafe product, it is typically defective and its manufacturer might be liable for it.

Hence, when launching an innovative product, we particularly help companies to answer questions such as: What may customers reasonably expect? What is the right benchmark? What is the state of the art? How do you navigate the "big unknown"?

How do you help clients navigate that "big unknown" of liability?

Polly: Each case is different. My team and I are very passionate when it comes to a client's products. Once we have understood the potential, in particular, we analyse market entry requirements, we assess risks and we help draft proper documentation. Also, we provide support regarding specifications, including labels, manuals and warnings. It is crucial to outline what a product can and — even more important — what a product cannot do. Moreover, we help train engineers and managers. The right awareness and guidance is crucial to avoid unnecessary risks in the first place.

Do you see the firm's role in this process as innovative, just like the product you are helping to bring to market?

Polly: Yes, that is the overall aim — I cannot stress that enough. A traditional lawyer might primarily advise a company on legal exposure. This is neither

particularly helpful nor innovative. Typically, our clients are quite aware of potential product risks. My job is not to highlight these risks but to come up with creative and valuable solutions to mitigate these risks in a way that allows the business to succeed with their plans. In doing so, we are also relying on certain innovative legal tech solutions.

There are also liability-related safety issues that are linked to the launch of innovative high-tech products. What are some examples?

Polly: Typically, there is a connection between both areas: a defective product is typically unsafe, while a safe product is typically free from defects. A company might be liable for a defective product and at the same time a company generally needs to make sure that it only places safe products on the market. Either way, as a general rule, a product generally has to comply with the "reasonable safety expectation" test.

However, with safety, it is often a more crucial issue, because civil liability typically only comes into play if there is an actual issue with losses. For example, an accident with personal injury may result in civil liability claims. However, a potential safety case might start much earlier, for example, when a company places a product on the market. This is because — regardless of an actual issue with losses — all products must be safe.

To illustrate safety challenges, let us first think about a traditional product like a pair of scissors. As we all know, there are certain hazards tied to a pair of scissors. These hazards are inevitable and known to the public. Still, everybody typically agrees that a pair of scissors is safe and can be placed on the market. However, if a company wants to place a completely innovative and new product on the market, there are obstacles. Maybe — due to a lack of previous experience from the field — potential hazards are yet unclear. Also, because the public is often not familiar with innovative products, it might be hard to anticipate user expectations or reactions. Hence, if a company takes an innovative product that is new to the market and users, decision makers might want to consider potential product safety implications very diligently.

What about the final element associated with a product launch: compliance? Are those challenges similar to liability and safety?

Polly: From a compliance perspective, there are different ways to look at it.

The first angle, of course, is that the product itself needs to be compliant, meaning that it is in-line with all applicable mandatory legal provisions. Besides, depending on the individual case, a company might also want to consider certain voluntary technical standards or guidelines as well as some other tests.

Then there are things like labelling, which is also very important to a product's marketability. For example, a company should avoid any shortcomings linked to instructions, labelling, marking and packaging aspects.

Furthermore, product compliance is also about how a company and its decision makers manage the internal paper trail. In particular, a company might have to raise certain awareness among its engineers and managers about how to accurately and properly document issues. As an example, exaggerations or understatements as well as irony, jokes or speculations should be avoided. Stakeholders need to understand that inaccurate or improper communication — including emails — can be a compliance issue in itself.

Another element of a product launch is proper technical documentation and proper authority communication. Depending on the respective product, a company might need certain approvals or certificates.

Besides, there may also be certain product monitoring obligations. Particularly if a product is new to the market, there is typically no or only very little experience from the field. Hence, a company might have to consider certain product monitoring activities, particularly to identify certain issues that might occur after the launch.

Based on our experience, the most jeopardising product crisis typically occurs right after the launch. If there is a design or production issue, it often takes a certain amount of time before there are failure reports from the field. Besides, sometimes there are certain misuse reports that need to be assessed. Having respective internal processes in place — to handle potentially incoming consumer claims — is generally also a part of a company's product compliance system.

How does Hogan Lovells educate clients about compliance?

Polly: We have a whole menu of services that we offer; this means every major element tied to a product launch. Conducting trainings is a very important element in our portfolio. We are happy to train everybody who is involved in product liability, product safety and product compliance — particularly engineers, managers, executive managers and in-house counsel. We also help build entire internal product compliance processes and systems.

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Emerging issues in the connected cars and autonomous vehicles market are influencing standard-essential patents and IP transactions

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A leading woman in technology law, Celine Jimenez Crowson, is on the forefront of patent litigation, protection and commercialisation for the world's most valuable technology companies. She uses her technical background in electrical engineering and her vast experience in intellectual property law to provide her clients with practical, winning solutions to their most complex and important problems.

In this hoganlovells.com interview, Hogan Lovells Partner Celine Jimenez Crowson addresses the relationship between standard-essential patents (SEPs) and the connectivity technologies used in connected and autonomous vehicles (AVs). She discusses the increased exposure of automotive manufacturers and suppliers to litigation from patent aggressors, how new autonomous vehicle technologies influence intellectual property transactions and challenges involved in setting telecom-related standards.

Why are we seeing an increased level of activity related to standard-essential patents and connected cars?

Crowson: We are getting a lot of requests from clients for help. One trend that we are seeing involves standard-essential patents directed to telecom-related standards, such as Wi-Fi, 3G and LTE/4G. These are the communication protocols that telecommunications devices use and that are now being incorporated into automobiles to fuel their connectivity.

There are a number of large players that have been traditionally involved in the telecom business, that are now reaching out to automotive companies, mostly the original equipment manufacturers (OEMs). They are saying to the OEMs — in a somewhat aggressive fashion — we hold patents related to these connectivity technologies, we think you are infringing these patents by incorporating this technology into your cars and we want you to take a licence or we are going to sue you.

Who is impacted by this pressure to licence and threat of lawsuits — the OEMs or the suppliers?

Crowson: Both are. OEMs are getting licencing letters. Suppliers, however, are also getting drawn into these disputes because oftentimes they are supplying the chips, modules, electronics and software that provide the connectivity technologies. For example, it is likely not the car maker that is providing the Bluetooth or 4G technology — it is an automotive supplier. We are sometimes able to represent both OEMs as well as the automotive suppliers when they are on the same side of the SEP licensor (or patent troll) issue.

Many of the telecom or once-called telecom, companies have significantly become licencing entities that are acquiring and holding patents. Some more traditional patent trolls have gotten into this business as well by acquiring patents from telecom and tech companies.

With the risk of suits from SEP-holding non-practicing entities (NPEs) or patent trolls, how can companies protect themselves?

Crowson: Companies are struggling with what to do. To the extent that the patents being asserted are related to the standards — sometimes they are not, but to the extent they are — these are standards because everybody has to use them. So "we are not using your patent" arguments are not as available when it comes to standard-essential patents.

That said, oftentimes we help with analysis of the patents that are being asserted. First, we want to understand whether they are actually related to standards — some may be but oftentimes not all asserted patents are. Also, sometimes the patents that are asserted may be broad — too broad — and there are arguments that they should have never been issued. There may be challenges we can make with respect to the patents, such as challenging them at the United States Patent and Trademark Office (USPTO) with a post-grant challenge procedure. Further, it is important to understand what aspect of technology is being accused and from

whom that technology may be supplied. How much cost of a product unit does the accused technology contribute? Is the accused technology touted in marketing material as driving purchasing? A lot of that activity — both investigation and perhaps challenges and even litigation, frankly, is geared toward lowering the price of a licence.

We can also help in the licence negotiations, while at the same time putting some pressure on by challenging patents or infringement reads if our client does decide to enter into licence negotiations — and many of them do, in parallel. In addition to analysis and challenges, we can help with the actual negotiations, helping clients draft letters and responses, especially outside of the United States, where there are special negotiation steps that should be followed and also in the United States.

For patents that relate to standards, there are special things that the one who is accused is supposed to do when they get these licencing letters to make sure that the accused is able to take advantage of the patent owner's obligation to provide a standard-related patent at a fair royalty. If you have a standard-related patent, which came out of your participation in a standards-related organisation, you have an obligation to licence that patent at a fair royalty. But in order to take advantage of that obligation by the patent owner, the accused has to act quickly to respond to a licencing letter and at least in Europe, to say that they are willing to take a licence. There is a sort of dance that goes back and forth that is laid out by case law in jurisdictions, such as Germany and the UK. It is pretty strict with respect to the steps that those accused need to take to preserve the defence that are owed a fair royalty rather than an injunction. In the U.S., although the required negotiation steps are not so well laid out, accused parties still need to make sure they are acting prudently to avoid allegations of willful infringement.

We help clients make sure that in the negotiations, they are behaving in the appropriate way so as to take advantage of the fair and reasonable royalties that the patent holder has agreed through its participation in standards organisations to provide and to avoid increased damages awards that can come if accused are found to be willful patent infringers.

What does "behaving in the right way" mean — can you elaborate?

Crowson: There has been significant case law developed in Europe with respect to how accused — and patent owners — need to behave once this negotiation over SEPs starts, including from the initial licencing letter. For example, the patent holder has to spell out in detail what products are accused and the basis for the infringement. Then the accused is under an obligation to respond relatively promptly — within a few months. It is not like the old days, where companies could just toss a letter like that into the trash and see if they heard from the accuser again. In order to take advantage of the potential fairest royalty rate, the accused also needs to express a willingness to enter into licencing discussions; they cannot just say, "We do not infringe, go away". Then the patent owner needs to provide detailed licencing terms in response. There are more required steps as well.

Those are the kinds of behaviour that clients need to know about, so they do not forfeit the opportunity to be treated as a willing licencee and owed a fair and reasonable royalty rate. And as mentioned, there are steps that need to be taken under U.S. law to avoid being deemed a willful infringer.

Is the issue related to SEPs focused on connected cars or could it transition to autonomous vehicles?

Crowson: Currently, it applies mostly to connectivity in vehicles because the telecom standards have been well established. But that said, there are standards organisations popping up with respect to autonomous driving technologies. Presumably, those standards will start to develop in the arena of autonomous driving and its security.

It is a bit further off, but one could imagine the same kind of issues that are arising in connectivity also cropping up as all these players involved in autonomous driving begin to get together and develop standards for autonomous driving technologies.

Should the newer standards organisations take steps to avoid setting up a regime, essentially where we have all these patent aggressors?

Crowson: In some regards, the standards organisations in the area of autonomous driving are moving more slowly, because there are so many different players — little companies and big — involved in autonomous vehicles. The big companies are acquiring technologies as well. But one thing many are thinking about is, can standards organisations put more teeth into some of their rules and obligations when folks join those standards organisations to avoid this patent aggression cropping up once those standards become adopted and a few players decide that they are going to start trying to buy up and aggregate enforcement of these patents?

There is also discussion about whether standards setting organisations (or courts) should consider placing a total value on a standard at the outset so that when myriad patents surrounding that standard are developed, the problems that arise with royalty stacking given so many patent assertions, can be alleviated. When it comes to the valuing of standards and royalty stacking issue, we have also helped clients get in touch with economists and finance experts who can help there.

The standards organisations are also trying to take on more responsibility, which will slow them down. I think it is going to be difficult, frankly, without court authority and all of that, to put teeth into their regulations, but they are at least thinking about those kinds of things.

Is the move towards autonomous and assisted driving generating an increase in M&A transactions?

Crowson: For sure. We are seeing hundreds of new players getting involved in various autonomous driving-related technologies, whether it is crowdsourcing to help with mapping and navigation, augmented and virtual reality or security-related software and technologies to help ensure that autonomous vehicles do not get hacked.

We see, on the one hand, automotive manufacturers buying smaller companies that are specialists in this technology. We help with those transactions and acquisitions of both technology and businesses, to make sure that the acquirer is getting what they think they are getting — that the intellectual property is free from encumbrances; that it is not likely to infringe the intellectual property of others; and, even on the trademark side, that the name of the business that is being acquired, is clear.

A lot of our clients are either acquiring or, if they are smaller companies, being acquired by larger entities that are looking to get involved in autonomous driving. They need technology but they also need people — thought leaders. So we see companies acquiring groups of professors from MIT or Stanford who are thought leaders in the software and algorithms that are so entrenched in autonomous driving.

This area is going to be very software and algorithm driven. For many of the traditional automotive companies, such things as mapping and navigation and artificially intelligent software, was not their core business; they were buying those capabilities from others. Now they are making acquisitions to bring in that business and technology. We are involved in diligencing the technology and ideas coming in and making sure that companies are getting what they think they are getting and getting enough assets to move forward with their business.

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The connected car: How European data protection, smart transport systems and competition law intersect

Published 12 October 2017

Based in France, Winston Maxwell specialises in digital regulation. He has become a trusted advisor of major Internet, automobile, telecom and media companies and of government institutions. In 2014 he was appointed to the French National Assembly's Commission on Digital Rights, and he was asked to contribute to the French Conseil d'Etat's 2014 report on fundamental rights in the digital age. Maxwell is a member of the French media authority's think tank "CSA Lab". He co-directs a post-graduate program at the Paris "Panthéon-Assas" law school designed to train future data protection officers.

In recent years former Counsel Gianni de Stefano has managed multijurisdictional teams for in-depth merger cases as well as some of the most complex global cartel investigations at all levels. He is a nongovernmental adviser within the International Competition Network and a General Editor of the *Journal of European Competition Law & Practice* published by Oxford University Press.

In this hoganlovells.com interview, former Partner Winston Maxwell and former Counsel Gianni De Stefano discuss how European data protection, smart transport systems and competition law intersect and the impact they will have on the connected car.

What are some of the European policy issues affecting the connected car?

Maxwell: What is interesting are all the security, environment and other policy rules beyond privacy that affect data sharing. The European Commission is trying to develop what they call Intelligent Transport Systems (ITS). In that context, the Commission wants cars and road systems to be able to communicate effectively to reduce traffic and therefore reduce CO_2 emissions. The idea is to have smart transport systems so that you avoid traffic jams and fluidify traffic and thereby reduce greenhouse gas (GHG) emissions. The Commission wants auto manufacturers to build intelligent cars that share data.

The European Commission's European Strategy on Co-operative Intelligent Transport Systems (C-ITS) emphasises the role that data can play in enhancing road safety, road conditions, the environment, accident notifications and so forth. Connected car makers need to have systems in place to actually share data in real time with other actors in the ecosystem.

How do European data protection, smart transport systems and competition law intersect?

Maxwell: You basically have three different policy environments that all come into play here. You have protection of personal data, you have intelligent transport systems and then you have competition law. These three environments intersect and affect how you think about developing data governance policies for connected cars.

For example, in Europe car manufacturers need to share data with independent repair shops under European Regulation 715/2007. If you buy a certain vehicle, the manufacturer cannot lock out independent garages and force people to only go to an approved garage. An independent garage has to be able to access the data in the onboard diagnostics module so that car manufacturers do not monopolise the repair market.

That is also going to be very important in the connected car area because there will be service providers that want to access the data in the car to provide value-added services to the user. Some players in this space want to provide the digital interface in the connected car — so it is just an extension of your smart phone. The question is, will car manufacturers embrace the entry of independent service providers or will they try to keep control over the user interface? There may be valid cybersecurity concerns relating to opening up the user interface to independent service providers. Competition law may also come into play.

De Stefano: Antitrust-savvy advice in a connected car business and/or partnership is crucial to avoid any liability down the road. What a car manufacturer views as a valid safety-related limitation to data access, may be perceived by service providers as impeding their business chances by independent service providers. This could end up in complaints or litigation.

How will competition law come into play when setting standards for the connected car?

De Stefano: The automotive industry is currently developing a set of standards that apply to the connected car — as envisaged by the EU Intelligent Transport Systems legislation. From a competition law perspective the questions that are relevant relate to the potential restriction of access of independent operators to this new business model and/or the monitoring of their activities by OEMs, which are competing with them. European competition law requires a constant balance of the legitimate concerns of OEMs (or other stakeholders that possess the data) to protect their intellectual property and the need to permit new market entry.

The other issue relates to sharing of information among existing stakeholders. To create standards stakeholders these firms will need to work together. In some instances, stakeholders will be actual or potential competitors. There is a concrete risk of "spill-over" discussions among stakeholders. There is a fine line between legitimate discussions about standards and talking about commercially sensitive information, which is forbidden.

When it comes to competition law compliance, Hogan Lovells offers to all stakeholders involved (ie, OEMs; suppliers of car components, smart components, chips or software; and insurance companies) business-friendly compliance programs to make sure competition and other rules are not breached while they work together within their partnerships or trade associations for purposes of standards setting or data pooling.

What are the antitrust and competition risks associated with the connected car's data?

De Stefano: The future of the automotive industry is digital; vehicles will soon become like our smartphones. One of the main applications of the upcoming 5G infrastructure and services will be connected cars. One of the EU's priorities is to boost innovation and support the growth of Europe's data economy. However, from a competition law perspective, certain data is considered an asset that can potentially confer market power, especially in connected industries. There have not been any cases yet, but the competition authorities in Europe are really focusing on this issue, with Germany and France at the forefront.

First, European competition rules may warrant independent operators' access to certain technical information in the connected automotive industry. The notion of independent operators is broad: independent repair shops, spare parts manufacturers and distributors, publishers of technical information, automobile clubs, roadside assistance operators, operators offering inspection and testing services and operators offering training for repair technicians. And the notion of technical information is flexible and will no doubt give rise to debate.

Second, other practices may be subject to scrutiny (for example, discounts in return for the customer agreeing that the data belongs to the OEM or another stakeholder). There are many factors that can be taken into account. For example, will the data that each OEM obtains as a result of developing connected car standards represent one single market? Would the OEM be considered the owner of the data? Or will the car user? And what does "ownership" mean? It is something you have to focus on because competition law is about defining relevant markets and creating a level playing field. Companies considered as being dominant on a given market have a special responsibility to compete on the merits and not exclude other stakeholders.

Will the increased levels of consolidation and/or partnerships related to the connected car trigger more antitrust review in Europe?

De Stefano: In Europe, the current consolidation and/or partnerships between or among OEMs, component suppliers, hardware or software suppliers, technology companies and/or insurance companies may need to be notified to the various merger control authorities worldwide — even when the target has limited revenues. Competition authorities have recently begun to take into account privacy and data protection concerns to some extent. When we work with clients on global merger control filings, we are also able to help them address the privacy and data protection aspects of their deal. That is thanks to our cross-practice approach to the connected car and the needs of the players participating in the race.

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Getting to data nirvana: Mapping connected car data usage scenarios and creating a holistic data governance plan

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Based in France, Winston Maxwell specialises in digital regulation. He has become a trusted advisor of major Internet, automobile, telecom and media companies and of government institutions. In 2014 he was appointed to the French National Assembly's Commission on Digital Rights and he was asked to contribute to the French Conseil d'Etat's 2014 report on fundamental rights in the digital age. Maxwell is a member of the French media authority's think tank "CSA Lab". He created and co-directs a post-graduate program at the prestigious Paris "Panthéon-Assas" law school designed to train future data protection officers.

In this hoganlovells.com interview, former Partner Winston Maxwell discusses how Hogan Lovells helps connected car manufacturers to develop simplified frameworks that internal stakeholders can use to understand business and operational needs balanced against data protection legal requirements.

How does Hogan Lovells help auto manufacturers map data usage scenarios to their business and operational needs?

Maxwell: At Hogan Lovells, we advise auto manufacturers on how to think about embedding data protection and other data governance rules into their platforms for vehicle-related data. The manufacturers know that they are going to be collecting massive amounts of data from different sources. And they are all acutely aware that in the future the name of the game will be selling recurring, value-added services to customers. They need to be able to take advantage of the privileged relationship that they have with the car owner to propose additional services to the full extent permitted by the data protection legislation.

I think one of the most valuable services we offer right now is to help general counsel develop internal business-friendly communication tools for the various project teams within an automotive company. These tools help identify the regulatory constraints that affect how a company thinks about data. We also help them develop a conceptual picture that includes where the data comes from — for example, website visits from the customer or a customer hotline. Then you have to think about what you are going to use the data for.

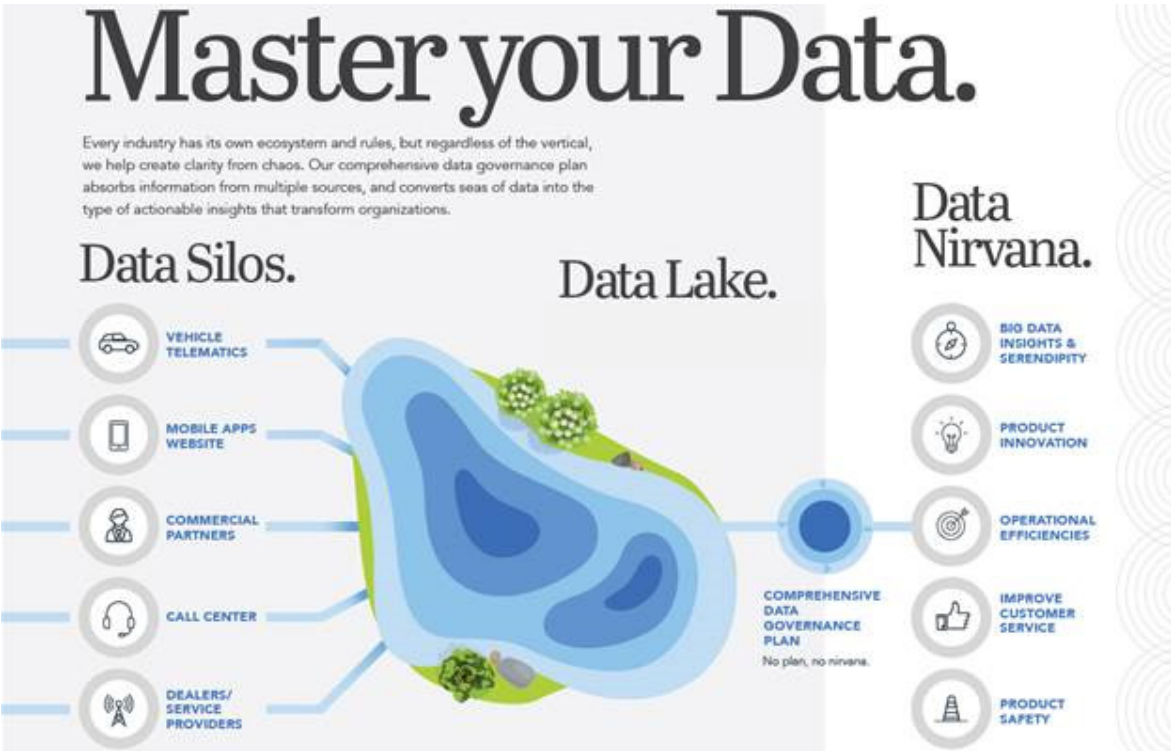
If the data is needed to save the car occupant's life, of course you are not going to ask for their consent. Saving a life comes first. The European Parliament has introduced an eCall requirement for new cars for this purpose. If the data is necessary in connection with deciding whether you have to notify the occupant about critical maintenance — then the use of the data may be linked to the maintenance contract. But as you go along the spectrum to more value-added services like — can I use the data to propose a hotel? — you will have stricter policies that require consent.

A recent report by a German Ethics Commission says that user consent is required to use car data for anything beyond safety. But where does safety stop? OEMs focus on safety in all aspects of the car and are likely to see data as an important tool to improve safety, including through analysing driver habits. Data protection officials might have a more restricted view on what is necessary for safety.

We have developed a product called Getting to Data Nirvana, which helps automobile manufacturers create holistic data governance plans for connected car data.

How do you break down data usage scenarios so that each component can be tied to an actionable data protection rule?

Maxwell: We help clients make a map of the different variables so that the business people can understand. Once the business people understand, then you have won half the battle. The idea is to build the privacy rules and the other data sharing requirements into the systems — engineers know how to work with that. What is difficult is when privacy lawyers or the general counsel come with big principles like — "we must



respect our customers' privacy". It is too general and disconnected from the engineers' design responsibilities. What we are trying to help clients do is transform the principles into actionable rules that can be understood by the business and the engineering community at the auto company.

What I sense we do better than some of our peers is translating those principles into actionable design rules. A car manufacturer could be collecting data about falling asleep at the wheel — there are systems that watch your eyes and can tell if you are blinking too much, a sign that you are tired. If those systems detect that you are falling asleep at the wheel, an alarm will be activated. Those systems could reveal drug abuse issues or other sorts of health data — it is okay to use that data to save an occupant's life but it would be hard to argue that sort of data should be used for anything else.

How many data usage scenarios should automakers be planning for?

Maxwell: At this point, there are so many different scenarios and data use cases, it is almost limitless. The data about my eye movement, can it be shared with an insurance company if there is an accident? The data about my GPS location, can law enforcement access it to see whether I was involved in a crime? You can go down the list and create use cases that are almost endless.

Because all usage scenarios could not possibly be envisaged by auto manufacturers at this time, we help them to manage their data lake by implementing a data lake management policy preventing the "garbage in, garbage out" phenomenon.

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Drones: Moving toward the future of mobility and highways in the sky

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Widely recognised as one of the "world's foremost authorities on drones and law", Hogan Lovells Partner Lisa Ellman offers a unique perspective and vast experience to clients, helping them push policy boundaries forward and get ahead in the fast-changing regulatory environment. She counsels businesses and trade groups on UAS issues in industries ranging from newsgathering and television production, to aerial photography and energy, to precision agriculture and insurance, to higher education, drones technology and construction — and everything in between.

Years before the commercial drone industry was taking off, Gretchen West was already at the forefront of the unmanned systems industry, advocating on behalf of the global community to reduce barriers to enable operations and use. As a senior advisor in the global Unmanned Aircraft Systems (UAS) practice group, her focus on innovation and technology has helped clients navigate business and market entry strategies, find value-added capabilities to ensure successful operations and understand the regulatory environment and associated challenges.

In this hoganlovells.com interview, Hogan Lovells Partner Lisa Ellman and former Senior Advisor Gretchen West talk about the role commercial drones and unmanned aircraft systems (UAS) will play in the future of mobility. They also discuss what type of UAS traffic management will be needed for tomorrow's highways in the sky and how the Commercial Drone Alliance is working to reduce barriers and enable this game-changing technology.

How quickly have drones and drone technology evolved?

Ellman: Drone technology has moved forward quickly, both in terms of the vehicle itself and the information technology that is on the vehicle. Once considered a toy, drones mounted with a camera can be used to inspect things, like cell phone towers, pipelines, flare stacks, electrical wires and bridges. There are huge safety and efficiency benefits to using drones instead of helicopters or people for these types of jobs.

Other use cases for drones include assessing crop health, detecting variations and mapping terrain; providing high-res digital elevation models of construction sites, mines and structures; and rapid deployment for search and rescue efforts. Drones have been used in the aftermath of Hurricanes Harvey and Irma to locate missing persons, assess damage and report the news. Drones are being used in other countries to deliver things like medicine and medical supplies to assist with catastrophe response. This industry is ripe for rapid growth.

While the technology has moved forward quickly, the policy has lagged behind. For the first time, commercial drones were broadly authorised here in the U.S. in August 2016. Under the rules, you can only fly small drones in low-risk ways — within visual line-of-sight (VLOS), during daytime hours, not over people and up to 400 feet. Over time, once the policy considerations are dealt with, we will see the policies move forward to the point that you can fly drones beyond the visual line-of-sight (BVLOS) and use drones for package and cargo delivery. And eventually, we will get to the point where you can use drones for people delivery. There are some pretty big players getting into the air taxi space. Larger, high-altitude drones could also be used in the future to provide wireless Internet connectivity.

How will drone traffic in this new air space be managed?

Ellman: The key with all of this is having an unmanned aircraft systems traffic management (UTM) system — essentially air traffic control for drones — and highways in the sky that will exist to manage traffic above buildings, below crewed aircraft, in suburban and rural areas. In these corridors or highways in the sky, drones will be communicating with each other, law enforcement and regulators on the ground, as well as other vehicles. You will be able to put your preferred flight path into a computer or an app that will figure it all out for you and de-conflicts the airspace with other vehicles in this space.

NASA has been heading the UTM effort, working hand-in-hand with industry partners and the U.S. Federal Aviation Administration (FAA) to design highways in the sky. You have a number of companies that are designing unmanned traffic management systems. The idea on the federal government side is that the UTM will not be "owned" by any one player, it will be interoperable. Delivery of the UTM to the FAA for further testing is planned for 2019.

What role does the U.S. Commercial Drone Alliance play in the industry?

West: A common thread running through all of these new mobility technologies, including drones, is the challenge of selling them to the public. That is the case with all newly introduced technology. In keeping with its role as an industry leader, Hogan Lovells is managing the industry-led nonprofit Commercial Drone Alliance. Members include manufacturers, service providers, software developers, commercial drone end users and vertical markets — including oil and gas, precision agriculture, construction, security, communications technology, infrastructure, newsgathering, filmmaking and others.

The Commercial Drone Alliance is dedicated to educating policymakers and the public about the benefits of commercial drone use, collaborating with lawmakers at all levels of government to enhance innovation and economic growth through policy and creating the value proposition for supporting commercial end users to enable growth.

How does Hogan Lovells work with companies in the drone space?

Ellman: Hogan Lovells serves as a bridge between Silicon Valley and Washington, D.C. We help companies that want to fly outside the scope of current rules and to get waiver approvals. For example, we recently helped CNN Aerial Imagery and Reporting (CNN AIR) to get the first Part 107 waiver issued by the FAA to allow small UAS operations over people for closed-set motion picture and television filming.

We also help clients who are interested in drone safety and security issues. Companies want to use drones but they are also worried about others using drones over their property and we advise them on security issues. There are a lot of legal and policy issues around the use of counter-drone technology at this point. But in the future, a facility owner could use counter-drone technology to prevent rogue drones from flying over its property.

We are a one-stop shop for any company in the drone space or that is impacted by drones in any way. We help manufacturers with product liability, IP or other corporate legal issues. We help clients with export control and legislative issues. And we also help on the business side. For example, Gretchen West, who is based in Silicon Valley, gives companies advice on market strategy.

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Fast and furious? Connected cars, jamming and the battle for spectrum

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Ari Fitzgerald provides strategic, legal and policy advice on a wide range of communications and spectrum policy issues to some of the world's largest and most dynamic communications network operators and equipment manufacturers, as well as a diverse assortment of industry trade associations and investors. He especially enjoys helping automobile manufacturers and other technology companies bring new and innovative communications-related products and services to market.

Times are changing in the automotive industry and changing fast. In this hoganlovells.com interview, Washington, D.C.-based Hogan Lovells Partner Ari Fitzgerald talks about the challenges facing car manufacturers as they race to develop connected car technology while keeping one eye firmly on regulators.

There are more than a billion cars in use around the world. Can they all be connected to telecommunications networks?

Fitzgerald: Well I think that the capacity is there and many of the world's largest mobile operators already have significant business units that are dedicated to the connected car. AT&T and Verizon here in the U.S. and Vodafone in Europe, are spending a lot of time and effort marketing their networks to auto companies and auto suppliers. Obviously there is some way to go before that becomes a reality though.

Is there a significant business opportunity as well as an opportunity to create safer and more efficient transport systems?

Fitzgerald: Yes, but perhaps right now the business opportunities are more speculative. In the U.S. most mobile operators are used to getting about $45 a month in revenue from each smartphone. It may be possible to generate that sort of revenue from automobile-embedded radio devices, but that will depend a lot on how attractive and desirable the content and applications delivered solely over the vehicle-embedded devices are.

Remember, passengers and drivers will have their smart phones with them so there will be tension and competition between auto makers and mobile telecom providers who may already provide some of these connected services such as mapping and entertainment applications.

Other network operators that emerge may be particularly attuned to the needs of the auto manufacturers. In the U.S. for example there are a number of potential new market entrants that are targeting the Internet of Things (IoT), which includes vehicles. We may see parties develop their own telecom networks. I would love to see the auto makers get together and create their own telecom network, but I doubt that will happen. So there is a lot of potential out there, but right now most of it is just that, potential.

Wireless devices depend on bandwidth — spectrum — so do we have enough to handle all of this new connectivity?

Fitzgerald: There is enough, but for some automobile-based safety applications lives will depend on its use, requiring that it be well managed and well regulated. Most of the spectrum that will be used for non-safety commercial services is already licenced to the traditional mobile network operators. Auto companies do, in some instances, have access to special purpose spectrum, which supports very specific applications like vehicle-to-vehicle (V2V) and vehicle-to-transport infrastructure communications.

This spectrum was set aside in the U.S., Europe and some parts of Asia for vehicle communications, but it is in a spectrum band that is immediately adjacent to a very popular Wi-Fi band and there is a disagreement over whether or not this band should be shared. If sharing does occur, it raises questions regarding the reliability of these communications. So we have a battle going on and we will have to see how that pans out.

Where is this battle taking place? At the Federal Communications Commission (FCC) presumably?

Fitzgerald: In the U.S., the battle is largely being fought at the FCC, the communications regulator. The Department of Transportation (DOT) is also heavily involved and within that the National Highway Traffic Safety Administration (NHTSA), the road safety agency within the department. The Obama administration proposed that the DOT mandate V2V communications, but the Trump administration has not indicated where it stands. Multiple agencies are engaging on this issue and ultimately the White House will have to play a role in the final result.

Is this same story playing out in other jurisdictions? In the EU for example?

Fitzgerald: Spectrum is very important to the auto industry and decisions are made at various levels. There is an organisation called the International Telecommunication Union (ITU), which is a United Nations agency that basically sets the rules of the road for spectrum globally. It is no accident that all TV broadcasts over the same frequency all over the world and the same applies to mobile communications.

That spectrum harmony promotes economies of scale and makes equipment manufacturing cheaper. In 2015 the ITU set aside a large amount of spectrum, 5 gigahertz, for vehicular radar operations. One of the reasons so much was set aside was to promote autonomous driving. It will be used for short-range high-resolution radar, so auto makers can install sensors to facilitate a 360-degree view around the vehicle, enabling the efficient identification of objects in its surroundings.

This dedicated amount of spectrum is one of many foundations needed to support automated and autonomous driving. Most regulators around the world were excited to facilitate that decision, which is a major step forward.

Wireless-based systems are inherently vulnerable to frequency jamming and other such attacks. Is the industry addressing these issues?

Fitzgerald: Jamming is against the law in most countries so there is a degree of protection. It obviously happens and because it does happen the auto industry needs to work closely with auto suppliers and mobile operators to safeguard against jamming.

Automotive Original Equipment Manufacturers (OEMs) need to assume that someone will try to jam their communication and so need to impose obligations on third parties like mobile network operators and equipment suppliers to ensure that all necessary precautions are taken. It is a reality though and enforcement will have to step up to fight it. There needs to be strong enforcement at the legal and at the industry level.

What role does the regulator have on radar use in vehicles?

Fitzgerald: As I said before, a lot of spectrum will be used for automotive radar. When new products are developed they have to be certified by the telecom regulator. If an automotive manufacturer is going to install new radar equipment it needs to be sure that its supplier has secured all of the required regulatory clearances. Auto manufacturers sometimes forget that they are ultimately responsible for what is installed in their vehicles. That applies any time you install any new product that uses radio frequency to operate.

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BUS

Connected cars and autonomous vehicles: The evolving landscape of product liability, product safety and product compliance

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Sebastian Polly's key focus at Hogan Lovells is on product liability, product safety and product compliance law. He is particularly experienced in the automotive industry.

In this hoganlovells.com interview, Sebastian Polly talks about how connected cars and automated/autonomous vehicles (AV) will impact the concept of product liability. He also addresses how automakers and suppliers will need to adapt their approach to product safety and product compliance to manage the risks associated with current and future mobility trends. "Players in this space are reinventing the car over and over, generating a lot of questions that need to be answered," said Polly.

How have the connected car and AVs changed the way people think about product liability?

Polly: Typically when one talked about product liability, they were only thinking about civil law liability — meaning a person injured in an accident that was allegedly caused by a defective product. That would trigger civil law liability — meaning you would owe compensation to the injured person for the material losses, like the cost of medical treatment or for immaterial losses, like pain and suffering.

Moreover, currently when we talk about liability and driving — it is one driver versus another driver due to an alleged driving error. That is the majority of product liability cases in the automotive industry today and that does not affect automakers or suppliers very much. There are very few technical defects in today's cars and there are even fewer accidents triggered by technical issues in cars. However, that was the old concept.

We will experience a massive shift in liability. The vehicle will step by step take over more responsibility and will perform more driving maneuvers — from highly and fully automated up to fully autonomous driving. If an accident happens, it will not be one driver versus another driver. It will be traffic victims either outside the vehicle or passengers inside the vehicle versus the person responsible for the vehicle — typically the automaker or a supplier because they were responsible for an alleged defect in the vehicle.

Will liability for vehicle accidents shift from the individual driver to the automaker and suppliers?

Polly: The overall number of auto accidents will go down because automated and autonomous cars will be much safer. But the accidents that do occur might become the responsibility of automakers and suppliers, which will have to defend their products. Now when we talk about connectivity and AVs, the concept of liability broadens. It is not just civil law liability anymore — it is also product safety and product compliance. They form a kind of triangle.

If there is an alleged defect in a car, the car could be considered unsafe and that in turn might trigger a recall. The recall could be more dangerous and challenging for the automaker or supplier than the actual accident they are dealing with. If there is a safety allegation, a company could have thousands or millions of vehicles in its fleet with the same program and algorithms that are instantaneously considered unsafe. That could trigger an unprecedented safety issue.

What is the industry standard for product compliance and product safety as it applies to connected cars and autonomous vehicles?

Polly: If you want to sell a connected or automated/autonomous car, you need to assure your customers that your product is free from defects and safe. But how can you know it is safe? What is the correct safety standard? In a highly innovative and constantly developing market, defining product compliance is a massive challenge for the entire industry at the moment.

The laws in the EU state that a product, including a car, needs to meet reasonable safety expectations. But what is your reasonable safety expectation regarding an automated car? Does it have to be as good as you? Or does it have to be as good as the average driver? Or does it need to be perfect in terms of being able to avoid any and all accidents? Or is that reasonable safety expectation somewhere in between?

Could automakers, suppliers or company employees be found criminally liable for car accidents?

Polly: The biggest threat to the automakers and suppliers in terms of product compliance is the criminal product liability that comes along with it. If there is an accident caused by a defect in the vehicle's programming and a person dies, is the developer or programmer criminally responsible for the death? This would then lead to a new concept. And a company cannot insure itself against criminal liability.

If there was a public prosecution investigation following an accident, an investigator might discover that a developer or manager signed off on an aspect of the car and potentially did something negligent when it comes to the duty of care. As a consequence, they might be exposed to criminal product liability risks. In a worst case scenario, one cannot even exclude that a public prosecution might try pressing charges against an engineer, programmer or manager for negligent manslaughter.

At Hogan Lovells, our role is to help protect the automotive companies and the individual decision makers from product liability and criminal product liability risks. We brief our clients on these issues and train them so they understand the legal challenge they are personally working against. We then help them to assess the legal challenges and give them advice on how to properly handle them. If we help companies to navigate these challenges, it will be very hard later on for somebody else to tell a developer or manager that they acted negligently.

We also help companies to create an accurate and proper paper trail. If something goes wrong five years from now and you have a bad paper trail during the development phase that might create an incorrect impression, it could expose the company to unnecessary risk during a lawsuit.

What are the ethical dilemmas AVs will have to be programmed to handle and act upon?

Polly: There are for example ethical dilemmas that go along with autonomous driving. What is the autonomous vehicle supposed to do if it suddenly identifies a human walking across the street who is not supposed to be there? The car may not have enough time to break, leaving it two options. One option is to run over the person walking across the street and the other is to take an evasive action. But if the car takes an evasive action, is the car allowed to hit something else? Running someone over is typically not very dangerous for the passenger in the car. But if the car takes an evasive action and hits a tree or wall, that could be very dangerous for the passenger.

What is the ethical move that the car needs to take? Protect the person inside or outside the car? Let us assume we could answer that question. A company then has to ask itself — what do our customers want the car to do? Depending on the outcome, customers might be unwilling to trust the technology and buy it. It is a very delicate concept. However, it also outlines the massive challenges that the automotive industry is facing. At Hogan Lovells, we help automakers and suppliers to protect the company, its brand and its decision makers.

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How connected cars and autonomous vehicles will change and shape the future of how we move

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Lance Bultena, former partner and now senior counsel at Hogan Lovells, is based in our Washington, D.C. office. He helps clients improve business outcomes by helping them to understand the regulatory and public policy environment in order to stay ahead of developments in these areas. Prior to joining the firm, he served as counsel to the U.S. Senate Committee on Commerce, Science, and Transportation.

In this hoganlovells.com interview, Lance Bultena talks about the impact connected cars and autonomous vehicles (AVs) will have on America's infrastructure and environment; the services associated with car ownership like repairs, financing and insurance; and the revenue streams of automotive manufacturers.

How will connected cars and AVs change America's physical infrastructure?

Bultena: When I hear the word infrastructure, I first think of the transportation network itself — the roads, bridges and highways. The impact there should be quite significant. Most expect connected and autonomously driven vehicles will increase road capacity quite dramatically. They will have sensors that provide a 360-degree view of the vehicle, vehicle-to-vehicle communication, and vehicle-to-infrastructure communication. That is vastly more information than any human being can ever take in.

That information will run through onboard computers where it will be analysed and a decision made and effectuated at a speed that is dramatically faster than any human can do. You will basically have a much better and faster decision capacity based on much greater information that will allow cars to sync up and drive much faster and much closer together. That means a much greater capacity for the roads. I have seen projections that say the capacity of the existing road systems will go up by three times — I have even seen numbers that put the increase at eight times. Either way, the impact is very significant.

How will connected cars and AVs impact the environment?

Bultena: Some environmentalists are worried about vehicle miles travelled (VMT). If transportation gets cheap and convenient, people will demand more of it. That seems true. But if you have electric vehicles and do not have clogged roadways because you are able to move safely very fast, there is an environmental opportunity there. Plus, there is a large social benefit in safe, cheap and reliable transportation for all.

Would you expect to see a reducing in parking infrastructure and gas stations as a result of AVs?

Bultena: About 30 percent of urban driving is people looking for a parking spot. If you have driverless cars that drop people off — you have less need for parking facilities. You will need spots to station and position the driverless cars but nothing like the 500 million or so parking spots that are currently in the United States.

If driverless cars are owned by fleets as opposed to individuals — meaning that you rent time in the car by distance and or time — the price could get very cheap. If this turns out to be the case, you have less need for those consumer outlets like gas stations, car washes and automobile repair shops as those tasks will be handled by the fleet manager. And if AVs meet their goal of being dramatically safer — 94 percent of accidents are caused by human error — you will have less need for medical services and some of the infrastructure built around repairing cars.

How will connected cars and ultimately AVs, impact the marketing of cars and the need for personal financing of cars?

Bultena: It affects them quite dramatically — it is all built around cost numbers. Right now, there are about a billions cars in the world valued at about US$20 trillion. Since we use our cars on average just under an hour a day — that is a utilisation rate of about four percent. You have a US$20 trillion asset that is only being used four percent of the time — meaning 96 percent

or US$20 trillion dollars is not being utilised. Increasing that utilisation rate is what gets you to the initial cost advantage of the connected car and ultimately bigger savings from a driverless car.

Having a smartphone in our pocket enables us to feel confident that we can summon a car that is operated by someone who will take us where we want to go (an Uber or Lyft type of ride share model). That greater utilisation rate for a car and the greater competition it is bringing to the taxi-type service is decreasing the cost that people spend getting ferried around by someone else. If you take the human driver out of the car, the cost will dive dramatically. So much so that many analysts think only the really wealthy individuals would own their own driverless cars. Most cars would be fleet owned.

If AVs are fleet owned, what does that do to the marketing of cars? If you are selling cars to a concentrated number of entities that run car fleets, that is very different than selling them to individuals by advertising at every sporting event or on a TV show. You would have a different distribution network. Obviously, if individuals are not buying cars, they are not financing them either.

What types of new revenue streams will emerge as a result of the connected car and AVs?

Bultena: Connected cars would produce new revenue streams and cut off some revenue streams. If you are an original equipment manufacturer (OEM), the wonderful thing about a connected car is the prospect of ongoing revenue from that vehicle. Right now, largely you sell the vehicle and you do not get more revenue. There might be some after-market floor mats or limited repairs but it is tiny revenue. The big issue with the connected car is that you can track a person's location and learn things about their behaviour. That is valuable information that can be used for marketing purposes, supplying of services or supplying the connectivity. That is ongoing revenue for the OEM and others.

Some revenue streams will be cut off. If cars are indeed vastly safer in the driverless context and they are owned by fleets not individuals, the need for personal insurance as a driver evaporates. Driverless cars could be quite damaging to the revenue of dealerships, repair shops focused on individual owners, insurance companies and gas stations.

How does data privacy and cybersecurity come into play with connected cars and AVs?

Bultena: The connected car has to be cyber resilient from a safety stand point. You have to take care of the cybersecurity problem, especially for those with a lot of autonomous capacity or are truly driverless cars — because a hacked car could pose real safety challenges.

There is also a need to be secure from a data protection and privacy standpoint. In a way it is hard to say what kind of information will not be collected by the car. If you have a car that is connected and it syncs up with the person's phone, you are going to know that person's location, what entertainment services they are using while in the car, what they are looking at while on the web, where they stopped to make a purchase, etc. The amount of information that is already collected from our cell phones is massive. Marketing is not the hit-or-miss enterprise of a couple of decades ago — it is extremely efficient because of all that data.

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Litigating disruption in the automotive industry's supply chain

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Widely recognised as a pioneer in the German market, Hogan Lovells Partner Detlef Hass and his team have developed best practices regarding how to approach high-profile commercial conflicts with clients, judges and other parties involved. He has supported trials in more than 20 countries in Europe, Latin America and Asia and is a market leader in automotive-related disputes and insolvency cases.

"We have seen an increase in litigation over supply chain disruption in the automotive industry," said Hogan Lovells partner Detlef Hass. "In the past, there was a sense that suppliers wanted to keep their customers happy and the OEMs appreciated the supplier's specialised manufacturing know-how. During this time, there were negotiated settlements. Except for cases where you had a supplier that wanted to leave the automotive industry or went into bankruptcy and there was no means to go into settlement."

"Now that has changed for a number of reasons," he added. "Suppliers have generated more power in the market — suppliers now manufacturer close to 70 percent of a car's components. The value creation and know-how to a large extent has shifted towards the suppliers. Secondly, the margins have been for many years under significant pressure. Many of the suppliers may not have consolidated and fully utilised the opportunity to maintain their margin. These are all reasons why some relationships have become more stressed between suppliers and OEMs and that sometimes spills over into litigation."

"I have also seen cases where a supplier may want to leave the automotive industry and focus elsewhere. And they do not see a problem with going to court with a large OEM," said Hass.

The automotive industry is highly dependent on suppliers. Can you describe some of the points of failure along the automotive supply chain?

Hass: In most cases there is just one supplier or source for a very specific automotive product, which is not off-the-shelf but rather designed for a very specific purpose. The design and manufacturing process of that product is also highly specialised and pre-agreed upon with the OEM and cannot be changed without the OEM's consent. In order to bring a new supplier on board, you could have a significant lead time of several months to sometimes more than a year. Therefore any issue in the relationship can have significant impact on the continuity of supply.

What are some of the issues driving disruption in the automotive supply chain?

Hass: Some of the supply chain issues that create disruption are discussions or disagreements over price — whether or not the pre-agreed price is allowing the supplier to make enough of a margin. You also can have quality issues and expensive product recalls, which can result in the OEM trying to get reimbursed by the respective supplier. Or a supplier might say that they no longer wish to continue as the supplier anymore and that could lead to a dispute about a termination and whether or not the termination is valid.

What options do automotive companies have if faced with a threat to their supply chain?

Hass: On the practical side, OEMs can increase their product stockpiles to a certain, often very limited extent. OEMs typically do not keep large stock inventories because that just adds to the overall cost and is inconsistent with the just-in-time and just-in-sequence supply concepts they have implemented. Instead, OEMs have the supplier manufacture and deliver product just-in-time so that it is available for the production line in sequence — all depending on the OEM's production needs. But in scenarios where the OEM is concerned about supply, it can build up some stock inventories so that the OEM can meet its production planning needs for a limited period of a few days.

OEMs also have one further negotiation option: If negotiations are not successful, OEMs can sometimes file for a preliminary injunction to get a court order forcing the supplier to continue

production. That is something that is available under pretty high requirements in many jurisdictions and it depends really on the court practice. But given that the manufacturing takes place in certain areas of the world, one can say that in some of these areas there is a court practice to the effect that this sort of legal tool is available.

Where is there interim relief across jurisdictions?

Hass: Your first question always is — where do you want to enforce your preliminary injunction? You should ideally obtain the preliminary injunction in the country where you want to enforce it so that you do not have an issue with recognition in a foreign country, which can take up valuable time and time is of the essence in a supply chain dispute. Therefore, you always want to go to the jurisdiction where you want to enforce it.

So the question then is — in that jurisdiction, is the tool of preliminary injunction already available? In the continental European jurisdictions where you have automotive manufacturing, such as Germany, Netherlands, Austria, France, Spain and Italy, you can generally say that the preliminary injunction tool is available. In Germany, you have a number of courts where big OEMs are located and those courts are pretty sophisticated with the tool. But if you go to other jurisdictions where use of the preliminary injunction tool might not be that frequent, generally you can say with a good local lawyer you can go into that venture. In case law countries like the United States, the situation is similar. There is also some case law practice, particularly in the U.S. states where there is automotive manufacturing. You can obtain that preliminary injunction tool in very extreme cases. In England it is similar.

It is more of an issue when you go to Asia. But China very positively has a new law on preliminary injunction; however, given that it is new, it has not been tested yet. Therefore you will need to test the waters in China on the letter of the law. If you go to Southeast Asia, where a lot of manufacturing has moved to from China for cost reasons, we are again looking at something which is similar to the English legal system. But this is mainly untested legal waters and you really need to think hard about whether you can obtain that preliminary injunction tool in Southeast Asia.

Can you get recognition of EU judgments ex parte in the United States or China?

Hass: You normally want to avoid having to get a judgment recognised in cases where time is of the essence. Particularly because you are normally try to get those injunctions ex parte — meaning you obtained the judgment in the first place without the other side having due process. You justify that in many jurisdictions by saying that the matter is so urgent and there is no harm done if the court gives that injunction because the payment of the consideration for the supply is not in question. The OEM is generally financially sound and therefore there is no harm done to the supplier. The supplier can appeal the decision, have their day in court and have due process. But ex parte decisions are not recognised in the United States or in China.

What type of litigation arises between suppliers and OEMs over manufacturing tools?

Hass: A supplier needs specialised tools in order to manufacture various automotive parts for an OEM. Because those tools are often very expensive, they are financed by the OEM. That means when you come to the end of a relationship with a supplier, the OEM needs to have that tool back so that it can give it to the new supplier. That is a critical point because the first supplier might say it wants to keep that tool as leverage to make the OEM pay all of its disputed debts. We have seen cases where the OEM gets an injunction so that it can repossess the tool from the initial supplier and turn it over to the new supplier.

Why is Hogan Lovells uniquely situated to help OEMs facing litigation over supply chain disruption?

Hass: We have very good experience in a number of jurisdictions with this particular type of case. The Hogan Lovells team that deals with supply chain cases is integrated internationally. This is very important because an OEM does not know necessarily from the outset which jurisdiction the dispute should best be resolved in. We can help clients sort out which jurisdiction should be selected and there is a high likelihood that we have a team located in that jurisdiction. Some of the supply chain cases also involve other aspects of the law such as product safety, insolvency or regulatory issues. Given that time is of the essence in these cases, the firm can call upon these practices to provide the client legal advice in a timely manner.

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How autonomous vehicles will change and shape the product liability market

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Sebastian Lach is a partner at Hogan Lovells and member of the firm's global Automotive sector group for Litigation. In the field of product liability, he has co-ordinated various product safety and product liability cases relating to more than 70 countries. He has advised on more than 50 recalls. And he has represented and advised clients in more than 100 court hearings, on all court levels from local courts to Supreme Courts, including submissions to the European Court of Justice.

In this hoganlovells.com interview, Sebastian Lach discusses the massive liability shift that will occur as autonomous vehicles (AV) hit the roadways and the factors that will influence how insurers calculate risk.

How will autonomous vehicles shift liability from the driver to the manufacturer?

Lach: Looking at car accidents, the question used to mainly be: Who is going to be liable — the driver or the owner of the vehicle? Product liability did play a role but a very minor one. If cars are now operated automatically there can be little doubt — if we ever come to the fact that the driver will not be acting at all — that the question or product liability will be raised. Then the question is mainly going to be: Is it a product liability issue?

The volume of car insurance cases in Germany is about US$30 billion a year. That is mainly handled by drivers' liability or car owners' liability, but that whole bucket of liability might move towards product liability. One of the biggest liability issues that we have in Germany and other countries today is that car insurance liability might now become a topic of product liability.

It is less about whether the driver made a mistake, which is the issue nowadays and is more about whether the car made a mistake. Or rather is there any other explanation — other than did the car make a mistake — if nobody else is involved? It is two automatically run cars that are going to crash — it is two products. It is only going to be a question about the responsibility of the product and that may go back to the original equipment manufacturer (OEM).

How will industry define safety in a world of autonomous vehicles?

Lach: Automated driving is a very innovative market with completely new products. You are never going to get perfectly safe products, but the question is: What is the state of the art? What do you have to do to say the product is reasonably safe? That is going to be interesting to find out. Is a car reasonably safe if it is as good as a normal driver? Is a car safe if it is as good as the ideal driver? Or does an autonomous vehicle have to be better than the ideal driver because it is a machine that does not have human flaws? Or is state of the art being as good as the best competitor with regard to safety? That is going to be the discussion.

How will insurance companies calculate insurance risk as liability shifts and autonomous vehicles start to appear on roadways?

Lach: For you as a driver, the situation is going to change as follows. Imagine today you are driving on a bus. Do you need insurance? No, because you are just a passenger. That might be the same in 20 years if we talk about autonomous cars — you are just a passenger. What does that change for the liability? The whole bucket of drivers' insurance will shift over to OEMs and insurance companies will have to decide how they insure car manufacturers.

Now we are talking about completely different amounts. Insurance is about math and insurance companies will need to think about how likely accidents are going to be. Are we going to live in a world without accidents? Are we going to live in a world with just as many accidents but not as much automated driving? There are going to be a lot of assumptions here because we are entering a completely new world. And there is another factor that adds complexity — we are not going to have, from one day to another, only autonomous cars on the road. We are going to have a mix of traffic with people driving, others being driven and others driving less. So it is also going to be difficult to calculate the risks on that basis.

How is Hogan Lovells helping clients navigate this space?

Lach: We are advising clients on what sort of due diligence they have to do — testing and documentation — so that when the day comes when there is an allegation of liability, they can defend the company and also defend individuals from claims of negligence related to car accidents.

You have to monitor the market to see what others are doing so that you do not fall behind and face an allegation that you are not state of the art. You have to carefully document that you are doing the right amount of testing. You have to make the right judgment calls when you do identify risks — that you either cure those risks with additional testing or decide that it is enough to warn about them in the product information. And you have to document why you were making these decisions and document that they were made on a sound basis based on a responsible company culture.

How can OEMs balance their desire to be first-moving with the need to conduct the necessary testing, development and due diligence?

Lach: OEMs should try to be mindful that while there is a lot of pressure to be on the market early, before launching such a product they have done the necessary testing, development and due diligence. Once the product is on the market, OEMs need to closely monitor whether it is behaving as expected. If it is not and the OEM is seeing product risks, they need to make sure they are reacting to those risks quickly and in an appropriate manner to address them. When these products are new on the market, there is going to be a lot of scrutiny on the behaviour of OEMs with regard to being responsible when it comes to dealing with product risks.

We have talked a lot about autonomous vehicles. What kinds of liability risks are associated with connected cars?

Lach: Connected cars will also be a problem. Now you are connecting various cars from different OEMs. If something goes wrong and there is a crash, whose fault is it? If something happened with the interface, are both the cars that collide at fault? Is the person developing the software at fault? Or are both software developers at fault? There are going to be completely new questions about responsibility that we have not yet faced when we talk about connected cars.

You are also going to have connected cars that are hacked. So if there is a breach into a vehicle's software and a hacker takes control or you have a virus through the vehicle's connection node — is it a product flaw? Does that mean product liability because the product manufacturer did not prevent the hacking from happening with sufficient safeguards or is it just an attack from the outside? Or is it both? Where does that start and end?

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How autonomous vehicles will impact and shape the real estate sector

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Lewis Cohen, former Hogan Lovells Partner, New York. He is a frequent speaker on how new technological developments impact the world of finance and capital markets, carving out a recognised niche as one of the leading lawyers in the United States in this space.

In this hoganlovells.com interview, Cohen discusses what autonomous driving and autonomous vehicles (AVs) mean for the real estate sector and how developers will need to change and evolve along with the mobility trends.

How are millennials approaching car ownership today?

Cohen: There are changing perspectives on what type of personal vehicle ownership is needed. We are already starting on a trend towards ride sharing with services like Uber, Lyft and others by urban-based millennials. Likewise, there are other rent-on-demand services like Zipcar. I see autonomous driving as another step in this direction — where people transition from car ownership and maintenance to autonomous mobility as a service.

There are a number of coalescing trends happening. It is also work-from-home — increasingly companies are devising programs where you do not have to come into the office or come in as often. All of this is conspiring to change the way in which people think about their mobility needs.

A change in car ownership of course directly impacts the need for and location of, parking spaces. In a June 2016 article, analysts at McKinsey & Company wrote, "AVs could change the mobility behaviour of consumers, potentially reducing the need for parking space in the United States by more than 5.7 billion square meters. Multiple factors would contribute to the reduction in parking infrastructure".

What are the knock-on effects from society's eventual transition to autonomous vehicles?

Cohen: In mobility and real estate, it should be taken as given that the value of real estate is most significantly determined by its location. And how you get to a physical place inherently determines the value of that place. As people change the way they get from one place to another — that will have a significant impact on the value of real estate, the use of real estate and how it is deployed. We have been encouraging clients to really start thinking about this. Parking garages and spaces are just the tip of the iceberg.

A real estate developer I was speaking to recently completed a large project in a major metropolitan area. It has something like 16,000 underground parking spaces, which is a crucial part of the office building's design, development and business plan. The supposition is that they need to have on average one parking spot per building employee. That whole model may change completely if you have autonomous mobility. Employees may be brought to the office building by an autonomous vehicle that drops them off and goes away to park itself in some alternative, much cheaper locale and returns at an appointed time when the employee is ready to leave for the day. The vehicle may also serve other passengers in the interim.

Today, you can have a building with 16,000 cars that are sitting unused in a parking structure for eight to 10 hours a day while their owners are working. I believe that five years from now, we will look at that model and think it is crazy to have all of that expensive equipment sitting unused for eight or more hours in the basement of a large building. There has got to be a better economic way of handling those mobility needs. And that is broadly the world that we are working towards.

How can real estate developers and others balance current needs against evolving trends?

Cohen: It is a difficult time now because nobody knows exactly how fast this transition is going to occur. So my advice is to design new projects as flexibly as possible. Is it three years away? Possibly. Is it five years away? Reasonably likely. Is it 10 years away? Almost certainly. But that makes a big difference for planning. So flexibility in design and consideration becomes critical. For example, there may be ways to design parking areas that could transition to retail space.

In December 2015, real estate analytics firm RCLCO issued a report on AVs and their impact on real estate. The authors at RCLCO wrote: "While near-term opportunities to capitalise on the impending arrival of AVs are limited, we expect to see them factored into the real estate industry's decision-making within the next 10 years."

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How spectrum and spectrum policy drive the connected car and autonomous vehicles

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Ari Fitzgerald is a partner at Hogan Lovells. He provides strategic, legal and policy advice on a wide range of communications and spectrum policy issues to some of the world's largest and most dynamic communications network operators and equipment manufacturers, as well as a diverse assortment of industry trade associations and investors. He especially enjoys helping automobile manufacturers and other technology companies bring new and innovative communications-related products and services to market.

What do the Internet of Things (IoT) and the Connected Car have in common?

Fitzgerald: The connected car was the first major example of the Internet of Things (IoT). Communications technology and capabilities were introduced into automobiles more than 10 years ago. I think people understand the IoT to mean machines communicating with each other. So when you think about it, the connected car, with its ability to communicate with other machines and infrastructure outside the vehicle, is the first example of the IoT.

What role does harmonisation and economies of scale play in the connected car and autonomous driving?

Fitzgerald: As we move toward autonomous driving, communications technology and spectrum becomes very important. In order to reach the vision of truly autonomous vehicles, you have to have sensors and radar in the vehicles that operate in the radio spectrum. And that requires interference-free access to specific frequencies. In order to make that radar and sensor equipment affordable, we need economies-of-scale. Globally harmonised frequency assignments for vehicular radar and sensors make it more likely that equipment vendors will achieve the economies-of-scale necessary to make the equipment affordable.

You essentially want to make sure that the same frequencies that are used in the U.S. for these types of wireless operations are also used in Western Europe, Russia, Japan and China. If that is the case, if there is global harmonisation with respect to the frequencies that are allocated and used — that makes the equipment a lot cheaper to manufacture.

How do they do that? Manufacturers make sure that the rules of the road are harmonised across jurisdictions. This is done through a UN agency called the International Telecommunications Union (ITU), which is based in Geneva. So, for a technology like vehicular radar that requires certain frequencies, you start at the ITU and try to get it to globally allocate spectrum in a certain frequency band. The ITU's global regulations can then be implemented in all the countries that are party to the ITU Treaty. And once the international global allocation has been effected, you implement at the national level.

How important has spectrum policy become to the automobile industry and the connected car?

Fitzgerald: Spectrum and spectrum policy has become extremely important to auto companies because of the wireless communications and other technology in the vehicle. Auto companies are using that technology to distinguish themselves in the marketplace. Spectrum and wide area connectivity are essential to providing a host of valuable services such as navigation services, concierge services, emergency calling and road-side assistance, door unlock, stolen vehicle tracking, crash notifications and hands-free voice calling. Just about every automobile on the road today has some form of wireless technology and you need interference-free access to spectrum in order for that technology to work as expected.

What are some of the hot frequency issues before the U.S. Federal Communications Commission (FCC) right now?

Fitzgerald: A big spectrum policy issue of interest to the auto industry is the FCC's 5 GHz proceeding, which has implications for whether cars will be able to communicate with other cars on the road as part of intelligent transportation systems (ITS). You need frequencies to facilitate communication from one vehicle to another — this is something that is just starting to come on to the market. The FCC allocated 75 MHz of spectrum in the 5 GHz band for this purpose a few years ago. Frequencies in this range are now used for Wi-Fi. Some Wi-Fi and cable companies would like the FCC to allocate the ITS frequencies for Wi-Fi, especially in outdoor urban areas. These companies are very keen to have ubiquitously deployed, high capacity Wi-Fi networks available because those networks are free and are not necessarily under the control of the mobile operators. The 5 GHz ITS frequencies are key to a mandate the government has proposed that would require all new light vehicles on the road to be equipped with the ITS radio equipment starting in 2020. That equipment will allow cars to communicate with each other when they are about to get into an accident — or to send messages to each other to let them know where they are on the road and therefore reduce accidents. The National Highway Traffic Safety Administration (NHTSA) believes this technology would save tens of thousands of lives every year and reduce up to 70 percent of nondistracted driving accidents.

What should automotive companies be doing now to plan for future growth?

Fitzgerald: There is spectrum and there is connectivity — and spectrum allows connectivity. The auto industry knows that it is now selling cars based on their communications capabilities. There is no doubt about that. If you ask the high-end manufacturers and OEMs — they will tell you that their customers really care about these capabilities. What the auto manufacturers and OEMs do not always realise is that they are entering into another heavily regulated field. Communications is almost as heavily regulated as auto safety, so they have to be smart and strategic about the communications services they offer and how they deal with the communications regulators. They need to educate communications regulators, who are not used to dealing with auto companies, on the unique challenges of introducing communications in the automobile environment. They also need to be sensitive to the regulator's concerns about privacy and cybersecurity and take proactive steps to address those concerns. I believe the auto industry is doing a very good job in those areas.

Some auto companies are better at engaging communications regulators strategically than others. The ones that get it — they tend to be the ones that are much more focused on autonomous driving and connected car services. And their engagement is paying off. This level of engagement requires both in-house capabilities and expertise from outside communications counsel or consultants. Both are required — and the most forward-looking auto companies understand this.

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Structuring the consumer terms for connected car services

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Patrick Ayad is a partner at Hogan Lovells based in our Munich office. He is highly regarded for his work in the areas of international contract drafting, global procurement and distribution and regulatory issues such as environment and international trade. He advises global companies in the consumer goods and industrial sectors, including the automotive industry. Ayad heads the firm's global automotive industry sector group.

Who will sell the connectivity services available in connected cars?

Ayad: Traditionally, car manufacturers have not sold cars directly to the consumer and this will continue to be the case. But in the future, car manufacturers will be selling connectivity services. For example, you could have an app on your mobile phone that allows you to remotely cool or heat the interior of your car before you get into it, lock or unlock your car from your home, look at the gas gauge or park the car while standing next to it. The services are quite innovative and they will become even more exciting going forward. And it is a completely new business model and revenue stream for car manufacturers.

Limited connectivity services already exist in most cars, such as the ability to place an emergency call or access the internet. With these connectivity services increasingly coming into the picture, car manufacturers and major suppliers are now trying to get this direct contact with the consumer. And they need consumer agreements that outline the terms associated with use of their cars' connectivity services, which the consumer in turn has to accept.

What role will automotive dealers play in the sale of these connectivity services?

Ayad: Traditionally cars have been sold by dealers. That is a somewhat sensitive issue — particularly in the U.S. — but also in other parts of the world, because you have franchise and distribution laws that protect the dealers. Car manufacturers will have to carefully navigate through these laws in order to be able to smoothly introduce this new business model.

How does Hogan Lovells help clients deal with the legal challenges associated with connected car services?

Ayad: We have automotive companies on the development and global rollout of the consumer terms associated with their connectivity services. This involves reviewing the different consumer laws in the various countries. In Europe, for example, we have harmonisation for the sale of goods but not for the sale of services — so in every country the laws are different, but at the same time you want to achieve a high degree of consistency.

We also work with the in-house business teams to describe the connectivity services in a way that is legally enforceable and also understandable. One real challenge is that these services are a moving target — simply because of innovation. It is really difficult to draft terms when you know that the services will be changing. You need to be quite innovative with how you draft the terms. We have a set of general terms that would apply to a basic business model. And then my recommendation is to have special terms in place for each of the connectivity services. The annexes with the specific services will allow you to introduce a new service and state that there is a new document that addresses the new service only.

Some of the connectivity services offered to consumers are provided by third parties. The face to the customer is the car manufacturer, which purchases these services from the third party and passes them on to the consumer. The service terms of the third-party product need to be somehow integrated into the consumer terms.

What are some of the best practices associated with developing these consumer terms?

Ayad: It is important that our lawyers are very closely aligned with the developers and the company's business side. The developers have so many ideas and these projects cannot just be structured from a business perspective. So we provide project management advice for a company internally and also when the time comes to rollout these services globally. There is a lot of co-ordination with the other law firms involved.

What are some of the best practices associated with rolling out new connectivity services?

Ayad: When contemplating a rollout of connectivity services, companies should first think about where in the world they want to introduce these services and conduct a feasibility study. This will help determine if there are roadblocks or other issues to consider and plan for. For example, we know that in some countries there are very strict data protection rules. It depends on your IT infrastructure system and how you set it up — where the data comes from, where it is processed and whether there is a transfer if you process this data.

If you are providing online services, you may run into difficulties regarding local telecommunication laws. You might end up as a telecommunication provider if you provide certain communication services. We can help clients look into the local telecommunications regulations.

All of this has an impact on timing. If you need some telecommunication registration in another country, it might take some months before you can offer these services. You need to make sure that the law does not come in and disrupt your planned product launch.

How will a consumer pay for and consent to these new consumer terms?

Ayad: Consumers will have to register online. It is a click-through process to accept the terms. We work with clients to draft the commercial terms and review the step-by-step process. We also help determine whether or not there are rules governing how a consumer can withdraw their consent. This process needs to be clear and transparent.

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