

FUTURE SUPPLY: WHAT WILL CAVS MEAN FOR THE AUTOMOTIVE SUPPLY CHAIN?

SUMMER 2019







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UKAutodrive

ABOUT UK AUTODRIVE

UK Autodrive was the largest of three UK consortia launched to support the introduction of self-driving vehicles in the UK. The aim of the consortium was to establish the UK as a global hub for the development of autonomous vehicle technologies and to integrate connected and autonomous vehicle technologies into urban environments.

UK Autodrive brought together leading technology and automotive businesses, forward-thinking local authorities and academic institutions to deliver a major three-year UK trial of autonomous and connected vehicle technologies. In late 2018, the UK Autodrive project successfully concluded, with the world's first multi-modal journey featuring connected and autonomous road- and pavement-based vehicles.

Consortium members included Arup, AXA, Coventry City Council, Ford, Gowling WLG, Horiba Mira, Jaguar Land Rover, Milton Keynes Council, RDM Group, Tata Motors European Technical Centre, Thales, The Open University, Transport Systems Catapult, the University of Cambridge and the University of Oxford.



GOWLING WLG

ABOUT GOWLING WLG

Gowling WLG is a Global 100 legal practice, with more than 1,400 legal professionals across 18 cities in the UK, Canada, Europe, Asia and the Middle East. Focused on key global sectors including automotive, tech, energy, infrastructure and real estate, they can provide clients with deep sector expertise.

Led by Stuart Young, the market-leading automotive industry group brings together technical excellence in regulatory, corporate, employment, dispute resolution, real estate, commercial and competition law.

It is the only law firm to have played a significant role in the £19 million UK Autodrive connected and autonomous vehicles programme, part of the UK government's driverless cars initiative.

METHODOLOGY AND OBJECTIVES

THIS IS THE SEVENTH IN A SERIES OF THOUGHT LEADERSHIP REPORTS ABOUT AUTONOMOUS VEHICLES PRODUCED BY GOWLING WLG ON BEHALF OF UK AUTODRIVE.

Our previous reports ask:

- What are the data protection risks when it comes to driverless vehicles?
- Is there enough regulation around the moral algorithms of driverless vehicles?
- Is it possible, or even feasible, to make these new vehicles cyber resilient?
- What challenges lie ahead in creating an effective road transport network which will allow CAVs to work to their full potential?
- What is the impact of intellectual property on the future of mobility?
- What are the potential social impacts of automation and how does government policy need to change to accommodate them?

They are all accessible here <https://gowlingwlg.com/en/insights-resources/topics/connected-and-autonomous-vehicles/overview>.

The existing, global Original Equipment Manufacturers (OEMs) are all developing their own versions of autonomy and connectivity while moving to electric power. The supply chain for traditional car building is already complicated, but it is established. This report explores how CAVs may affect this supply chain, the likelihood of new entrants and how changes to supply could transform the industry.

The research was conducted by BizWord Ltd (www.bizword.co.uk), an independent business consultancy.

Specific sources have been listed in the body of the report. To compile the report, we undertook interviews with industry experts during the Spring of 2019. We also conducted desktop research and analysis of publicly-available information, industry studies and forecasts.

Many thanks to our panel of experts for giving their time and sharing their expertise. They include:

- Christian Bedford, Director of Williams Technology Ventures & Head of Legal at Williams Advanced Engineering
- Phil Bracken, Procurement Director, London EV Company (LEVC)
- James Colgate, Group Strategy Director, Williams Grand Prix Engineering
- Andy Hibbert, CEO and Founder, Car & Away
- James McGeachie, Engineering Director, Prodrive
- Nick Reed, Founder, Reed Mobility

DEFINITIONS

CONNECTED AND AUTONOMOUS VEHICLE (CAV)

A vehicle which can fulfil the operational functions of a traditional vehicle without a human operator and contains technology enabling it to connect to devices within the vehicle, as well as external networks like the internet.

ELECTRIC VEHICLE (EV)

A vehicle which uses one or more electric motors for propulsion.

MOBILITY AS A SERVICE (MAAS)

The integration of various forms of transport services into a single mobility service accessible on demand.

POD

A small, automated driverless vehicle that can act like a taxi.

INTRODUCTION

The automotive sector is transforming. Dramatic technological developments allied with big changes to mobility needs, mean that cars will look very different in 20 years' time. They will be packed with tech, built from new materials and be powered by battery rather than an internal combustion engine. The established supply chains that have existed for years, could disappear.

The massive changes occurring in the sector are expensive, complex and, in some cases, technologically risky for the OEMs. Global car sales are slowing, and the profitability of the OEMs is decreasing as their investment in innovation rises. Today's investments may take decades to mature and some may never be recovered at all.

According to The Society of Motor Manufacturers and Traders (SMMT), the automotive sector is vital to the UK economy, delivering an annual £20.2 billion direct to the Treasury, employing 186,000 people and responsible for 12.8% of all the UK's export in goods. Recent OECD figures show that the true scale of the sector's economic contribution via the associated supply chain, is significantly larger, at more than £200 billion.

In other words, the UK needs the sector to be successful.

The UK government's recent policy paper entitled "Industrial Strategy: Automotive Sector Deal" believes the UK is in a good place to lead the change and several initiatives have been launched to facilitate this process, including:

- A partnership with industry via the Automotive Council
- An investment of a £250 million to develop and manufacture electric vehicles, including the Faraday Battery Challenge and a new battery development facility in Coventry
- Increased testing of CAVs using existing test tracks

The government is also investing in a new industry-led programme to raise help UK suppliers compete with their European counterparts.

But is all this enough and how will the advent of CAVs change the established supply chains that the OEMs rely on to make their businesses work?

We hope you find the following pages thought-provoking, and that they are a useful addition to the current debate in terms of how this new technology can be brought to market successfully.

If you have any comments or ideas that you would like to discuss, then please contact me using the details below.

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SUMMARY OF KEY FINDINGS

MAKING CARS IS BIG BUSINESS, WHETHER YOU'RE IN CHARGE OF PRODUCING THE FINAL PRODUCT OR A LINK IN THE SUPPLY CHAIN.

Significant investments over decades have been made in the existing supply chains and the associated manufacturing techniques. But the advent of CAVs means that these now need to change at a pace that is both unfamiliar and precarious for the traditional OEMs and their suppliers.

Their key points are:

The industry is facing a period of unprecedented change. The technological developments associated with automation and connectivity are huge, but when coupled with the necessity for electrification, the industry and its suppliers are faced with a significant challenge.

The advent of CAVs will increase the associated value of every vehicle's technology content. This will lead to a commercial challenge for existing supply chains because of a separation between the current physical supply chain and its related value.

The limited availability of high-voltage (HV) batteries may negatively impact the OEMs and have a knock-on effect on the UK economy.

The availability of new composite materials may change existing supply chains.

Conversely, the complexity of the industry and its associated 'rule book', makes life hard for new entrants.

The technological uncertainties that exist around the development of CAVs mean that the supply chain is currently very complicated. This will simplify, but it may take a long time for this to happen.

At a time when considerations around international contracts (especially those managed from, and into, the UK) could not be more important in terms of ensuring increased certainty, the introduction of ICC Incoterms® 2020 will have implications for anyone trading in goods across international borders. The changes can be considered positively and will support buyers and sellers through providing a concrete set of terms that they can use to clarify their position in the supply chain and the risks and responsibilities they will bear.

While the OEMs may maintain a strong position in a market dominated by personal CAVs, they will not have an advantage in a 'brave new world' of mobility dominated by pods.

The UK automotive industry needs more support from the government to cope with the rapidly changing environment, particularly when it comes to the supply and recycling of HV batteries.



THE RACE IS ON

THE CAR IS EMBARKING UPON A PERIOD OF RAPID CHANGE – THERE IS REVOLUTION IN EVERYTHING FROM THE WAY VEHICLES ARE POWERED TO OUR ATTITUDES TO OWNERSHIP.

This means that the automotive industry needs to re-think its tried-and-tested ways of working.

Our experts identify four areas which are key to the current development of CAVs:

- Autonomy
- Connectivity
- Electrification
- Lightweighting

They all agree that there must be significant changes to how cars are built, designed and operated to make these all work together.

The OEMs have been developing software for autonomy and connectivity for years. And many cars – particularly those at the luxury end of the market – already have elements of each. The car industry broadly agrees that there are five levels of autonomy (see diagram), with the final tier still seen as a long way off.

Unfortunately for the automotive industry, the major technological changes associated with connectivity and automation are not the only development they are dealing with. The combustion engine is becoming a thing of the past, which means the industry is getting to grips with battery technology at the same time. Andy Hibbert, CEO and founder at Car & Away says:

“The whole model is changing. For the OEMs, it’s a really challenging environment!”

Nick Reed, formerly at Bosch and now founder of Reed Mobility, acknowledges that the fast pace of change across so many areas is a challenge for the industry as a whole:

“Probably the most important issue at the moment is that significant investments have been made over the years in existing supply chains and existing manufacturing techniques. These are now having to change at a pace that is unfamiliar. Whether it’s jobs or training or manufacturing lines, things are altering quickly, and this is difficult for traditional organisations like the OEMs.”

Andy Hibbert continues:

“The OEMs are transformational right now and they need to be because their world is changing. There are predictions that in the next decade 50% of current car owners will switch to on-demand, pay-per-use-driven models. Connectivity and autonomy then take this to another level. It will not be that long before in-built telematics mean a vehicle will be able to drive itself to the service station when it needs the brakes refitted, for example.”



In other words, it is the technology which will become the most valuable part of each vehicle, rather than the engineering.

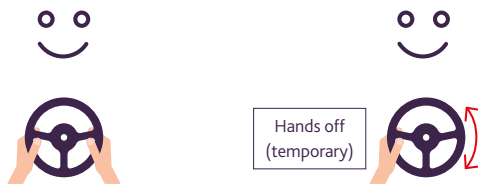
James McGeachie, Engineering Director at Prodrive, adds:

“At the moment, the systems on our cars are largely discrete. They’re very modular – a parking system, help with traffic signs and blind spots, or intelligent suspension systems – for example. This modular approach is being forced by the Tier One suppliers because it suits them.”

The OEMs have already put significant investment into the development of technology that will make the autonomous and connected parts work. Much of the news coming out of the auto industry shows a new level of collaboration between OEMs and tech firms. Perhaps because the OEMs have realised they don't have the capability to develop the technology in-house and fear losing their grip on the industry.



ASSISTED DRIVING



AUTOMATED DRIVING



Driver is responsible for the vehicle. Controls lateral and longitudinal movement. May hand some control over to the system.

Must actively monitor system performance and retake full control where necessary.

System can control lateral OR longitudinal movement in specific use cases.

Driver is responsible for the vehicle. Controls lateral and longitudinal movement. Can hand full control to the system.

Must actively monitor system performance, retaking control as necessary.

System can control lateral AND longitudinal movement in specific use cases. Where system exceeds performance limits, it will hand control back to the driver.

Driver is only responsible, and exercises control, outside of specific use cases where the car is able to self-drive.

System can control lateral AND longitudinal movement in specific use cases. It will not require driver intervention during this time.

System can control lateral AND longitudinal movement in all use cases. Driver intervention is not needed.

Level 2

Level 3

Level 4

Level 5

ADVANCED DRIVER ASSISTANCE

ADVANCED DRIVER ASSISTANCE

HIGHLY AUTOMATED

FULLY AUTOMATED

Our experts think we will continue to see more collaboration and partnerships, particularly including OEM investment in SMEs that support the ambitions of an autonomous and connected future.

Our panel also agrees that the HV batteries required by CAVs present a very different, and huge, supply chain problem.

POWERED UP?

A 2018 study by Navigant Research shows that South Korea leads the way when it comes to the manufacture of HV batteries. LG Chem and Samsung SDI are the two clear leaders of this rapidly-growing sector. Below them is another South Korean company, Kokam, as well as China's BYD and Japan's Panasonic and Toshiba. Saft, from France, and Leclanche, based in Switzerland, are just behind them. The report also predicted that the value of the market will balloon from US\$2.9 billion in 2017 to more than US\$23.1 billion by 2026. A lot of this expansion will be fuelled by the demand for EVs in the West.

Phil Bracken, Procurement Director at the London EV Company, the manufacturers of the black cab, tells us:

“The West Midlands is renowned for its car manufacturing industry. It's in the 'DNA' of the region. I've employed people's whose parents, grandparents and great-grandparents have all worked in the trade. But we do not have the skill set to deal with HV batteries.”

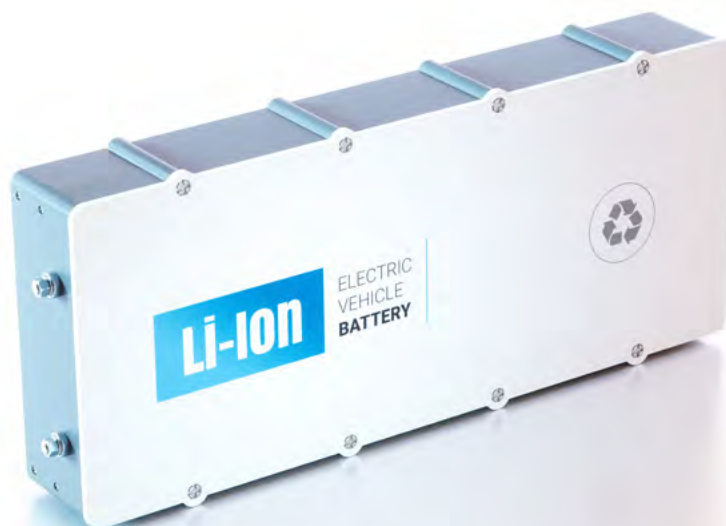
Phil acknowledges that 'UK plc' is working hard to remedy this problem but admits that there is no quick fix.

“You need to invest a huge amount of money at the start to manufacture HV batteries,” he says. “It is not like making AA batteries where the technology is known and it's just a question of sourcing the right ingredients. There is a great deal of intellectual property associated with HV battery design, so if you did replicate them, you could be in breach of IP. It's a very challenging market.”

The reliance on the South Korean suppliers puts the traditional OEMs at a disadvantage and could have a significant impact on those in the UK. There are efforts being made to develop the local production of batteries, but recouping the initial investment then becomes a matter of scale. In other words, our industry would need to export as well as supply local manufacturers.

Stuart Young, Partner at Gowling WLG, adds:

“Lithium is currently vital to the production of EV batteries, and the global OEMs are already trying to 'lock in' the necessary supplies to increase production. The problem they have is that the Chinese auto industry, with the benefit of huge government backing, is gaining an increasing monopoly in this area.”



Williams Advanced Engineering, is involved in one of the possible solutions to this problem. Hyperbat Limited is a joint venture between Williams and Unipart. Launched in the September 2018, it is the UK's largest independent vehicle battery manufacturer.

Christian Bedford, Director of Williams Technology Ventures & Head of Legal at Williams, says:

“This venture has received a lot of interest and support from UK plc and the government. The battery plays such an important part in every electric vehicle and they don't necessarily travel so well. There is an argument that if you build a battery here, the rest of the car will follow. We have an opportunity to support the future of the British automotive sector.”

Hyperbat's first customer is Aston Martin's Rapide E vehicle. Christian and his colleague James Colgate, Group Strategy Director at Williams Grand Prix Engineering, describe how they are continually being asked for help with redesigning existing vehicles. James explains:

“Many of our customers already have vehicle lines set up but come to our engineers to see if it is possible to remove the internal combustion engine and replace it with a battery solution.”

In other words, they want to keep most of the existing supply chains in place and just change one component – albeit a significant one! James continues:

“We can design something and hit the performance targets, but if an engineer were to sit down with a blank sheet of paper, they may well design something completely different.”

James McGeachie, at Prodrive, is also optimistic.

“Overall I think there will be sufficient capacity – by 2020 there'll be seven Giga factories online in Europe with something like 80 GigaWatt hours. It looks like the supply chain is starting to sort itself out and there is also the possibility of using hydrogen fuel cells – although that adds an additional infrastructure challenge.”

Phil Bracken also believes that the OEMs, with their size and strong global relationships, will be an important factor in making sure the battery supply chain functions well.

“The OEMs will fiercely resist being dictated to by the battery manufacturers,” he says. “They will not be beholden to a small number of suppliers who show little regard for the economics of any country or individual OEM.”



LIGHTWEIGHT CONSTRUCTION

The bodywork of the car is another area where new supply chains are required. OEMs are constantly looking for ways to make vehicles weigh less. As weight has a direct impact on battery longevity this is becoming a critical factor. This means OEMs are moving away from using traditional metallics and turning to plastics and carbon-composite structures.

James Colgate at Williams explains:

“There have been quite a few companies set up to provide composite materials. Traditionally there wasn't much demand for composite materials, and it was the two big main airframe manufacturers who tended to buy up most of the global capacity. A number of automakers are making moves, but the supply chain is still developing for this new requirement.

“If the automotive industry starts seriously going down the route of the composite lightweight structures then there will need to be growth in the supply chain of the core materials. Currently this just isn't set up for that kind of volume.”

His colleague Christian Bedford believes there is huge potential for a supplier in this area.

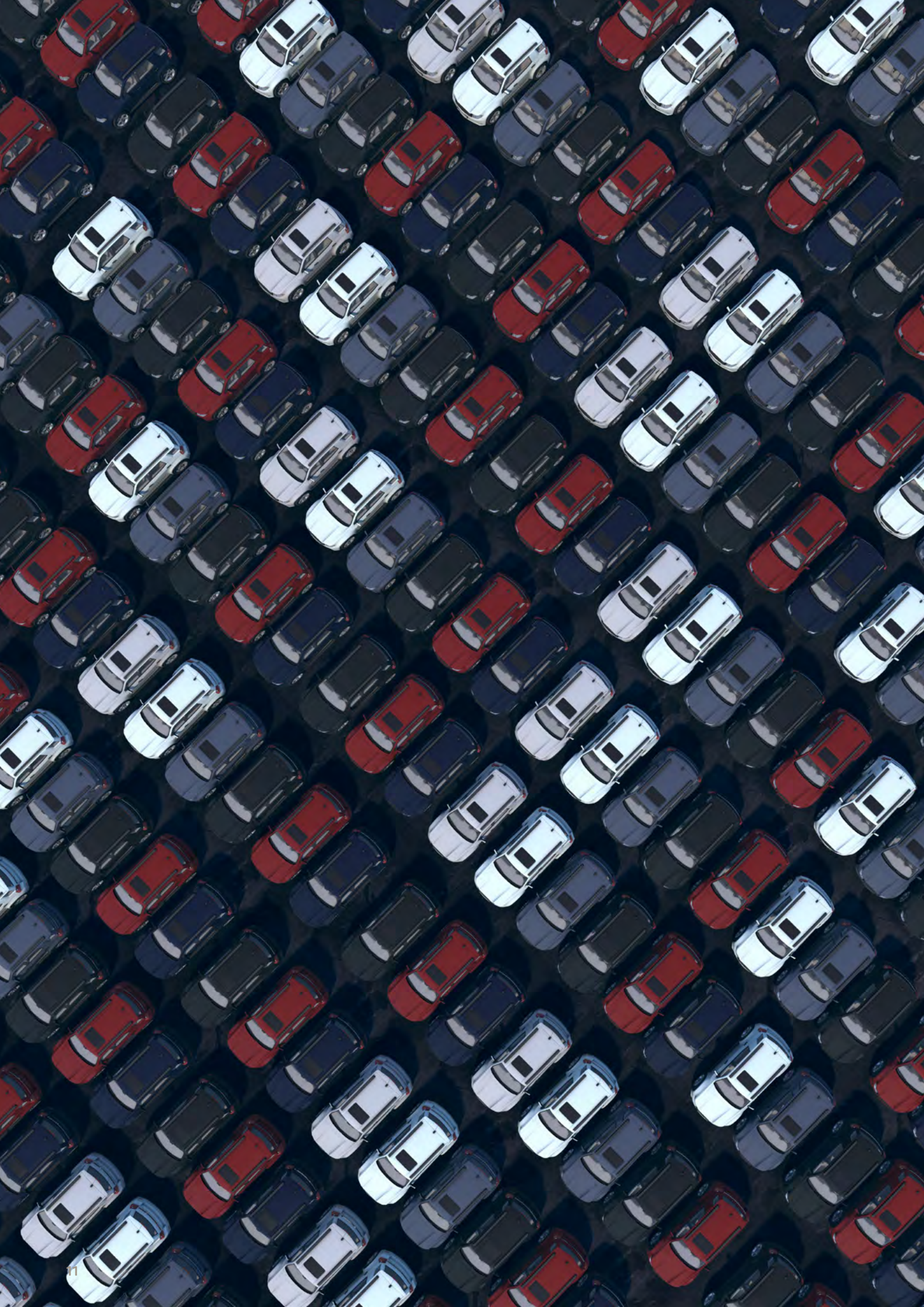
“If there are Tier One or Two suppliers out there who can nail a really cost-effective composite manufacturing process then this is a really great opportunity. Producing composites en masse at a price that is comparable with steel or aluminium is definitely a sweet-spot for somebody.”

An interesting technological development that could make automotive manufacture cheaper and greatly simplify the existing supply chain is the development of 3D printing.

James McGeachie elaborates:

“Traditionally, machined parts have an expensive piece-price, but your tooling cost is really low. But if you're making a tooled part, there's a massive tooling bill, but the piece-price is like shelling peas once you're up and running. 3D printing offers the opportunity to have cheap tooled parts at high volume. At Prodrive we've started to use it for very niche applications – for example, we worked with Sir Ben Ainslie on the hydraulic control system design and production for his Americas Cup yachts and it worked really well. Obviously, this was a small scale job and the 'art' to this is designing for volume.”





ADAPTATION OR REVOLUTION?

THE AUTOMOTIVE INDUSTRY HAS LONG BEEN RIPE FOR DISRUPTION. BUT THE SHEER SIZE OF THE OEMS MEANS THAT EVEN HIGHLY STRUCTURED DISRUPTORS WITH MASSIVE FINANCIAL BACKING, SUCH AS TESLA, HAVE STRUGGLED TO GET THEIR PRODUCT RELIABLY TO MARKET.

They simply don't have the scale to take on the large OEMs. Currently their new ideas and ways of working are not enough, but will that always be the case?

James Colgate believes a new approach could present a supply chain advantage.

“Existing OEMs have taken different views on how they integrate the new parts of their supply chain into their businesses. And any supplier to an OEM needs to understand the pressures on them – can they really supply their product regularly and reliably? This is a bigger barrier than some people imagine. But there is a definite opportunity for new companies and start-ups to do something different.”

James McGeachie, at Prodrive, further describes the difficulties for new suppliers to the sector:

“There is a barrier to entry, not just because the market is dominated by three or four key players but also because it's very often not about the tech but about the level of certification, validation and sign-off associated with vehicle standards. Basically 'the rule book' slows down new market entrants. And those that do succeed tend to be bought by existing Tier One suppliers”.

One company that has recently taken the decision to set up new ways of working is LEVC. Phil Bracken previously Procurement Director at the business, tells us:

“I joined LEVC in 2013 when it was in administration. The previous supply base had been disengaged, so the first task was to re-engage the supply-chain and re-start production of the vehicles. We moved onto a brand-new design of vehicle straightaway.

“This is an electric vehicle known as a series hybrid. This means it is fully electric with a high-voltage battery which drives the wheels of the car. There is also a small combustion engine, which is there to top-up the high-voltage battery as necessary. This is fairly new territory and we took the decision to put in place a completely new global supply chain to support it. We started full-scale production in 2018.”

LEVC had the “freedom” to be revolutionary and set up a new supply chain. Not only does the company have a very focused product range, but it was also at cross-roads, both financially and in terms of its manufacturing processes.

Prodrive is another example of a supplier working in a focused market. They are a Tier One supplier to JLR, but because they only provide parts for vehicles that are at the highest-end of the market, the volume of product they supply is relatively small.

James McGeachie explains:

“This is a very deliberate policy for us, as the big guys play at high volume with relatively low complexity. We are the opposite of this and therefore occupy a niche they don't want to be in. Our own supply chain is very well-established and specialises in low-volume manufacture. There are also certain advantages to being based in Banbury, north Oxfordshire. We are in the motorsport belt where there is a high level of technical skill – and it is pretty much all about a low volume supply chain.”

THE STRENGTH OF THE OEMS

The OEMs are working with a very different type of supply chain. Over the years, they have learned how to build high volumes of vehicles to the right quality and at the right price for each model. In many cases this involves long-term relationships with committed suppliers, like Bosch and Continental. But more recently OEMs have started to form partnerships with key suppliers.

Nick Reed comments:

“More opportunities and space have developed for collaboration and partnerships. We've seen this with Waymo and Jaguar Land Rover for example, as well as Bosch and Daimler who are working together to develop software and algorithms for an autonomous driving system. I think we'll see more collaboration and partnerships in the future, as well as increased OEM investment in SMEs involved in connectivity and automation.”

Alongside increased investment, all our experts agree that the OEMs are likely to be more acquisitive soon. Christian Bedford says:

“My personal view is that as the technology behind CAVs progresses and becomes more reliable, it is inevitable that the larger companies will acquire and merge, to deliver economies of scale. But I do think that this will calm down during the next 15 years or so, as automation develops further.”

This point is re-iterated by others who acknowledge that we are currently in a period of technological exploration. It is currently unclear which technologies are going to be critical for CAVs to function. For example, we don't yet know whether automation will use radar, cameras, lidar or other technology, or a combination of all of them. And the same is true for the connectivity elements where DSRC, 4G, and 5G are just some of the high-tech solutions being used.

This means that if an OEM were to bring out a CAV tomorrow, the supply chain would be extremely complicated. This will gradually change, but the situation may well remain complicated for years to come, according to our experts.

OUTSOURCING

As cars have become more about the IT systems and peripherals than the engine, the OEMs have tended to outsource, particularly when it comes to research and development (R&D).

James Colgate explains: “For about the last 15 to 20 years the auto industry has been collaborating with the supply chain for R&D. For example, some OEMs spent a lot of time trying to make good entertainment systems, with varying success. When the complication of these systems was fully realised many decided to partner with the likes of Bosch, or another Tier One supplier.”

Phil Bracken concurs and believes that the proliferation of technology associated with CAVs will only increase the use of the outsourced model:

“When it comes to electrical components for example, we all know that they can be made very cheaply overseas. So, for cables and connectors and some of the ‘peripheral stuff’ that nobody wants to think about, the OEMs have been happy to outsource this for a very long time. I think this will increase with the development of CAVs. This also increases the chance that supply of these components will come from overseas.”

CHANGING MOBILITY OPTIONS

Another interesting take on how a new approach to mobility may affect supply chains comes from Andy Hibbert, at Car & Away. Owners park their car at Gatwick airport when they go away, and Car & Away then rents their car out to vetted drivers, earning the owner money while they're abroad.

The process followed by Car & Away is simple, and Andy says it could be much simpler if all cars had key-less technology, i.e. you got into them using an app rather than a physical key.

“Any car up to 11 years old can be transformed into a key-less car” he explains. “It's almost like putting a USB stick into your laptop and doesn't cost a lot of money. We know that when you put the boxes that enable this tech in a car and take the key away, the cars rent many more times than their on-request cousins.”

So, adding certain pieces of new technology to existing vehicles – or upgrading them – could add another layer of complexity for the OEMs and their suppliers.

Much of experts' discussion is based on a variation of today's mobility model i.e. personal vehicle ownership. It is widely acknowledged that the way we all travel will change significantly, particularly as we move towards shared ownership or subscription models. And the move towards using pods, rather than 'cars' as we know them, moves the goalposts even further.

James McGeachie elaborates:

“We need to ask ourselves whether a traditional passenger vehicle is really the answer on CAVs. If the trend goes in parallel with mega-cities then a passenger car really isn't the answer, but a pod could well be.”

So, pods could be a game-changer. They're all about the interior environment – utility or luxury. And because they're wholly autonomous in a controlled environment, all the crash structure work that has been done on cars may be unnecessary.

James continues:

“Once the Googles of this world start manufacturing these at scale then the supply chain completely changes. For example, there may be more industrial manufacturers because a pod doesn't need the degree of complexity in terms of vehicle architecture. There are various companies here and in Europe whose focus of attention, their IP, is an algorithm. You could argue that it's the most important part of a CAV, and it is almost hardware-agnostic. These companies are not trying to be a Tier One supplier, they're not trying to sell a product, they're developing a product that's going to sit on something else.”

Gowling WLG Partner, David Lowe, said:

“Much of the conversation in the automotive sector is really just about upgrading the traditional passenger car – a concept that has been around for over a century. But the real disruption will be to the idea of every household having its own car. Peer to peer car rental, pods, on street car rental and alternatives such as electric bikes are going to have a big impact in cities where congestion and access to parking play a big part.”





CONTROLLING THE DIRECTION OF TRAVEL

RESEARCH SHOWS THAT NEW TECHNOLOGY IS CRITICAL TO THE DEVELOPMENT OF THE AUTOMOTIVE INDUSTRY. HOWEVER, IT IS NOT THE ONLY IMPORTANT FACTOR THAT WILL AFFECT THE OEMS AND THEIR SUPPLIERS.

Customer acceptance and a new regulatory regime that codifies the sector are also vitally important.

In its recent report titled 'Future of Mobility: Urban Strategy' the Department for Transport (DfT) stated:

“The strategic transition to low carbon, connected and self-driving vehicles requires the building of new supply chains. The Government, through the Advanced Propulsion Centre, Faraday Battery Challenge and a connected and self-driving vehicles programme, is supporting the development of technologies that will form the basis of future low carbon vehicle supply chains and keep the UK at the cutting edge of low carbon automotive innovations.”

But are we seeing enough action from the Government to ensure that new regulations, deadlines and guidance support the industry and ultimately the UK economy?

ICC INCOTERMS® 2020

The increasingly complex nature of global supply chains has also highlighted the similarly increased need for stable terms and guidelines that provide certainty through solid and direct international trade-related procedures.

The International Chambers of Commerce (ICC) has implemented key headline changes that respond to the common trading behaviours that businesses have displayed in recent years. The release of ICC Incoterms® 2020 – the set of standard international freight delivery terms – provides revised commercial contract terms that apply from 1 January 2020 and impact any business involved in the purchase and supply of goods across international borders. Indeed, these arrive at a time when considerations around international contracts (especially those managed from, and into, the UK) could not be more important in terms of ensuring increased certainty.

Head of Commercial Contracts at Gowling WLG, Partner David Lowe is Global Co-chair of the Incoterms 2020 drafting group and so has played a central role in shaping ICC Incoterms® 2020.

David explains:

“Any business trading across international borders will recognise that between the seller and buyer's premises there are many different cost points and areas of risk. Incoterms are fundamental in helping each party in an agreement understand the costs and risks involved and determine how they will be allocated.

“At a time of so much political and economic change, companies are likely to already be dealing with a significant additional paperwork burden for the handling of tax, customs duties, tariffs and passports. It is more important than ever that they reassess their supply chains and contractual arrangements to ensure they are optimised and using the right set of Incoterms, in the most effective way.”

Gowling WLG has produced a comprehensive summary of the key changes in the newly revised edition and how these will impact businesses involved in the purchase and supply of goods across international borders. The key headlines here, which most would consider to be top priorities are: costs, security, insurance provisions, the extent of responsibility within the supply chain and the definition of a 'terminal' or 'destination'.

Key questions for businesses to consider in reviewing their trading arrangements are: What current Incoterms are currently being used? Is the right term being applied for the current situation? Do the changes brought in by ICC Incoterms® 2020 mean existing contractual terms need to be adjusted?

For more information on Incoterms®, visit [gowlingwlg.com/en/topics/incoterms-2020/](https://www.gowlingwlg.com/en/topics/incoterms-2020/)

SUPPORTING UK PLC

One of the main selling points for connectivity and automation is improved road-user safety. However, currently there is a lack of CAV-related legislation. History shows that where this situation has occurred previously, OEMs in other European jurisdictions have been

better at filling the void than those in the UK. For example, when the safety standard ISO 26262 was developed, German OEMs and their Tier One suppliers were very involved with it and so were first to market. The German companies in particular, have a reputation for working more collegiately and have the backing of a very supportive government.

This support is key, particularly at a time when all parts of the industry are having to invest heavily in R&D.

Stuart Young explains further:

“The OEMs will automatically focus on where they can get the most return. This means that connectivity and automation will only be available on the most expensive vehicles with the highest spec. It is only as this spec becomes more common place and the technology gets cheaper, that the price for the consumer will come down. This is just how the market works and only changes in legislation will force different behaviour.”

Another area where our experts believe more clarity is needed, to ensure customer acceptance of the new technology, is around liability.

Christian Bedford clarifies:

“I think as a consumer you would probably expect whoever sells you the platform or the vehicle to be responsible ultimately for providing assurances and warranties. It is, of course, inevitable that the seller will flow the risk down the supply chain, and this creates more uncertainty around ultimate liability if the consumer has several options for legal recourse if something were to go wrong.”

Nick Reed adds:

“This is something every manufacturer and supplier is mindful of. The situation where the vehicle is in control, something bad happens, it is unclear how liability will be shared between driver, vehicle manufacturer, component supplier, down to individual programmers and employees. There is active consideration on how that will play out, but it needs to move quickly.”

To an extent, the Autonomous and Electric Vehicles Act (2018) already addresses liability in relation to accidents involving CAVs by mandating insurance for cars in autonomous driving mode. Under the act, when injuries are sustained or property damaged in a collision with an autonomous vehicle, a claim can be pursued against the insurer, who will be primarily liable to deal with that claim. The insurer may then have a right of recovery against the manufacturer, if autonomous driving mode was activated and the accident was the result of system malfunction. This model may be challenged if individual CAV ownership is replaced by fleet ownership such that corporate owners can deal with the risk of such liability arising.

This area is likely to develop further, particularly when you consider that the more technology that is on a vehicle, the harder it is to tell where a problem started.

It is also currently unclear what will happen when CAVs and, in fact, EVs reach the end of their lives. Today the OEMs are responsible for the disposal of HV batteries. This is not a simple process, Phil Bracken says:

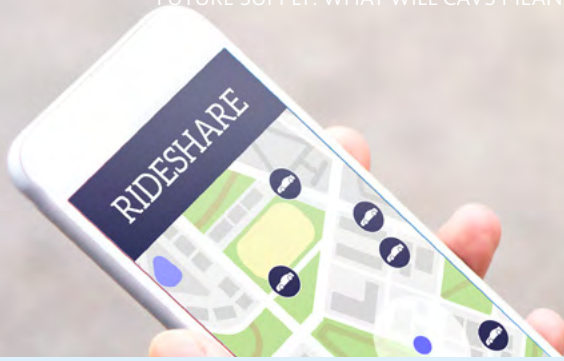
“You can't just take them to your local landfill and in the UK, we don't have any sites for breaking them down. There are several firms who've said they would like to set this up, but they can't because there isn't enough business in the UK alone to support the investment needed. They need help from elsewhere. Currently the closest plants are in Belgium and Germany.”

ACCESS TO RAW MATERIALS

Another problem highlighted by our experts is around continuity of supply. This is predominantly a concern for the precious metals associated with HV battery manufacture.

Phil Bracken tell us:

“The Chinese government is famous for taking a long view. They are actively supporting local businesses with a view to ensuring their own supply of HV batteries from within their own economy. This involves a lot of central government funding and is critical as there is no business in the world that could



justify the amount of investment needed to become a valid HV supplier. I'm not convinced that there is sufficient capacity, even with the people who are the current suppliers to satisfy global demand. This only creates more pressure on the UK industry and economy."

Fundamental economics dictates that this situation will not be allowed to continue. Therefore, the questions really are who will be the successful new entrants and where will they come from? Clearly, the UK government would like them to be in this country and there is work going on to ensure the intellectual capital is in place. But is more economic support required?

Gowling WLG Head of Natural Resources Charles Bond, said:

"There is no doubt that the emergence of electric vehicles has shifted the attention of the global mining community towards the key minerals that are used in an EV, not only for the battery (lithium, cobalt, graphite), but also in the other components such as copper and rare earths. Prices for the majority of these commodities have tended to spike with the uncertainty of supply, and then level off as the future supply/demand dynamics become clearer."

Charles continues:

"Lithium has perhaps been the key battery mineral in focus lately; but it is not simply about how much lithium there is in the world, it's much more complex than that. What form does it occur in naturally (brine, hard rock or clay), which of those forms is easier to develop into the upstream compounds required by the auto industry (lithium carbonate or lithium hydroxide), and how close is the source and the place of production (e.g. Argentina, Australia, Africa, Europe) to the auto manufacturers?"

"There is no doubt that Europe would like to be reliant on its own supply, but the feeling is that European lithium projects (including the fledgling Cornish ones in the UK) are still a way off at the moment given the early stage of the market. The long term investment capital of the larger Chinese mining houses,

which is starting to flow into various lithium projects around the world, is starting to take control of supply, as it has done to some extent already with the rare earths market."

BREXIT

It is inevitable that Brexit – whatever the outcome and whenever it is decided – will impact the UK automotive industry and its supply chain.

Currently, and mostly because the outcome is far from clear, our experts cite currency market uncertainty as the main problem they are having to deal with now.

James Colgate at Williams says:

"Formula One Management income is paid in dollars with other f1 income typically in Sterling, and our expenditure is in Sterling and Euro, so we are impacted by rates changes and manage carefully to mitigate there." Phil Bracken agrees: "Fluctuations in exchange rates can make things difficult but the biggest uncertainty is trade balance."

Phil continues:

"This is what we are dealing with now but the issue for the future is around the extent to which we are able to export. If there isn't a trade deal in place, then we will suffer the consequences of more expensive imports. And if we can't drive our export market, then it's the worst of both worlds."

The problems for the Williams and Prodrive businesses and supply chains are slightly different and focus on access to the best minds.

James McGeachie explains:

"We look for the best engineering talent regardless of where they come from, so any restrictions on movement cause uncertainty for people."

THE FUTURE OF MOBILITY

Our experts agree that CAV technology, alongside the impact of EV development is the biggest threat to the OEMs' business model that

they have had to face. They are used to manufacturing, selling and servicing cars, all of which rely on the current model of ownership. It is very likely that this is going to change.

Andy Hibbert tell us:

“Recent studies by Warwick University have shown that 60% more people are using sharing products than they were 18 months ago. You can share your music, pets, handbags, houses, boats, cars, the list goes on. It is growing at a rapid rate. In our sector, it's not necessarily just Millennials who are sharing – it's everyone. But it is the Millennials who are saying 'I don't want to waste my money here – I'd much rather have the experience when I need it'. Pay-per-use, on-demand, data-driven access platforms. And everyone knows that the easier products are to access, the more your product will be in demand.”

One of the nine principles underpinning the DfT's approach outlined in its recent Urban Strategy report recognises the power of data. It states:

“Data from new mobility services must be shared where appropriate to improve choice and the operation of the transport system.”

The report also committed the Government to do more to shape the way MAAS platforms emerge to ensure regional interoperability and ensure a fair and open market. They admit there is potential for monopolies to emerge with the report continuing:

“Significant monopoly power could reduce consumer choice, limit innovation and raise the price of mobility. For instance, in a scenario where a dominant mobility firm emerges, data and algorithms could be used to identify and raise prices for individual consumers who have the fewest alternative mobility options. Dominance of a single firm could also lead to a lack of transport provision in the event of that firm abruptly exiting the market.”

Gowling WLG Head of EU, Trade and Competition Bernardine Adkins, said:

“There has been widespread discussion as to the fitness for purpose of current competition regimes to tackle these new challenges; but as yet no consensus has emerged. In the meantime, it is also acknowledged that existing competition law remedies must be applied in a sufficiently robust and timely fashion to ensure adequate access to these nascent markets.” So, what is the forecast for the OEMs and their suppliers and what can they do about 'carmageddon'?

James McGeachie believes:

“The current situation will change, but will it change in the short-term? I don't think so. There are absolutely opportunities for new entrants, despite the barriers. These barriers are less in pods or other forms of automated vehicle (AV), than they are in passenger vehicles. Trucks may become the first mass-adopter of AV tech because they are predominantly on motorways, and therefore in a controlled or constrained environment.. Fundamentally though if it works commercially, it will happen.”

Andy Hibbert adds:

“The one thing that is for certain is that it is vital for everyone in the industry to understand what consumers really want and act on it.”

CONCLUSION

THE CURRENT AUTOMOTIVE SUPPLY CHAIN REFLECTS THE ENTIRE INDUSTRY AND HAS ADAPTED WITH IT THROUGH THE YEARS.

Many of the Tier One suppliers will continue as automation, connectivity and electrification become common place, but some will become obsolete.

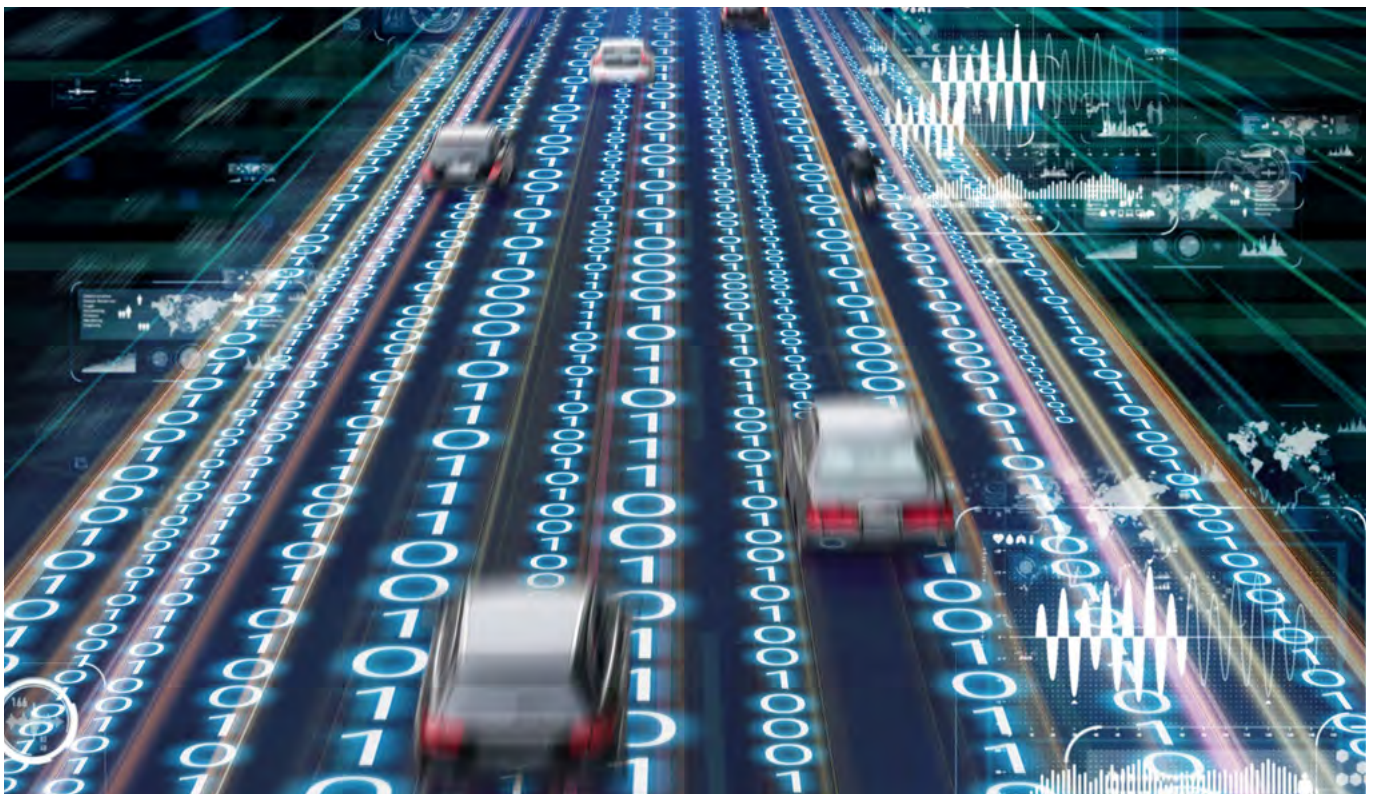
During the current period of rapid change, the supply chain is complicated because breaking new ground demands innovation and often, new people with new ideas. As the 'right' technology for the job emerges, it will simplify again, but this process could take decades.

This uncertainty leaves many of the suppliers, and OEMs, exposed.

Long-term foresight and a spirit of collaboration is needed to ensure continued success.

The OEMs and their suppliers must take strategic decisions about how much and where to invest. This investment is not limited to capital but includes having the right technological skill and organisational structure to ensure success.

They industry needs support from the government to make sure regulation is in place that ensures competition is fair, it delivers on environmental commitments and improves mobility options for the public.



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