

Smart car, smart business model

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Connected, driverless vehicles are set to overhaul not just the automotive industry, but software, finance and telecommunications too. KPMG's Alec McCullie tells us how.

On 6 April, six convoys comprising more than a dozen trucks arrived in Rotterdam after driving across Europe. The remarkable thing? In each convoy, only one of the trucks had a driver in control on the motorway. The rest were driving themselves.

Connected and autonomous cars are on a fast track to becoming the norm. In February, the government awarded £20m to eight projects at the forefront of this transport revolution. The Insight, will create a fleet of driverless shuttles with advanced sensors for trials in pedestrian-friendly city areas, mainly for disabled users.

One man keeping a close eye on all these developments is KPMG Associate Director Alec McCullie, whose career in car giants including GM, Ford and Honda led him to designing autonomous car capabilities with tech start-up Indoo.rs.

At KPMG he helps clients from start-ups to large corporations develop strategies to embrace, apply and leverage these game-changing technologies. And he says there needs to be a huge change in mindsets to bring them to market – one that will have profound knock-on effects throughout a range of industries.

A tankful of code

Established original equipment manufacturers (OEMs), McCullie argues, are accustomed to ground-up product development – an engine model is typically designed with set emissions and power targets; built; and homologated (auto-industry speak for 'accredited'). Regulators then check sample units on a regular basis. The revision cycle often takes years.

"By contrast Tesla software in its cars allows it to remotely turn on new functionality whenever it's ready,"

says McCullie, citing the autopilot feature or upgrades to battery management. "Traditional OEMs can spend four years developing a new product, and then another two optimising components to reduce cost, weight and improving reliability. The life cycle for platforms is typically much longer."

The message? Software is now a defining element to the car experience. Connected cars can gain new features and "driving intelligence" simply by downloading an upgrade from the manufacturer.

It's not just aftermarket upgrades. "The four segments I see emerging now are telematics, vehicle-to-x communication, cybersecurity and autonomy," says McCullie.

"Beyond telematics, we will have intelligent systems monitoring everything from engine state to driver health."

Auto industry leaders are already reacting – witness General Motors' acquisition of self-driving start-up Cruise, as well as the purchase of Israeli cybersecurity firm Towersec by connected-cars specialist Harman Industries. "Not only did the field of vehicle cybersecurity not really exist just a few years ago (Towersec was founded in 2012)," McCullie says, "but now you have large corporations acquiring targeted expertise to move quickly."

Digital indemnity

This revolution extends to insurance. "The obvious opportunity is in usage based insurance [UBI]," says McCullie. "Monetisation won't necessarily come from winning market share by reducing people's premiums – there's only so far premiums can be reduced. Instead, it will come from the more granular level of analytical insights into driver behaviour and vehicle usage." This data will allow insurance companies to understand the precise risks associated with individual drivers (and even [helping them avoid loss events](#)) as well as exploring new revenue channels through non-traditional products and partnerships.

The real challenge, he believes, is "who owns that analysis, how they *understand* that customer, and what they offer them as a result. The insurance industry could learn from Google how to monetise *knowledge*, rather than products."

McCullie predicts an even bigger revolution on the liability side. Current insurable risk pools will change, but no-one can predict exactly how. "At the moment, liability rests with the driver," he says. "So if your Tesla is on autopilot and something happens, it's your problem. Tesla has been quite clear on that." This position may change in time, as legislation and public opinion evolves around autonomous driving.

"A couple of OEMs have already said publicly that they would assume liability for *fully autonomous* vehicles (much more advanced than autopilot).

McCullie's four drivers

Coverage of the auto revolution has focused on self-driving cars from companies such as Google and Tesla. But the revolution is more far-reaching than that. Four areas will be critical.

- 1. Telematics.** Transferring real-time data between vehicles and specific agencies such as the manufacturer or an insurer to monitor (and tweak) performance, driver behaviour and usage patterns.
- 2. Vehicle-to-x communication.** Allowing vehicles to connect with each other and infrastructure systems to allow them to respond better to their environment.
- 3. Cybersecurity.** Ensuring smart systems – from in-car climate control and door locks, to cloud-based services accessed by a vehicle – are protected from unauthorised access.
- 4. Autonomy.** Building cars where some or all of the functions work without human interaction.

So in let's say five to eight years' time - when self-driving is fully implemented - insurers and carmakers will need to form strategic alliances because insurance companies will be covering *manufacturers* – not drivers. Of course, advanced telematics will be able to tell exactly when the system was active for liability purposes".

Collaborative cars

The next generation of connected vehicles will be better at telling other cars around them about driving conditions and environmental factors. OEMs, government agencies and tech insurgents will have to determine how best to provide an infrastructure that facilitates this kind of connectivity. And it's an even bigger question for telcos.

"Cars will probably (but not necessarily) need to exchange massive amounts of data in real time – which can't happen yet," says McCullie. "Will telcos get 4G and soon 5G to cars with full coverage over the entire country with no drop-outs? More importantly, do the telcos *want to*? What's the business case for them given the multiple different connectivity options such as long term evolution (LTE) or dedicated short range communications (DSRC)? The data standards required for the kids in the backseat to enjoy on-demand entertainment are likely to be very different from a safety critical update from the vehicle manufacturer."

The government would also have a significant role to play. "Let's think about how all these different players look at feasibility," explains McCullie. "How is this going to work? Who's going to fund it? What's the timeframe? Imagine the CapEx involved in a hardware-based network that may take five years to build. What if it's no longer relevant by the time they've finished – for example start-ups like Portugal-based Venium are already building a mesh networked 'wifi of moving things'."

"The Department for Transport's Centre for Connected and Autonomous Vehicles is helping the UK be a real leader."



Europe shifts gears

As the government's announcement in February showed, it is keen to help find answers. "The UK already has pioneering legislation around self-driving cars that puts us ahead of many other countries," says McCullie.

Europe is eager to catch up. On 14 April, EU transport officials and the European Automobile Manufacturers' Association agreed the [Declaration of Amsterdam](#), a paper committing them to devising new rules for research and innovation in connected and autonomous vehicles.

With governments and OEMs increasingly committed to this revolution, is there no longer room for the independent inventor to make a mark?

"There has probably never been a time in the automotive industry, this side of Henry Ford, when we have seen such innovation," McCullie says. "Giant tech firms are spending huge sums of money to drive innovation alongside OEMs. But we're also seeing kids in California stick computers in their cars and experiment.

That goes to the heart of the changing business model: *the car is no longer the core bit of kit*. It's now about the software that's running it."

This is a message that resonates throughout the industrial landscape. User experience, connectivity and rapid iteration in the field are today's watchwords – not decade-long product cycles and fixed designs.



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- **On your reading list:** [Connected and Autonomous Vehicles – The UK Economic Opportunity](#) a detailed guide to this market in the UK and beyond, produced in association with the Society of Motor Manufacturers & Traders (SMMT).
- **On your board agenda:** How do we design our customer journeys and use of connected devices to exploit opportunities for enhancing products post-purchase?
- **Anticipate tomorrow...**: Every aspect of logistics – from moving people to bulk commodities – will rely on connected, autonomous vehicles. This poses questions about the role of the workforce, the accessibility of markets and what kind of investments you need to make (and when) in next generation enterprise management technology.
- **...deliver today:** Machine-to-machine technology is approaching maturity. Exploiting the "Internet of Things" is no longer about hype – every business needs to understand how it can drive efficiencies now, and investments today which deliver valuable lessons about the potential for smarter autonomous devices tomorrow.