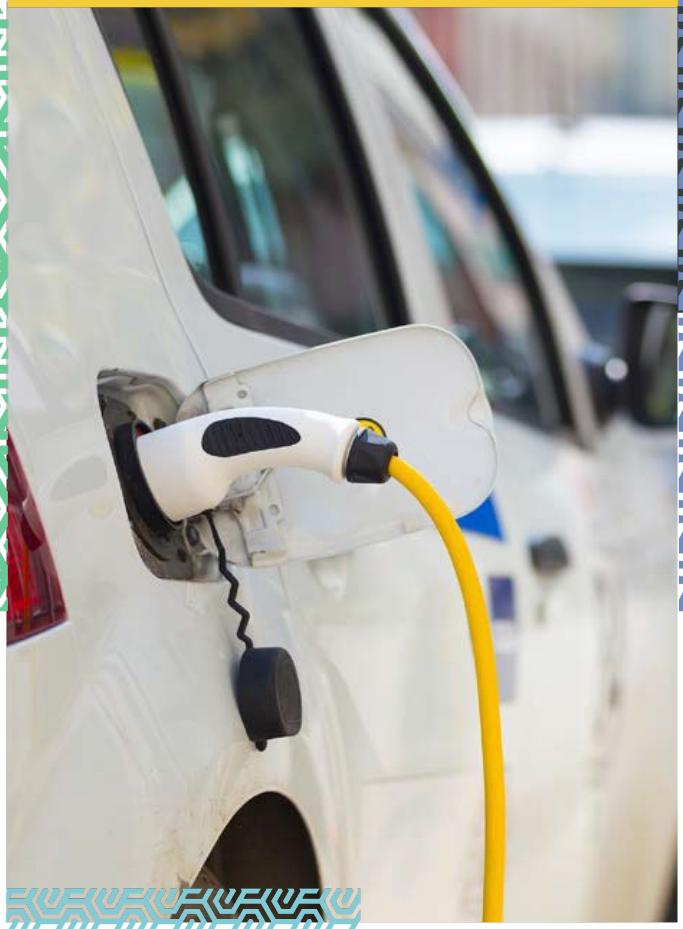
Risk control

Automated and Electric Vehicles



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Introduction

Cars, as we know them, have been the very foundation of our transport system for the last hundred years, but all of that has recently been changing.

With 1.3 million road traffic deaths per year worldwide, will the dawn of the driverless electric car improve road safety and transform lives[1]?

There are many features built into our cars which we now take for granted; such as – parking sensors, cruise control, sensors on our windscreen wipers to detect rain and adaptive cruise control to name just a few. These are all part of driver assist technologies and are the first small steps on the road to full autonomy.

The Automated and Electric Vehicles Act 2018 received Royal assent on the 19th July 2018.

This is a complex piece of legislation which seeks to set the regulatory framework to enable the next generation of transport technology to be invented, designed, produced and used in the UK.

As well as car manufacturers and the UK Government investing in autonomous vehicle design - Google parent company has recently announced a further $2.5bn funding into self-driving technology[2].

The Government View

Since 2009 UK governments have sought to provide a framework in which electric vehicles, or 'ultra-low emission vehicles' (ULEVs) can grow. The decarbonisation of both private cars and goods and passenger carrying vehicles is seen as critical to helping the UK achieve its climate change obligations and to improving air quality, particularly in cities such as London.

The measures in the Act are intended to help deliver the aim in the Conservative Manifesto 2017 stating "Our ambition is for Britain to lead the world in electric vehicle technology and use". It further states "We want almost every car and van to be zero-emission by 2050 – and will invest £600 million to help achieve it". This was subsequently amended as the sale of petrol and diesel vehicles will end by 2030 and hybrid vehicles by 2035[3].

Taken together, the powers would allow Government to regulate if necessary in the coming years, to improve the consumer experience of electric vehicle charging infrastructure, to ensure provision at key strategic locations like Motorway Service Areas (MSAs), and to require that charge points have 'smart' capability.

In contrast, the cost and complexities brought about by the Act cannot be ignored. The need to redesign our highway infrastructure to enable automated and electric vehicles to operate freely, the lack of electric charging facilities, and how automated and manual vehicles will interact with each other are all dilemmas which need to be worked through. In November 2020 the UK government announced funding of "£1.9 billion in charging infrastructure and consumer incentives". However recent press reports indicate that whilst vehicle orders have dramatically increased, the installation of charging points has not kept pace. Zap Map recorded 24,513 registration of Battery Electric Vehicles in May 2023 alone but only 1,628 new charging devices were installed[4].

Development in this space will undoubtedly bring opportunities creating high quality jobs and investment as well as benefits for the environment. The Act is comprehensive and it is refreshing to see insurance and data security / data protection issues included from the outset. Data logs in automated vehicles will be invaluable for determining liability – but how long should that data be kept? Whose data is it? Who should be allowed access? All questions which require answers.

Public Perceptions

The public look at autonomous vehicles with the same fondness of 'marmite', they either love them or hate them. Would you trust a computer to have control of you travelling along the motorway at 70mph?

Trust is a critical factor for the autonomous vehicle market as it determines success or failure. It is therefore important for them to raise levels of trust in the market or see the vast production of vehicles which ultimately remain unsold. An in depth piece of research has been published by The American Automobile Association:

'Users' Understanding of Automated Vehicles and Perception to Improve Traffic Safety — Results from a National Survey'[5]

[1] Road traffic injuries (who.int)

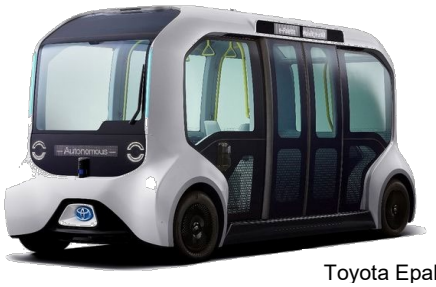
[2] https://electrek.co/2021/06/16/waymo-announces-another-2-5-billion-in-funding-from-latest-investment-round/

[3] https://www.gov.uk/government/consultations/consulting-on-ending-the-sale-of-new-petrol-diesel-and-hybrid-cars-and-vans

[4] https://www.zap-map.com/ev-stats/how-many-charging-points

[5] https://aaafoundation.org/wp-content/uploads/2019/12/19-0493_AAAFTS_Emerging-Technology-Report_FINAL-1203.pdf

This large scale piece of research focussed on the US public's perception of autonomous vehicles and whether there were areas that they would prefer the driverless vehicle over the traditionally driven counterpart. This research is hugely important with the US having one of the largest vehicle markets worldwide.



Toyota Epalette

To be trialled at the next Olympic Games

The results show some interesting but not unexpected results;

1. Respondents were asked how much they would trust each level of Autonomous Vehicle (AV) technology
2. Their perception on the effectiveness of AV technologies for crash prevention
3. They were then asked to rate their potential concerns with AV technologies across 8 different circumstances

The results suggest that the AV manufacturer has some work to do.

The responses to question 1 identified that the majority of responders trusted the lower levels of AV technologies (currently 2-5) more than the higher levels with nearly 30% strongly distrusting the full AV technology. AV Level 2 with 55% being divide between strongly and somewhat trust and 19% somewhat distrusting to strongly distrust.

The responses displayed that even at level 3 the public were starting to lessen their trust with only 43% having a strong trust or being somewhat trusting. 26% remained unconvinced either way but 29% now identified that they somewhat or strongly distrusted the technology.

Moving to AV level 4 technology we see now only some 36% in the trust area with 41% distrusting and at level 5 only 33% having some degree of trust and 48% having distrust in it. Question 2 asked respondents about the technologies effectiveness to reduce crashes. Overall respondents perceived higher level AVs as more effective than lower level AVs in preventing crashes due to dangerous driving behaviours and challenging driving situations. For example, 60% of respondents perceived Level 5 as effective in preventing crashes due to drowsy driving, while 21% felt the same way about Level 2. Meanwhile, crashes caused by traffic congestion and bad weather conditions were reported as the least likely to be prevented by fully automated vehicles (Level 5).

Question 3 looked at the respondents grading their concerns for each AV level. The responses identified that concerns increased as the level of vehicle automation increased. Fear that the technology might malfunction was the biggest concern across all AV levels. For Levels 3 and 4, the second biggest concern was the possibility that drivers might become over-reliant on the technology.

The research recognises that the developers have some way to go to convince the US public regarding safety and reliability however it also showed that people do actually believe that the technology has the potential to substantially reduce road crashes and the subsequent injuries and death that follow and make the roads much safer.

Insurance Implications

The House of Commons has consulted widely with representatives from the automotive industry and insurance sector on the implications brought about by the Act. The Government has stated that it will create a new compulsory insurance framework which protects motorists when they are driving and when they have 'legitimately' handed over control to the vehicle itself[6].

Consumers will be able to purchase insurance in the same way they do now and will continue to have quick and fair access to compensation in the event of an accident.

Insurers will pay out to victims and where they can, insurers will then recover costs from the liable party using common and product law.

The Insurance Industry[7] has made it clear that drivers for now will not be able to disengage from the driving task. This means 'autonomous' not 'driverless' ensuring that drivers must remain in full control and sober for the time being.

Yet to be determined is how autonomous cars will make moral decisions e.g. whether to collide with a child or a bus filled with passengers? David Williams – Chief Commercial Underwriter at AXA said: "I genuinely believe the world will

[6] https://www.insurancebusinessmag.com/uk/news/auto-motor/transport-minister-new-insurance-framework-for-selfdriving-cars-84103.aspx

[7] https://www.abi.org.uk/products-and-issues/topics-and-issues/driverless-cars/

be a safer place with autonomous vehicles and I really don't want that derailed[8]."

The Road Map to Automation[9]

The National Highway Traffic Safety Administration and SAE (formerly the Society of Automotive Engineers) have set levels of autonomy from level 0 to level 5. These are:

Level 0 You do all the work...

- No automation - human driving.

Level 1 Helping out...

- Driver assistance level. Car helps out by doing a single task such as cruise control.

Level 2 Building confidence...

- Level 2 car can help you drive as long as you keep a careful eye on it. If difficulty arises, it is for the human to take over. Some cars can already scan for a parking space and then park for you. This would fall within level 2. Tesla's autopilot system is an example.

Level 3 Taking control...

- There is no level 3 on the market yet. These cars will make decisions e.g. instead of braking to avoid collision they will look around and may decide to change lanes. Audi's prototype A7 is an example. Human intervention is still needed if sensors fail etc.

Level 4 Off to college...

- Human becomes expendable. The car can handle any situation by itself as long as it stays in 'its safe place'.

Level 5 Adulthood...

- This is what Google is aiming for. The car that can handle all driving tasks and go anywhere. No human, no steering wheel, no pedals. Climb in and tell it where you want to go - it may even know by looking at your phone!

What will the future look like?

Automated vehicles are those which have the capability of driving themselves without human oversight or intervention for all or part of a journey. Have we thought about what that will mean for the future delivery of our public services?

Will we be able to programme in 'meals on wheels' deliveries to self-driving vehicles? How will our statutory duty to maintain the highway change? With an ageing population placing pressure on local authorities – will automated vehicles reduce the burden on service provision for the elderly as they will be able to travel themselves to appointments, day care centres etc.?

Could cars run our errands for us? Will this be the demise of the taxi? Will we be able to just text our cars and they travel to where we are and pick us up?

Regardless of how far society embraces autonomy, we will need to place significant trust in that vehicle to keep us and others around us safe. Judgement, speed and tactical decision making in the future, will be out of our hands.

Public sector clients should be preparing themselves for the changes. They should consider the risks and opportunities that will be brought about by the introduction of autonomy and how they can realise the benefits for their service users.

The vehicle itself will be controlled by laser, radar and satellite navigation rather than a human. To support this, our existing city fabric will have to be transformed to accommodate these new machines. For years we have been building up our world with a completely different vehicle in mind. At this stage, there are probably more questions than answers, but that shouldn't prevent public sector leaders from preparing early for the change that's on its way.

March 2018 saw the first 'autonomous vehicle fatality' in Tempe, Arizona where Uber were trialling a Volvo which was in 'autonomous mode' with a human 'monitor'[10]. This is the term for autonomous driving but where the 'driver' remains responsible for emergency action to avoid incidents. The vehicle struck a pedestrian whilst she was crossing the road. Uber have since suspended road trials of such vehicles.

This does raise some unanswered questions such as liability. The 2018 Act places the costs burden to the insurer or owner. As aforesaid it is good that the government has at least tackled these issues, however the more sensitive for public consumption is blame. Criminal liability may be a

[8] https://www.insurancejournal.com/news/international/2021/04/21/610902.htm

[9] https://www.sae.org/blog/sae-j3016-update

[10] https://www.bbc.co.uk/news/technology-54175359

more difficult issue as can be seen from the Tempe collision. What liability does the 'human' monitor have? Is it right to hold that person to account for the collision? What if there is no 'monitor? Interesting times and still a lot to be settled yet we, even now, have several pilots in place across the country.

Oxford, in late 2020, began trials of autonomous vehicles between Oxford Parkway station and the city's main rail station, a distance of 9 miles. The trials are also forecast to be heading to London and additional unconfirmed cities. The vehicles will be Level 4 meaning the car can drive itself, without the need for a driver[11].

A further move, will see the government allowing ALKS – Automated Lane Keeping systems. When activated, the system keeps the vehicle within its lane, controlling its movements for extended periods of time without the driver needing to do anything. The driver must be ready and able to resume driving control when prompted by the vehicle however[12].

To achieve level 5 autonomy, the vehicle will need to have cognitive capability to sense the world around itself and take decisions on what to do. We raised some of these questions earlier and there is still a significant amount of work to be done before manufacturers can be confident that the autonomous vehicle will make the 'right' decision.

[11] https://www.bbc.co.uk/news/uk-england-oxfordshire-54744656#:~:text=Oxford%20is%20believed%20to%20be,driverless%20control%20a%20vehicle%20has

[12] https://www.gov.uk/government/news/uk-government-announces-automated-lane-keeping-system-call-for-evidence

Further information

For access to further RMP Resources you may find helpful in reducing your organisation's cost of risk, please access the RMP Resources or RMP Articles pages on our website. To join the debate follow us on our LinkedIn page.

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For more information, please contact your broker, RMP risk control consultant or account director.

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