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Automated and Electric Vehicles Briefing 2020



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Automated and Electric Vehicles Briefing 2020

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 1.35 million road traffic deaths per year; will the dawn of the driverless electric car improve road safety and transform lives¹?

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, ²designed, produced and used in the UK.

The Government expects automated cars to begin appearing on our roads by the 2020's. As well as car manufacturers and the UK Government investing in autonomous vehicle design - Google has itself been investing \$30m annually into the development of a driverless car².

Tesla CEO Elon Musk claimed³ “*We are just two years away from ‘sleeping in our cars’*”. Volkswagen launched a driverless car last year, with Audi following this year with Ford and BMW close behind in 2021.

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 “Our ambition is for Britain to lead the world in electric vehicle technology and use,” says the manifesto. “We want almost every car and van to be zero-emission by 2050 – and will invest £600 million by 2020 to help achieve it.” 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.

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. That is why a recent piece of research has been so eagerly awaited.

The American Automobile Association has recently published (Dec.2019) the

*‘Users’ Understanding of Automated Vehicles and Perception to Improve Traffic Safety — Results from a National Survey*⁴

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. 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

¹ <https://www.who.int/publications-detail/global-status-report-on-road-safety-2018>

² Horizon Programme – Dawn of the Driverless Car – July 17

³ <http://fortune.com/2017/09/13/gm-cruise-self-driving-driverless-autonomous-cars/>

⁴ AAA Research Paper ‘Users’ Understanding of Automated Vehicles and Perception to Improve Traffic Safety — Results from a National Survey’

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.

Toyota Epalette



To be trialled at the next Olympic Games

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 started 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. Respondents were also asked about two negative implications that were related only to Levels.

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 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.

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 Association of British Insurers has expressed concern that significant changes would have to be made to existing insurance practices to deal with routine road traffic accidents involving automated vehicles and these concerns have been included in the Governments impact assessment on the Act

It is currently estimated that 94% of all accidents are caused by human error⁵. Does this mean that in the future the computer (car) will always be right and the human (driver) will always be wrong? 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? How will we build conscious thinking into a car's computer, its DNA?

David Williams – Chief Commercial Underwriter at AXA said: *“As well as making our roads safer, insurance premiums are based on the cost of claims and therefore we expect substantially reduced premiums to follow.*

Automated vehicles, together with an effective framework, as the Government propose in the Bill, could deliver significant financial and safety benefits for road users”.

⁵ <https://blog.lawinfo.com/2017/09/.../human-error-causes-94-percent-of-car-accidents/>

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.

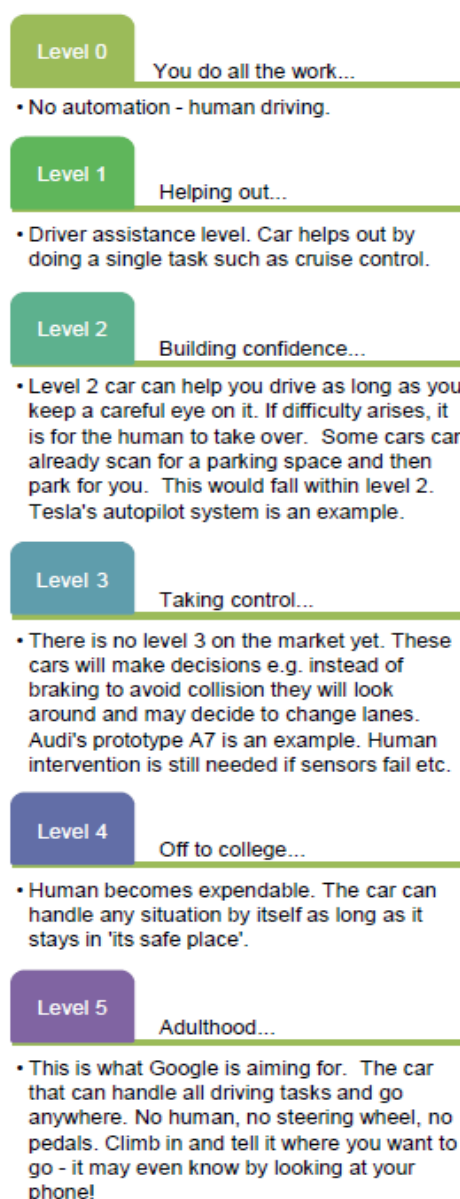
March 2018 saw the first 'autonomous vehicle fatality' in Tempe, Arizona where Uber were trialling a Volvo which was in 'autonomous mode' with a human 'monitor'. This is the term for autonomous driving but where the 'driver' remains responsible for emergency action to avoid incidents. The vehicle struck 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 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.

The Road Map to Automation⁶

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:



⁶ <https://www.techrepublic.com/article/autonomous-driving-levels-0-to-5-understanding-the-differences/>

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.

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.

References

- 1 <https://www.who.int/publications-detail/global-status-report-on-road-safety-2018>
- 2 Horizon Programme – Dawn of the Driverless Car – July 17
- 3 <http://fortune.com/2017/09/13/gm-cruise-self-driving-driverless-autonomous-cars/>
- 4 AAA Research Paper 'Users' Understanding of Automated Vehicles and Perception to Improve Traffic Safety — Results from a National Survey'
- 5 <https://blog.lawinfo.com/2017/09/.../human-error-causes-94-percent-of-car-accidents/>
- 6 <https://www.techrepublic.com/article/autonomous-driving-levels-0-to-5-understanding-the-differences/>

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