RESPONSE TO THE DEPARTMENT FOR TRANSPORT'S DISCUSSION PAPER AND CALL FOR EVIDENCE

"REVIEW OF THE LEGISLATIVE AND REGULATORY FRAMEWORK FOR TESTING DRIVERLESS CARS"

18 September 2014

Introduction

This is the response of the Royal Society for the Prevention of Accidents (RoSPA) to the Department for Transport's Discussion Paper and Call for Evidence, "Review of the Legislative and Regulatory Framework for Testing Driverless Cars".

RoSPA thanks the Department for the opportunity to comment on the proposals. Our response has been produced following consultation with RoSPA's National Road Safety Committee.

Vehicle technology has been advancing rapidly, with new technologies that automate some of the driving task and assist the drivers (such as Anti-lock Braking (ABS), cruise control, parking sensors, brake assist, lane keeping, SatNavs) becoming commonplace. Some of these technologies are reaching the point where a vehicle can be operated for periods of time with reduced, or in some instances without, driver input.

Autonomous vehicles could have significant safety benefits by reducing (or even eliminate) human error, which causes a significant proportion of accidents. It could also improve mobility for people unable or unwilling to drive, enhancing their quality of life. There is potential for better use of road space, reduced congestion and more consistent journey times, as well as reducing energy consumption and pollution. However, there are also risks, including road safety risks due to failures in the technology, road users not understanding how to cope with autonomous vehicles and a long transition period where normal vehicles are sharing road space with autonomous ones.

Manufacturers are carrying out extensive testing on private test tracks, and in several countries around the world, tests on public roads are underway with vehicles supervised, rather than driven, by a driver who has the normal set of controls at their disposal if they need to take control of the vehicle.

There is a comprehensive legislation regime governing vehicles and drivers, including International Conventions, EU Directives and Regulations, UK primary and secondary legislation, legislation that only extends to England and Wales, or to England and Northern Ireland, and legislation governed by the relevant Devolved Administrations. The Highway Code is also an important part of the legal regime.

The introduction of driverless cars will, in due course, require changes to these international, EU and UK laws, regulations and guidance. Co-ordination with the devolved administrations in Scotland, Wales and Northern Ireland will be crucial.

Therefore, the Department for Transport is conducting a review of the legislation and regulation to assess what changes would be needed to enable cars with advanced autonomous safety systems to be tested on British roads. As part of the review, the DfT is seeking comments and views on any regulatory or other issues that may need to be addressed in considering the testing of cars with advanced autonomous safety systems on public roads, and what new regulation may be necessary.

For the review, two types of cars are being considered:

High automation – a car which is capable of operating on the road network without human intervention, but is fitted with a full set of driving controls, and in which a driver must be able and ready to assume control.

Full automation – a car which is capable of operating on the road network without human intervention, and in which a driver need not be able and ready to assume control.

The review will mainly focus on high automation cars, but will note any additional issues relating to Full automation cars. The main areas of legislation on which the DfT is seeking views are below.

Driver Testing and Licensing
For testing cars with high automation, the driver would have to be the holder of a full licence. Some jurisdictions require a second person as an observer in the vehicle. For full automation, a thorough review would be needed and the law might need to define (and set standards for) the person who is responsible for the vehicle despite not being on board.

Question 1
Should any special training/testing or a minimum number of years of driving experience be specified for drivers involved in testing driverless cars with high automation?

RoSPA Response
RoSPA believes that some additional requirements should be set for drivers who are permitted to test autonomous cars on public roads. We recommend that the following are considered:

- Some form of post-test driver training; perhaps advanced driver training
- Specific test driving experience/qualification
- Experience of driving autonomous cars off –road

It would be useful to check what requirements other countries that are conducting on-road testing set.

Once autonomous vehicles available for the public to buy and use, it will be necessary to decide whether they can be driven on a normal car licence, or whether a new licence category for driving an autonomous vehicles (would be needed. If it becomes possible for people to take their driving test in an autonomous vehicle, it would seem sensible for their licence to be restricted to driving autonomous vehicles (just as someone who passes their test in an automatic car is only licensed to drive an automatic car).

Question 2
Should a second person be required to be present, as an observer?

RoSPA Response
It would be useful to understand the basis on which other countries have decided to require a second observer to be in the vehicle. It would seem a sensible precaution during the initial research and on-road testing period, but if the second person is not expected to be able to take control of the vehicle (if it became necessary) then s/he could observe remotely rather than be in the vehicle.

However, if the 'driver' is required to monitor additional displays or information and this reduces their ability to monitor what is happening on the road around them, a second person, who can take control of the vehicle, would be necessary.

The observer would need to have had the same training/testing as the driver of the autonomous vehicle, enabling them to take control of the vehicle if required.

Driver Behaviour

The laws around driver behaviour (e.g., careless driving, speeding, using a hand held mobile phone, not wearing a seatbelt, drink and drug driving) would apply to the person in the driving seat during testing of cars with high automation. So, if the car started speeding, for example, the driver would take the penalty points. Some exemptions may be needed. For example, the driver of a vehicle with high automation should have a defence against a careless driving charge for not holding the steering wheel, but if the vehicle wandered across the road and they did not take over control, they could be liable. Drivers would not be permitted use a hand-held mobile phone, or consume, because his prime role is monitoring the vehicle.

Question 3

Do you believe that the normal set of requirements for driver behaviour should still apply or are any exemptions from these required, if so please specify?

RoSPA Response

A thorough review of driving laws, offences and civil and criminal sanctions would be needed to assign responsibility for the behaviour of a driverless car with full automation. When testing high automation vehicles RoSPA recommend that the driver would still need to demonstrate that he/she is able and ready to assume control of the vehicle if necessary. If a crash were to occur for example and the driver was found to be asleep or incapable of driving due to impairment then they would still be covered under current legislation such as careless and dangerous driving.

In general, RoSPA agrees that the existing rules should apply, but that the provision of some type of statutory defence should be considered for situations where the automation malfunctions in a way that does not given the driver time or the ability to take control and correct it. Each case should be considered by a court taking into account the circumstances.

Drivers who were not alert and ready to take control of the vehicle should not be able to use this defence, and there may be a case for stricter penalties in such cases to emphasise the importance of the driver remaining alert.

Question 4

Are any new requirements or constraints necessary?

RoSPA Response

RoSPA believes that new requirements on, and liabilities for, the vehicle manufacturer may be needed, however, we cannot be specific at this stage. Our assumption would be that the regime of strict manufacturer liability would continue to apply.

Behaviour of Other Road Users

The introduction of highly autonomous cars is likely to affect the expectations and behaviour of other road users, who may be surprised to encounter a car where the driver is not obviously "driving" and so might not react to signals such as hand gestures. Eye contact is a vital part of interaction with other road users, particularly vulnerable road users.

Requirements and constraints will need to be considered and revised throughout the testing period as there is also likely to be unintended behaviour change on the road. This may be especially pertinent whilst there is a mix of automated and non-automated vehicles on the road.

Question 5
Do you have any suggestions for an indication to other road users that the vehicle is operating autonomously, or capable of autonomous operation? For example, a warning signal showing autonomous operation or a distinguishing sign (different number plate, sticker on windscreen, etc.) indicating the potential capability of autonomous operation?

RoSPA Response

For the testing period, the vehicles should carry some visual indication that they are, at least partly, autonomous. This should be more prominent at first (perhaps a light signal) but it may be possible to relax this requirement as autonomous vehicles become more commonplace.

We do not think a different number plate would be prominent enough.

Question 6
Should educational materials be developed to advise other road users about the testing of highly autonomous cars?

RoSPA Response
Yes, a major and ongoing education campaign will be needed to raise awareness of these vehicles, how they differ and how other road users should behave. This should involve central and local government, manufacturers, police, driver training bodies and road safety stakeholders.

Question 7
Do you have any observations on the possible reactions of other road users, or the risks of interaction with driverless cars, and possible mitigation measures?

RoSPA Response
It is possible that other road users may mis-judge how such vehicles will behave, or be distracted by them, especially during the period when they are an unusual sight, rather than a common sight.

It is possible that some people may deliberately mis-behave in order to see how the autonomous vehicle reacts.

Education and enforcement would be the main mitigation measures, along with ensuring that the technology for autonomous vehicles can reliably cope with the behaviour of other road users.

Product liability

For high automation cars, the situation would not be significantly different to the current situation with technologies such as ABS and ACC, where malfunctions can cause collisions and injuries. It is anticipated that the regime of strict manufacturer liability would continue to apply. A failure leading to a collision is very rare, and current regulations are intended to minimise this risk by requiring that in the case of a failure, the driver is warned and the system reverts to a fail-safe mode of operation. We would require cars with high automation to follow the same philosophy. Full automation would present further issues that are not in scope of this Review.

Question 8
Do you see any difficulties with the existing product liability regime, when operating driverless cars with high automation?

RoSPA Response
RoSPA agrees that the current situation should largely cover autonomous cars.

The manufacturer should be liable for product malfunctions, the driver should receive a warning by the system and the system should revert to a fail safe mode.

Vehicle standards
Vehicles are highly regulated as to the technical standards they must meet to ensure safety, both when new (type approval) and once in service (roadworthiness):

1) New vehicles – type approval
In the long term, EU or international standards would be developed to regulate various aspects of these vehicles as part of the vehicle type approval system, but the initial testing of high automation cars will necessarily take place before, and during, the development of such standards. Currently, there are domestic rules to enable the registration and testing of prototype vehicles.

Question 9
Do you have any suggestions for standards to regulate the testing of prototype cars with high automation?

RoSPA Response
RoSPA is not familiar enough with the details of the rules for prototype cars to make suggestions at this stage.

Question 10
Are there current type approval or construction rules that prototype cars with high automation might not comply with?

RoSPA Response
RoSPA is not familiar enough with the details of the rules for prototype cars to make suggestions at this stage.

Question 11
Are you able to suggest any specific areas (e.g. braking, steering) or any specific systems/technologies (e.g. ABS, ESC) where regulation needs to be amended or developed, as a priority?

RoSPA Response
At this stage, we are not able to suggest specific areas, other than to say that acceleration, braking and steering would seem to be the most crucial areas. This should be reviewed before testing on public roads starts.

2) Vehicles in service - roadworthiness
The cars used for testing will have to be roadworthy, and subject to maintenance to keep it in good working order, which might involve (for example) compulsory software updates. Special methods for regular roadworthiness testing and MOTs will have to be developed, once the type approval standards have been developed. A more thorough review will be needed to investigate the implications for vehicle longevity, and to avoid problems as the vehicles age and repair becomes uneconomic. For example, they might need to be designed

in a modular fashion, with components and modules that can be swapped out economically when they fail or an upgrade is desired. Alternatively they could be leased, and returned after several years for re-commissioning or recycling.

Question 12
Are any changes to the current roadworthiness regime required to permit the testing of driverless cars, or ensure their safety?

RoSPA Response
Some changes to the current roadworthiness regime will almost certainly be required, but we are not able to be specific at this stage.

Question 13
Have you any initial thoughts about any longer term risks and issues as driverless cars age, and possible requirements to address this?

RoSPA Response
The reliability of these vehicles and their technology will be crucial. If it is much more expensive to repair or replace components, this may result in some people skimping on maintenance. If so, the owners should not be able to use the statutory defence (discussed in our response to question 3) if poor maintenance resulted in a malfunction.

Vehicle tax, registering with DVLA
Cars with high automation would need to be registered. In due course, decisions would be required as to the level of taxation and whether the capability for autonomous operation would be recorded on the DVLA database, to provide data on uptake, but that seems to be outside the scope of this initial review.

Question 14
Do you have any comments on this approach?

RoSPA Response
RoSPA believes that autonomous vehicles should definitely be recorded as such on the DVLA database in order to monitor and analyse issues, such as malfunctions, accidents and offences.

If these vehicles do improve safety, fuel efficiency and road management, the Government may wish to provide tax incentives at some point to encourage their take up. Equally if common crash causation factors are identified which relate specifically to automated vehicles then these would need to be investigated to see whether the vehicle or highway requires modification or whether it is a training issue.

Road and infrastructure standards
Testing of driverless cars with high automation would take place largely on existing roads and the vehicle would have to be capable of interacting with the existing infrastructure. However, it would be possible for special test areas to be constructed, if necessary, for a more controlled environment. Additional benefits could be realised via active communication between car and roadside units. Any fundamental and widespread changes to road signs, and markings or other infrastructure to allow the roll-out of full automation driverless cars would need to be agreed and planned over the medium and longer term.

Question 15
Do you anticipate a need for special infrastructure to permit the testing of cars with high automation?

RoSPA Response
Some of this infrastructure may be built by the vehicle manufacturers as part of their research, development and testing. Government may be able to work with manufacturers and share these development costs.

However, ultimately these vehicles must be able to cope with existing infrastructure and normal roads, as this is where they will be used.

New infrastructure design and technologies may well develop as the testing and development of autonomous vehicles progresses.

There may be case for new infrastructure for specific types of autonomous vehicles and specific types of road – HGVs platooning on motorways, for example.

Insurance
These vehicles would have to be insured on the road. It is anticipated that insurers would offer suitable products, and even if they did not, that manufacturers would be able to 'self-insure' by placing a bond against their liability for third party injuries.

Question 16
What issues would need to be addressed, to enable insurers to offer suitable insurance products?

RoSPA Response
RoSPA is not familiar enough with this area to make suggestions at this stage.

Question 17
Are there other insurance-related issues which may affect the introduction and testing of driverless cars?

RoSPA Response
While insurers would almost certainly develop and offer insurance products for these vehicles, and their drivers, as they become mass-market, we are not clear whether it would make financial sense for them to do so during the testing period, when the number of vehicles will be much smaller. If not, then the manufacturers will need to self-insure.

Data and privacy concerns
Any data collection by an autonomous car would need to comply with existing privacy and data protection laws. This is not anticipated to be an issue during the early testing phase, but longer term implications are more complex. The use of vehicle telematics is likely to become more prevalent, and there may be a desire for these devices to become compulsory in autonomous cars. This would need a wide debate around the implications for privacy.

Question 18
Do you have any suggestions or concerns over data collection and privacy, when considering the testing of cars with high automation?

RoSPA Response
RoSPA supports the use of telematics, which we believe has great potential for educating and training drivers. For autonomous vehicles, the data should be treated in the same way as it is treated for current telematics.

Many forms of telematics are used in vehicles now. Event Data Recorders only record data if an 'event' (such as a crash or harsh acceleration, deceleration or cornering occurs) but other types of telematics record data for the whole drive.

RoSPA is not yet clear how relevant the data will be if the driver is not driving.

Overall regime

Another issue is whether to amend regulations piecemeal to cater for high automation cars or introduce a stand-alone regime. This is complex because different pieces of legislation extend to different parts of the UK, sometimes extending UK-wide, sometimes to England and Wales only, or to England and Northern Ireland only, whilst the relevant Devolved Administrations accordingly have their own legislation. In a sense, the Westminster Government can only guarantee to deliver a testing regime for England, although the strong intention and aspiration is to reach agreement UK-wide.

Question 19

Do you (a) support amending diverse current regulations to cater for driverless cars alongside conventional ones, or (b) support creating a special regime via specific regulations to permit the testing of driverless cars under certain circumstances or constraints? (Or does it not matter as long as the regulations are appropriate and clear?)

RoSPA Response

It is difficult to know which would be best at this stage; perhaps a combination of both.

Co-ordination with the devolved governments in the UK would certainly be crucial.

Question 20

Do you have any other comments on the need for a special regime to cover the testing of driverless cars with high automation? Do you consider any other regulations or aspects of driving practice would pose a barrier, or do you consider that extra conditions would need to be imposed? Please give full details.

RoSPA Response

The Department may wish to consider whether to stop using the term "driverless cars" as this may contribute to a mis-perception that the driver has no role in the operation of these vehicles. This is not the case, and certainly not with high automation cars.

The review should consider the different circumstances on different types of roads. Testing on motorways and dual carriageways will be different from testing in busy urban areas, and on minor country roads.

Given the nature of the technology involved, serious consideration will need to be given to the risk of the software controlling these vehicles being affected by a cyber attack, or by signals from other devices, such as a mobile phone jammer, for instance.

The discussion document does not mention the implications of autonomous technology for other types of vehicles, such as vans, HGVs, buses, coaches and motorcycles.

The issue of autonomous vehicles towing trailers will need to be considered at some point.

RoSPA thanks the Department for Transport for the opportunity to comment on the Discussion Paper. We have no objection to our response being reproduced or attributed.

Road Safety Department
RoSPA
28 Calthorpe Road
Birmingham B15 1RP
www.rospa.com