HOUSE OF LORDS

SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY

Autonomous Vehicles

Call for Evidence

The House of Lords Science and Technology Select Committee, under the Chairmanship of Lord Selborne, is conducting an inquiry into Autonomous Vehicles. The Committee invites interested individuals and organisations to submit evidence to this inquiry. The deadline for written evidence submissions is **Wednesday 26 October 2016**.

Background

"Autonomy" is defined as the ability to make decisions based on external events and internal goals that lead to different courses of action, even when faced with unexpected events and unknown environments.[1] The prospect of autonomous cars on the roads of the UK has captured the public imagination. But in addition to road transport there is a much wider array of possible applications for autonomous vehicles.

Cars present an obvious example of where autonomy could be useful, offering potential improvements in safety and freeing up the driver to perform other tasks. There are, however, also questions about how this will work in practice, how autonomous vehicles would interact with conventional road vehicles during a transition to a fully autonomous system and about consumer attitudes and behaviours. The arrival of autonomous cars and public transport will provide most people with their first experience of autonomous vehicles. Cars with some level of autonomy are already available and it is predicted that fully autonomous driving could be in widespread use as early as the 2020s.

Autonomous vehicles offer opportunities in a wide number of areas other than use on the road. There are potential advantages in removing the need for a driver in situations such as warehousing, deliveries or farming. Without the need for a driver, the use of new types of vehicle is possible - small aerial vehicles for deliveries or light weight farm vehicles. Autonomous vehicles can also be used to perform tasks in extreme environments, such as the deep sea, space or nuclear power stations.

The UK has the potential to become a world leader in developing, producing and deploying autonomous vehicles. The Government has identified robotics and autonomous systems as one of its eight great technologies.[2] Researchers and businesses working in this area have proactively engaged with Government. For example, in 2014 the Robotics and Autonomous Systems (RAS) special interest group of the Innovate UK network described a possible national strategy and associated recommendations.[3]

[1] https://connect.innovateuk.org/documents/2903012/16074728/RAS%20UK%20Strategy?version=1.0
[2] https://www.gov.uk/government/speeches/eight-great-technologies
[3] https://connect.innovateuk.org/documents/2903012/16074728/RAS%20UK%20Strategy?version=1.0

The Government has been active in responding to the potential for the UK offered by autonomous vehicles. In 2015 it established a new joint policy unit, the Centre for Connected and Autonomous Vehicles (CCAV).[4] In the 2015 Budget the Government announced a £100 million intelligent mobility research and development fund focusing on driverless car technology. It also published a review of existing legislation relating to road vehicles, which concluded that: "[the UK] legal and regulatory framework is not a barrier to the testing of automated vehicles on public roads".[5] In addition, it has published a code of practice for testing of driverless cars.[6] In the 2016 Queen's Speech, the Government announced that it would introduce a Modern Transport Bill to: "ensure the United Kingdom is at the forefront of technology for new forms of transport, including autonomous and electric vehicles".[7] CCAV held a call for evidence on the UK testing ecosystem for connected and autonomous vehicles, which closed in July 2016[8] and a call for evidence which sought views on proposals for people and businesses in the UK to use automated vehicle technologies and advanced driver assistance systems.[9] This closed on 9 September 2016.

Scope

The Government aims to ensure that the UK is a world leader in developing, testing and deploying connected and autonomous vehicles and, as set out above, has been proactive in its response. This inquiry will examine whether the actions taken by the Government are appropriate, considering both the scale of economic opportunity and the potential public good benefits. The inquiry will collect evidence on the potential uses and benefits of autonomous vehicles. It will look at the transition path and the co-existence of autonomous and conventional road vehicles. Finally, it will consider connectivity and interactions with physical and digital infrastructure.

As cars, and other forms of public transport, will be at the forefront of the public's experience of autonomous vehicles, many of the questions in this Call for Evidence refer to this type of vehicle. Evidence is, however, sought on autonomous vehicles across a whole range of possible applications.

Questions

The Committee invites submissions on the following points, with practical examples and other evidence where possible. You only need to answer questions of relevance to you. Please also do draw the Committee's attention to any relevant issues not captured in the specific questions below:

Impacts and benefits

1. What are the potential applications for autonomous vehicles?

[4] https://www.gov.uk/government/collections/driverless-vehicles-connected-and-autonomous-technologies
[5] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/446316/pathway-driverless-cars.pdf
[6] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/446316/pathway-driverless-cars.pdf
[7] https://www.gov.uk/government/speeches/queens-speech-2016
[8] https://www.gov.uk/government/consultations/driverless-vehicle-testing-facilities-call-for-evidence
[9] https://www.gov.uk/government/consultations/advanced-driver-assistance-systems-and-automated-vehicle-technologies-supporting-their-use-in-the-uk

2. What are the potential user benefits and disadvantages from the deployment of autonomous vehicles?

3. How much is known about the potential impact of deploying autonomous vehicles in different sectors?

4. How much is known about public attitudes to autonomous vehicles?

5. What is the scale of the market opportunity for autonomous vehicles?

Creating an enabling environment

Research and development

6. Is the scale of current and planned demonstration facilities for autonomous vehicles sufficiently broad and ambitious?

7. Is the Government doing enough to fund research and development on autonomous vehicles, and to stimulate others to do so? Should it be doing more to coordinate UK actions?

8. How effective are Innovate UK and the CCAV in this area?

9. Is the environment for small and medium-sized enterprises (SMEs) working in this sector sufficiently enabling?

Real world operation

10. Will successful deployment of autonomous vehicles require changes to digital or physical infrastructure?

11. How might a move from current levels of highly automated vehicles to their extensive deployment best be managed? What do you see as the key milestones?

12. Does the Government have an effective approach on data and cybersecurity in this sector?

13. Are further revisions needed to insurance, regulation and legislation in the UK to create an enabling environment for autonomous vehicles?

14. What, if any, ethical issues need to be addressed in the substitution of human judgement in the control of vehicles by algorithms and Artificial Intelligence?

Wider governance

15. What does the proposed Modern Transport Bill need to deliver?

16. How effective is the UK's education system in delivering people with the right skills to support the autonomous vehicles sector?

17. Is the Government's strategy and work in this area sufficiently wide-reaching? Does it take into account the opportunities that autonomous vehicles offer in a wide range of areas, not just on the road?

18. What are the implications of exit from the European Union for research and development and the autonomous vehicle industry in the UK? Are specific actions from the Government needed to support or protect the autonomous vehicles sector in the short term or after the terms of Brexit have been negotiated?

Respondents need not provide responses to all questions. **Equally, if there are any crucial issues not captured under the questions we pose, please highlight what they are and explain their salience.**

The deadline for receiving written submissions is Wednesday 26 October 2016. Public hearings will be held in November 2016. The Committee aims to report to the House, with recommendations at the beginning of 2017. The report will receive a response from the Government, and may be debated in the House. **Instructions as to how to respond to this Call for Evidence can be found in Annex I overleaf.**

15 September 2016

ANNEX 1: GUIDANCE FOR SUBMISSIONS

Written evidence should be submitted online using the written submission form available at www.parliament.uk/autonomous-vehicles-written-submission-form. This page also provides guidance on submitting evidence. The deadline for written evidence is **26 October 2015**.

If you have difficulty submitting evidence online, please contact the Committee staff by email hlscience@parliament.uk or by telephoning 020 7219 5750.

Shorter submissions are preferred. A submission longer than eight pages should include a one-page summary. Paragraphs should be numbered. All submissions made through the written submission form will be acknowledged automatically by email.

Evidence which is accepted by the Committee may be published online at any stage; when it is so published it becomes subject to parliamentary copyright and is protected by parliamentary privilege. Submissions which have been previously published will not be accepted as evidence.

Once you have received acknowledgement that the evidence has been accepted you will receive a further email, and at this point you may publicise or publish your evidence yourself. In doing so you must indicate that it was prepared for the Committee, and you should be aware that your publication or re-publication of your evidence may not be protected by parliamentary privilege.

Personal contact details will be removed from evidence before publication, but will be retained by the Committee Office and used for specific purposes relating to the Committee's work, for instance to seek additional information.

Persons who submit written evidence, and others, may be invited to give oral evidence. Oral evidence is usually given in public at Westminster and broadcast online; transcripts are also taken and published online. Persons invited to give oral evidence will be notified separately of the procedure to be followed and the topics likely to be discussed.

Substantive communications to the Committee about the inquiry should be addressed through the clerk of the Committee, whether or not they are intended to constitute formal evidence to the Committee.

This is a public call for evidence. Please bring it to the attention of other groups and individuals who may not have received a copy direct.

You may follow the progress of the inquiry at: www.parliament.uk/autonomous-vehicles.