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UK Competitiveness in Autonomous Vehicle Technology

techUK Position Paper

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Introduction

Autonomous vehicles (AVs) have the potential to deliver a multitude of societal and economic benefits, such as improved mobility, emissions reductions, new ways of facilitating goods transportation and as an avenue for further tech innovation.[1]

The most important benefit, however, is for driverless technology to improve road safety by removing human error from the equation. The Government estimates that 85% of collisions on UK roads are caused by human factors such as drowsiness, drunk driving, and distraction - research in other parts of the world put this number even higher.

The UK has a strong track record in AVs, thanks largely to an innovation-friendly testing framework and our place as a world-leader in research and innovation. Earlier this year, the Government announced upcoming steps towards permitting Automated Lane Keeping System (ALKS) technology on UK roads. However, a legal framework for Level 4[2] or "highly automated" AVs - that is, those that do not require the presence of a human driver at any time - remains a work in progress in the UK, with limited detail on direction available and no timeframe for implementation set out.

The UK thus faces a risk of falling behind in the regulatory space, potentially allowing peer nations to steal a march in terms of technology development and application. EU Member States meanwhile are moving forward with legislation for actual commercial deployment of AV technology on public roads. Germany and France have introduced national rules, with the EU slated to implement its framework for type-approval of AVs in July 2022.

With the deployment of Level 4 AV tech still waiting for the green light here in the UK, this paper makes recommendations to speed up adoption and unlock the potential of Level 4 AVs for UK society and industry.

1. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/929352/innovation-is-great-connected-and-automated-vehicles-booklet.pdf
2. https://www.sae.org/standards/content/j3016_202104/

Key considerations

Pace of UK Progress in International Context

Though encouraging, the steps the UK Government has taken so far towards permitting AV testing on UK roads fall somewhat short of creating a framework for commercial operation for higher levels of automation. Automated Lane Keeping Systems (ALKS), which will be permitted on UK roads imminently, will automate a portion of the driving task - they will require a human driver to be always at the wheel and only operate under limited speeds and limited lanes of travel. By contrast, a Level 4 automation system performs the entire driving task under the conditions for which it is designed without the need for human intervention. This still leaves the UK trailing in terms of the frameworks being introduced in other countries.

There are moves afoot, however, to create a policy framework for higher levels of vehicle automation. Since 2018, the Law Commission of England and Wales and the Scottish Law Commissions have been conducting a review[3] into a future legal framework for AVs. Their conclusions are due to be published by the end of this year and it is intended that their recommendations provide the foundations for the primary legislation needed to lay the groundwork for commercial deployment of Level 4 AVs on public roads in the UK.

It is worth noting, however, that legislation will not by itself create overnight change once enacted. The Government's Centre for Connected and Autonomous Vehicles (CCAV), in consultation with regulators and industry, will need to continue building out the framework for how vehicles equipped with an automated driving system (ADS) will be approved for use on public roads. This is a complex process and will take several more years to design. We may therefore be looking at an extended lead time before AVs are deployed across the UK.

All told, the UK has opted for a slower and more cautious policy development process when compared with some EU member states. For example, Germany passed its Autonomous Driving Law earlier this year and an Implementing Ordinance will be passed shortly, putting the law into effect.[4]

3. https://www.lawcom.gov.uk/project/automated-vehicles/
4. https://ec.europa.eu/growth/tools-databases/tris/en/search/?trisaction=search.detail&year=2021&num=344

France has published its National Degree on autonomous vehicles this year which will come into effect September 2022.[5] Development of EU-wide autonomous vehicle regulation is under way, which will lay the foundations for widespread deployment of AVs from July 2022.[6]

The United Nations Economic Commission for Europe has adopted an Amendment to Article 34 of the 1968 Vienna Convention on Road Traffic to revise key portions of the Convention that were previously viewed as barriers to AV operation without a driver. The US is already ahead of the European markets. While work on future federal regulations for AVs continues, national legislation does not restrict testing and deployment of highly automated vehicles and most states already allow the deployment of Level 4 AVs under their own legislation, regulations, and ordinance. Multiple companies operate highly automated vehicles in the U.S. and one company operates a passenger service using Level 4 vehicles without human drivers. Many of the international developments are also already allowing for the testing of autonomous vehicles in not just highway, but also dense urban environments, including in the US, Germany, and Israel. There is still hesitancy in the UK market to explore and test autonomous vehicles due to a variety of reasons, including a lack of fully autonomous operation.

The path the UK has set out will provide an opportunity for the Government to learn lessons from other regulators as it seeks to determine and implement its own legislative and regulatory framework. However, if the UK wishes to keep pace with the EU and US, an urgency is nonetheless required to remain at the technical vanguard. This should involve setting a timeline for implementation, as has been done in other countries, with early engagement of stakeholders as to direction and intent.

5. https://ec.europa.eu/growth/tools-databases/tris/index.cfm/en/search/?trisaction=search.detail&year=2020&num=852&mLang=EN
6. https://circabc.europa.eu/ui/group/4273d650-b8a9-4093-ac03-18854fbba4b5/library/8867d2ba-3584-4994-bd4f-d21d96ee17b2/details

An Open, Competitive, Safe and Innovative Market for AVs

AV technology is nascent and changing the makeup of the traditional automotive sector. New business models are emerging, value chains are evolving, and partnerships are being forged between automotive manufacturers, tech companies and other entities developing vehicle components. The UK can take steps to prepare for this developing market by creating a flexible policy framework that encourages participation in the regulatory process from knowledgeable and experienced AV organisations in addition to traditional carmakers - as the current AV testing regime in the UK has already done.

In their final consultation paper, the Law Commissions proposed that any entity that can meet all the necessary safety and performance requirements in the approvals process should be able to seek type approval of the AV (that is, the base vehicle and the ADS together) from the regulator.[7] This is a critical proposal that must be implemented. In practice, it means that innovative companies who build the ADS will be able to play a formal role in demonstrating its safety to a regulator rather than relying on the entity that built the base vehicle - and may have limited knowledge of the technical details of the technology - to do so and, in turn, assume all legal responsibility.

Developing an ADS, the brain of an autonomous vehicle is a highly labour-intensive process, requiring specialised expertise and time. If the Government is to build public confidence in the safety and performance of AV technology, the experts who have designed the ADS must be involved. Given the emergence of new business models being created to bring AVs to market, an inclusive and flexible regulatory regime that invites this participation is key.

Adopting the Law Commissions' proposal would also give UK industry a competitive advantage over neighbouring countries like Germany, whose own framework restricts AV type-approval eligibility to traditional car companies only, even in cases where the carmaker has played no part in developing the ADS. It is worth noting that **Bitkom**, Germany's leading digital trade association, has also called for this approach to be reversed.

7. https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2021/01/AV-CP3.pdf

In a globally competitive environment in which national governments across the world are competing to attract high-value investment into their countries, adopting more inclusionary rules would be likely to incentivise AV investment in Britain. It means offering better conditions for companies that are developing the advanced vehicle technology to retain their intellectual property, and thus their competitive advantage, than in countries where regulation demands this intellectual property be handed over to automotive manufacturers to secure approval.

A lack of clear government guidelines and a confusing regulatory landscape will result in market hesitancy. By taking a more progressive stance, the UK will also have an opportunity to take a leading position when it comes to developing consumer acceptance for these advanced technologies. Therefore, the Government must also take a leading position when it comes to assuring the safety of these products and their advanced safety component systems. Public acceptance and use of AV technology can only be created through trust in their safe operation.

Creating a Pathway for Mobility Solutions

With commercial deployment of AVs in the UK several years away, it is imperative that regulation does not seek to delay this further by restricting deployment in its early stages.

Though often well intended, certain policy ideas are already under discussion that could bring about unintended consequences that inhibit deployment and disincentivise industry investment in the UK. For instance, the Law Commissions have proposed capping absolute automated vehicle numbers; while EU regulators appear fixed on only allowing low-speed shuttles and robo-taxis to be deployed and limiting their application to non-motorways, potentially creating a disadvantageous legislative model for the UK to follow. This would mean limiting maximum speeds for AVs on UK roads, creating a potential inability for a driverless taxi service to access areas beyond city centres. This is an outcome that would not only disincentivise providers from rolling out services in the UK, but also run contrary to the Government's 'Levelling Up' agenda if investment can only reach major cities.

These limitations could jeopardise, or at the very least, delay, the UK's capacity to realise the societal benefits outlined in the introduction to this paper as well as stifling progress towards building public confidence in AV technology. To create and sustain a UK AV sector that is genuinely world-leading, the UK Government must allow the full potential of Level 4 autonomous vehicles to be realised to attract the investment that is waiting to be unlocked.

In a similar vein, the regulatory approvals process should be rigorous but efficient. Duplication of requirements can occur when multiple authorities are given overlapping responsibilities in assessing AV safety and performance. This must be avoided to ease implementation. Once legislation is in place, it is our recommendation that one national regulator should be granted the authority and resources to make these determinations.

Conclusions

The UK sits in a prime position to capitalise on the revolution in AV technology, post-Brexit, by designing and implementing an independent legislative framework that is the most conducive to investment in research and development in the world. Consistent with the Government's vision for Global Britain, the opportunity to seize an initiative in this area is now.

To do this, the UK Government should set out a clear timeline for deployment and work towards the completion of a legal and regulatory framework to meet it in consultation with the AV community. This should be built on flexibility, safety, and encouraging innovation if it is to support the ambition of the sector and build public confidence.

The Government must ensure that the CCAV is well-resourced so that it can comprehensively examine the topics covered in this whitepaper and create a world-leading environment for AV investment and deployment.

About the Intelligent Mobility and Transport Group

The Transport Work Stream exists to encourage innovation in transport and highlight the crucial role of the UK tech sector in the delivery of a *"digitally-enabled, interoperable, integrated and inclusive transport network that connects our citizens with multiple modes of transport services."* The group focuses on rail, road, air, logistics and freight.

Our members are developing technological solutions that are transforming the mobility services sector, such as software and hardware development, AI and machine learning, and automation.

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About techUK

techUK is a membership organisation that brings together people, companies and organisations to realise the positive outcomes of what digital technology can achieve. We collaborate across business, Government and stakeholders to fulfil the potential of technology to deliver a stronger society and more sustainable future. By providing expertise and insight, we support our members, partners and stakeholders as they prepare the UK for what comes next in a constantly changing world.

linkedin.com/company/techuk

@techUK

youtube.com/user/techUKViews

info@techuk.org