The UK strategy for Connected & Autonomous Vehicles

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The UK is hugely ambitious to play a leading role in the coming automotive CAV revolution

The UK has unique CAV strengths and capabilities that are being reinforced

The Government is working collaboratively with industry to ensure the UK is a leading location for CAV technology development and deployment

The UK is a GREAT place to develop and deploy CAVs
The UK has deep technical capabilities relevant to CAVs and is an “Innovation Nation” that embraces emerging technologies

An advanced Mobile Network
- Europe’s most dynamic mobile phone market with mobile voice coverage to more than 99% of UK premises and 94% of UK’s landmass.
- One of the fastest rollouts of 4G in Europe as well as some of the lowest priced mobile connectivity.
- Mobile 4G coverage is at more than 90% of UK premises with up to 90 million mobile subscriptions.

A world leader in computer science
- 40% of all large software companies in Europe are based in the UK.
- London 2nd city in the world for production of lines of code, and has 71,000 full stack software developers.

A global centre of excellence for automotive
- 11 major vehicle manufacturers and 18 of the world’s top 20 automotive suppliers have operations in the UK.
- 7 of the world’s 11 F1 teams are based in the UK.
- Manufacturers of luxury and niche vehicles, from Aston Martin to Zenos Cars.

A history of early adoption
- From online to mobile, the UK has often been first to adopt new technologies and services.
- The internet economy contributed more to GDP in the UK in 2015 than in any other G20 country.

Europe’s only megacity
- London is a global hub for digital technology, finance, insurance and legal services.
- London has transport challenges and the solutions being developed here will be relevant globally.

“An innovation nation!”
- The UK is #2 in the Global Innovation Index.
- Highest research productivity of the top research nations.
- Most effective university-business collaboration of Europe’s major economies.
The UK is one of the world’s go-to locations for the development of connected and autonomous vehicle technologies

A welcoming regulatory framework
- The UK’s Code of Practice for automated vehicle technology allows testing anywhere with no need for permits or surety bonds.
- Testers must have appropriate insurance, a road worthy vehicle, and that a driver or operator (i.e. a driver not in the vehicle) must be present, ready, able, and willing, to take control of the vehicle.

The UK government is determined to keep the UK at the forefront of this technology by:
- Creating an open regulatory environment for innovation, testing, and use.
- Collaborating with industry, and academia on research, development, and demonstration.
- Coordinating activity through CCAV.

A global test bed
- World class test sites such as HORIBA MIRA and Millbrook, and real world labs such as Greenwich, Milton Keynes and Bristol.

A supportive tax environment
- Lowest corporation tax in the G7 and joint lowest in the G20.
- Most business-friendly tax system of Europe’s 10 largest economies.

World class universities
- The only European country to have a university ranked in the global top 8 – the UK has 4.

Government support for R&D
- £100 million Intelligent Mobility Fund for collaborative R&D
- £100 million for CAV Testing Ecosystem
- 4 Cities Driverless Car trials in Bristol, Greenwich, Milton Keynes and Coventry.
- Funding via Highways England.
The 2015 Traveller Needs and Capability Study overseen by the Transport Systems Catapult was a £1.2m project jointly funded by BIS/DfT (£600K), and match funded by Industry/Auto Council.

Capabilities in Intelligent Mobility

- The study identified 6 core capabilities that will act as fundamental enablers to establishing the UK as a world leader in CAV technology.
- Key conclusions for the value chain include that the UK is world class in human-machine interaction design and real-time control, and is ahead in a number of areas that are core to CAV development including data privacy and security.
The UK has strength in depth in the core underpinning technologies for the development of connected and autonomous vehicles.

HMI Interaction Design
Technology, techniques and design, passenger experience, enables better driver/passenger information and can help to influence traveller behaviour.

Connectivity and Networks
Ability to connect different systems, travellers, goods, infrastructure with the goal of ubiquitous connectivity.

Real-Time Control
Technologies and processes that enable real-time intelligent control of vehicles or systems:
• Complex event processing.
• Decision-making algorithms.
• Motion stabilisation.
The UK has strength in depth in the core underpinning technologies for the development of connected and autonomous vehicles.

**Localisation and Mapping**
Technologies enabling an understanding of the local environment.

**Analytics and simulation**
Ability to connect different systems, travellers, goods, infrastructure with the goal of establishing 'ubiquitous connectivity. London’s SCOOT system is globally recognised as a leader.

**Data Privacy and Security**
Cyber security technologies, cryptography, privacy and information assurance, validation and verification.
The UK already has an extensive eco-system of expertise and capabilities including over £200m of R&D Government funding.
The Vision for the UK CAV eco-system

- Accelerated development of the Connected and Autonomous systems capability in the UK that will attract investment, build international reputation and develop UK intellectual capital.

- The rapid establishment of a globally recognised and unique large scale and multi-faceted ecosystem for the development, deployment and validation of Connected & Autonomous Vehicles (CAVs) through smart leveraging of existing UK assets and capabilities.

- Building on and augmenting existing public and private capital investments and addressing capability gaps through focused investment in existing or new assets.

- The ecosystem will include commercially focused, co-operative, optimised environments and capabilities to deliver a truly seamless enabled environment for CAV development.

- Creating a Connected & Autonomous Vehicle Nation, analogous with the existing Propulsion Nation addressing the Low Carbon Vehicle focus and recognising the ultimate merging of Low Carbon and CAV technologies in next generation mobility.
Developing and delivering the strategy

- Identify what enabled environments and capabilities are required to attract and retain the leading global CAV development and deployment activities
- Map the existing UK capabilities, projects and investments
- Create a UK brand for the ecosystem
- Establish a “thin” coordinating and promoting Hub organisation
- Continuously update this strategy with a multi phased approach over 5+ years
Validation of complex CAVs will require full simulation capability of the vehicles and the road environments.
GRAVITAS - A multi organisational response led by the Automotive Council to the Centre of Connected and Autonomous Vehicles Call for Evidence on the “UK Testing and Ecosystem for Connected and Autonomous Vehicles”.

- Objective: To accelerate the development of Connected and Autonomous Vehicles (CAV) systems capability in the UK, attract investment, build an international reputation and develop UK intellectual capital.

- Solution: Hub & Spoke network to coordinate industry with a focus on creation of the complete physical & virtual environments required to develop and validate CAVs.

- Autumn Statement - £100m investment over 4 years coupled with 50% match funding from industry will provide £200m for investment into “new connected and autonomous vehicle (CAV) testing infrastructure”.

- Next Steps: establish the Hub organisation, develop the overall strategy and prepare the funding calls for 2017/18
Opening September 2018
HORIBA MIRA will be expanding the existing MIRA Academy prospectus of focused training courses at MSc level performed by our technical specialists as well as offering a comprehensive range of bespoke courses to meet the immediate needs of businesses.

- Certification & Homologation
- Cyber Security
- E-Powertrain
- Connected and Autonomous Vehicle
- High voltage safe working
- Vehicle Dynamics
- NVH
- Braking
- Powertrain – Emissions
- Functional Safety
- Driver Training and Subjective Evaluation
- Programme Management
- Leadership & Business Soft Skills
- Health & Safety, Quality & Environmental
- Deference Security
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Thank you