

Researchers study human reaction to sharing control with driverless car

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The first trials of the [Venturer](#) autonomous vehicle project, a Government backed research project, have focussed on a critical aspect in the field of autonomous vehicle (AV) technology.

The 'handover', when the control of the car switches from human driver to autonomous mode, is one of the least studied aspects of this developing technology. However, the interaction between the human driver and the car is a vital component in taking the [new technology](#) forward to a stage where it can be safely and successfully deployed on public roads.

The first trials tested drivers in a static simulator and in the Venturer driverless car, on private roads at the University of the West of England (UWE Bristol). Under controlled conditions at speeds up to 20mph, participating drivers were first instructed in the use of the vehicle and their reactions measured in response to instruction to switch to driverless mode and take back control of the car. The data collected from these [initial trials](#) will be used to provide the groundwork for the next stage of testing and trials in the project.

Tony Meehan (Consultancy Director, Atkins) says that in the long term AVs can bring great benefits, but getting the user-interface right is key. He said, "Autonomous vehicles are going to be a global phenomenon and it's absolutely critical that the UK and the West of England economy are able to benefit from this new global industry."

"Developing the technology and the skills needed to introduce something as radical as autonomous vehicles is crucial, but being at the forefront of this huge challenge is also about regulation, insurance, safety and maximising the benefits of autonomous vehicles. This project is trying to plug the gap between technology, the road network and the user.

"The research is looking at how users interact with an as yet unknown piece of kit - how they react when confronted with different situations and when confronted with a piece of kit that looks and feels very familiar but is really radically different."

Professor Graham Parkhurst (UWE Bristol) says the social and behavioural aspects of how AV technology is introduced are crucial to making a success of the technology's potential.

He said, "Reaping the benefits from this new technology depends on how we introduce it and how we decide to use it. We need to understand the human and social interface in order to fully benefit from this as a society.

"For example, a scenario in which all vehicles were replaced with AVs wouldn't help traffic reduction and emissions reductions might be very small. An AV might drive more smoothly than a human driver but major benefits in terms of sustainable mobility will only be possible if we use these vehicles in a different way.

"So the research needs to help us understand if this technology could encourage people to travel in a different way. Is an AV more likely to be acceptable as a shared vehicle if none of the users is responsible for driving it? The promised benefits from AVs cannot be realised without understanding the social and human behaviours involved.

"Completely [autonomous vehicles](#) may be coming, but we are currently

at the stage of 'driver-assisted systems' which are in use by some vehicles on our roads. In the short term drivers might benefit from better driver assistance technologies, but currently all vehicles on the UK network must have a driver attending to the situation and able to take control immediately.

"The really interesting questions around AV relate to transition. Many people might eventually like us all to end up with fully autonomous cars, but as the [technology](#) emerges politicians, transport planners and road engineers will need to deal with a future of mixed conditions where the road network will have to cater for AVs as well as other road users."

Tests next year will look at different road conditions, the AV emerging from junctions, manoeuvring around roundabouts, and choosing appropriate gaps in traffic that make the occupants feel safe without unnecessarily slowing down traffic or adding to emissions.

More information: For a full list of consortium members and further details, visit the Venturer website: www.venturer-cars.com/

Provided by University of the West of England

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