

Endeavour – Safety assurance and AV trialling

The trialling and testing of automated vehicle (AV) technology is a fast-changing and rapidly evolving domain. Its impact is not limited to the product and the end-user, but all members involved in the trails - OEMs, trialling organisations, suppliers, testbeds, insurers, landowners, road and local authorities, and the public. One key requirement for any AV trial is to provide robust safety assurance.

From a trialling perspective, there are some basic questions to answer. What safety evidence is required? Who will use it? How to structure it? The list goes on. These inquiries are fundamental but answering them can be a daunting task.

TRL experience in CAV trialling and safety assurance

At TRL, we've been accumulating extensive experience in safety assurance due to our involvement in a wide range of CAV trials in the UK including [GATEWAY](#), [Streetwise](#), DRIVEN and the [HelmUK HGV platooning trials](#). TRL also led the build of the Smart Mobility Living Lab in London - the UK's most advanced real-world connected environment for testing future mobility technologies. For SMLL we have put all the necessary processes in place to ensure that any trials at the London testbed are conducted safely and in line with current best practice, guidance and standards.

Exposure to diverse projects of different scales and nature has allowed us at TRL to develop deep technical understanding of a range of elements related to safety assurance including: creating and reviewing safety cases, undertaking risk assessment, developing risk mitigation strategies, supporting trials, conducting emergency response tests, and establishing testbed procedures.

The team at TRL has also played a key role in developing the current guidance and standards for CAV trials. We co-authored [BS PAS 1881 – Assuring safety for automated vehicle trials and testing and played](#) a key role in the development of [the Zenic Safety Case Framework for CAV testing and trialling across all the UK testbeds](#).

Project Endeavour

TRL is a key participant in [Project Endeavour](#), which we see as an important project to fast-track the introduction of automated vehicle (AV) services across the UK, increase consumer confidence in the technologies, and maximise the potential of this new technology to meet the needs of a changing urban population.

Endeavour is the next step on a very complex journey towards allowing automated vehicles on UK roads. We've gone from a single tethered pod on a private track in Greenwich to five years later running trials involving a fleet of vehicles in three cities. That's a huge leap of technical capability and with it comes a huge leap in our understanding of what is required to make the trials safe to conduct on public roads in normal traffic conditions. Every AV trial is a chance to refine and develop our understanding of the safety case. Endeavour is the first research project starting to consider the implications of removing the safety driver from the vehicle as part of the trial. These are all small but essential steps which cannot – and should not - be rushed.

The output from Project Endeavour will be improved processes for everyone involved in trials to make the safety assurance process a swift activity, enabling more of these technically challenging trials in real world environments. The updated guidance and processes resulting from our work will encourage more cities to explore the benefits of automated transport systems on their local roads and how they might benefit their local communities.

TRL's Role on the Project

Our primary focus is on improving the understanding amongst stakeholder groups of what is required to demonstrate/assess safety assurance. This educational activity will support a growing call for “pop up autonomy” (i.e. the ability to move from one trial location to another in a short timescale), through driving a consistency of approach to safety assurance amongst stakeholders. It will be really helpful for trialling organisations to go from one local authority to another and be met with the same questions and requirements in order to gain approval for a trial. As a specific project task, TRL will also support BSI in the design of a streamlined and repeatable process for assessing safety best practice through a compliance assessment scheme for testing and trialling environments. With all stakeholders adopting a common process, the ability to organise trials will be much improved, and all parties will benefit from the efficiencies. Local authorities in particular will be more confident in promoting the trial in their community engagement activities.

Understanding CAV stakeholder perspectives and requirements

It’s not a one-way process. By engaging with relevant industry stakeholders, we expect to gain a better appreciation of their perspectives and requirements with regard to safety assurance.

We are speaking to a range of stakeholders including: trialling organisations, road and local authorities, testbeds and landowners, insurers and insurance bodies. For each stakeholder group we are exploring the level of experience in CAV trials, their understanding of the existing CAV standards within the UK, their current practices and capabilities in terms of safety assurances and key areas where they would like assistance to improve.

TRL will use this information to help shape our work activities and direction on the Endeavour project so that our outputs can deliver maximum benefit to the industry and help improve the safety of future CAV trials.

If you are interested in hearing more about our work on this project then please sign up for updates on our [project page](#) or send any queries to pendeavour@trl.co.uk.
