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Study concludes in favour of harmonised testing for intelligent transport systems

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An EU study on the feasibility of establishing performance testing for intelligent vehicle safety systems has concluded in favour of a harmonised testing programme.

The Active Safety Test Europe (ASTE) study, funded under the European Commission's SMART programme, recommends that performance testing should be developed to verify the performance of a safety function in a traffic scenario, but not to confirm fixed requirements in individual technical systems.

Intelligent transport systems are just one way of making roads safer. Using information and communication technologies (ICT), a plethora of technologies have already been developed. These include: systems to keep vehicles in lane; night vision; anti-lock braking systems; road friction detection; collision warning systems; and collision avoidance systems.

Generally, the systems work by collecting information from the vehicle and its environment, and then modifying vehicle functions based on this information. Either the vehicle avoids an accident, or the driver is warned and can take action to avoid an accident. The functionality of an active safety system can be categorised as one of the following: preventive; dynamic or collision-avoidance.

Testing of passive safety systems is now well established, but there are no such uniform tests for ICT-based safety systems.

While the ASTE final report recommends a testing programme, it recognises that this will be a complex matter: 'There are technical issues, organisational issues and marketing issues. It will be important to find a performance testing programme with benefits for both traffic safety and industrial development. Some conclusions may be regarded as sensitive by some stakeholders. Further discussion will be needed to strengthen the acceptance by stakeholders,' it states.

ASTE says that performance testing could be based on documentation, systems or traffic scenarios. For a document-based test, an evaluation would be performed by reviewing the design, system and functional specifications supplied by the manufacturer. The advantage to this method is the low cost involved, but the disadvantage is that it is difficult to assess a system through only a theoretical review.

A system-based test would use a combination of practical physical tests to verify a safety system. 'The potential drawback is that it may limit the technical development of new safety systems since minimum requirements and definitions will depend on today's technology,' the report warns.

Scenario-based performance testing puts a vehicle in a real life accident scenario and is the favoured testing method for the ASTE partners. According to the team, the advantages to this set-up are that the test methods can be harmonised, and that the process will be suited to technical system variations and new systems. The challenge will be to define an appropriate number of normative traffic scenarios.

The costs of carrying out such tests are estimated to be in the same order as tests on the passive safety of a vehicle. The testing facilities can also be used during the development of a new system.

Once tests have been performed, the results must be communicated to consumers in a way that ensures their different requirements are met. Results should be communicated on several levels, ranging from a very detailed to a simplified level. Consumers must be able to compare results from different vehicles with ease.

The next step is for suppliers to agree on standardised test methods. More research must also be done on driver behaviour and driver modelling. Other requirements include the development of performance testing methods, and consensus on how performance testing should be encouraged, managed and controlled.

To access the ASTE report in full, please click here

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