

Proposed draft building blocks for cross border requirements regarding testing of CAV on public roads

Based on the international inquiry that was made during GEAR2030, the following building blocks for cross border CAV testing are suggested.

Applicant

All countries require contact details from the applicant. Because a third party liability insurance is not sufficient to cover potential damage, additional insurance for testing is required.

Driver/monitor

To reduce the impact of system failure, drivers of CAV vehicles are required to be trained to use the system if the vehicle has a test driver. This next to the regular driving license requirement. To verify this information, the name of the driver must be known. With the advancing of technology, the requirements for the driver can be loosened. In case of an operator outside the vehicle, this person should meet basic driver requirements on national legislation basis.

Vehicle

In most cases the CAV are built on (European) type approved vehicles. A proposed building block is the CAV should comply with the type approval requirements before modifications. The modification on top of the type approved vehicles, must be described. If applicable, electro magnetic compatibility standards must be proven. The CAV must be known with the authorities by its vehicle identification number VIN and licence plate.

Infrastructure / route

To be able to make a risk analysis, a description of route and infra needs is required. Together with the road authorities local traffic situations with regard to for instance truck platoons or connectivity needs must be assessed.

Driving behaviour

CAV will lead to interaction with other traffic. This can lead to higher risks like traffic jams, merging traffic with platoons. Therefore experts in this field should be consulted to assess in-vehicle behavior and safety and external (e.g. mixed traffic) conditions.

Documentation

The applicant should provide a testing plan and carry out a risk analysis where the present situation and the desired situation with the CAV are described. Safe operation (acceptable means of compliance for safe operation) can be demonstrated with tools like FMEA, HARA SIL, ISO 26262 and/or safety management systems in applicant organisation. If cybersecurity risks are identified, they should be part of the safe operation assessment.

The assessment should include the complete environment like the vehicle, infrastructure and the driver as mentioned in the previous topics. If other member states use the same building blocks, the exchange and/or recognition of each other assessments can be considered - for example in case of cross border testing.

Decision making unit

Road worthiness assessment of CAV are the competence of the member states, based on UN-ECE, EU and national legislation. The member states can delegated powers to local authorities. The assessment of CAV by an independent testing organization in state of the applicant is seen as an asset. Recent publications from the US (NHSTA) confirm this position.

Exemption

All member states provide some form of written exemption for the approval of CAV. This in order to provide transparency and a legal base. The range of the exemption differs from one vehicle one driver of one part of the infrastructure to an exemption for nationwide testing for a longer period of time. An exemption can be withdrawn unilaterally. The exemptions can be accompanied by a **Code of practice** were for instance local traffic behavior is elaborated.

Evaluation

Evaluation of lessons learnt is seen as an asset. Governmental/societal use cases and evaluation questions can be brought in before testing. The evaluation afterwards can provide requested answers to those questions including agreement on the level of data and information provided by the applicant to answer those questions.