

Use case overview

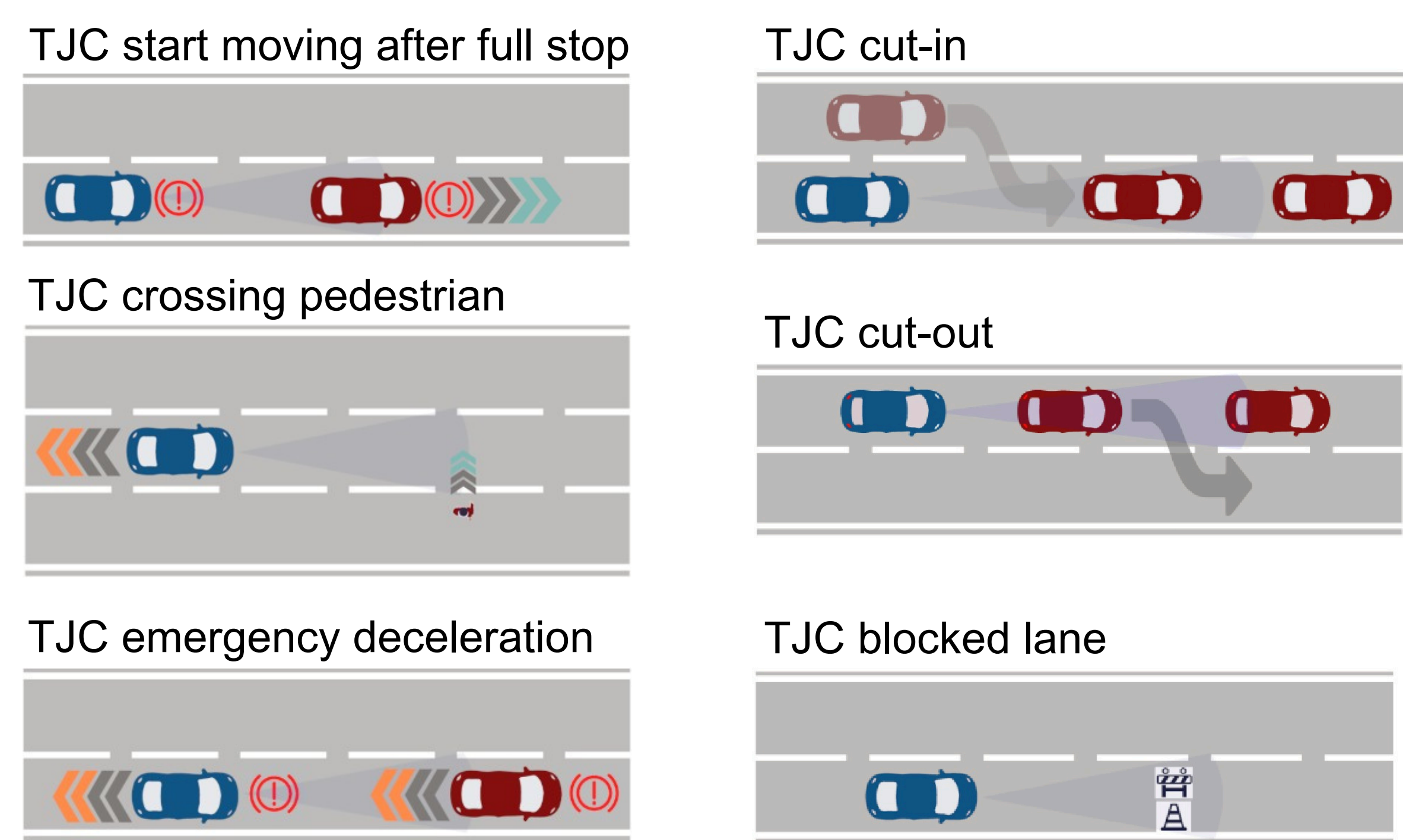


Figure 1. Overview of Use Case 2.1

UC2.1 tests a Traffic Jam Chauffeur (TJC). This system manages both longitudinal and lateral motion via braking and steering, ensuring expected behavior under constraints like maximum speed and front vehicle distance.

Objectives

UC2.1 focuses on validating AD behavior by optimizing the workflow from scenario creation (Query & Concretise), execution (Execute), evaluation (Test Evaluation), to ensure robust collision avoidance against challenges like cut-ins and VRUs.

SAF blocks demonstrated

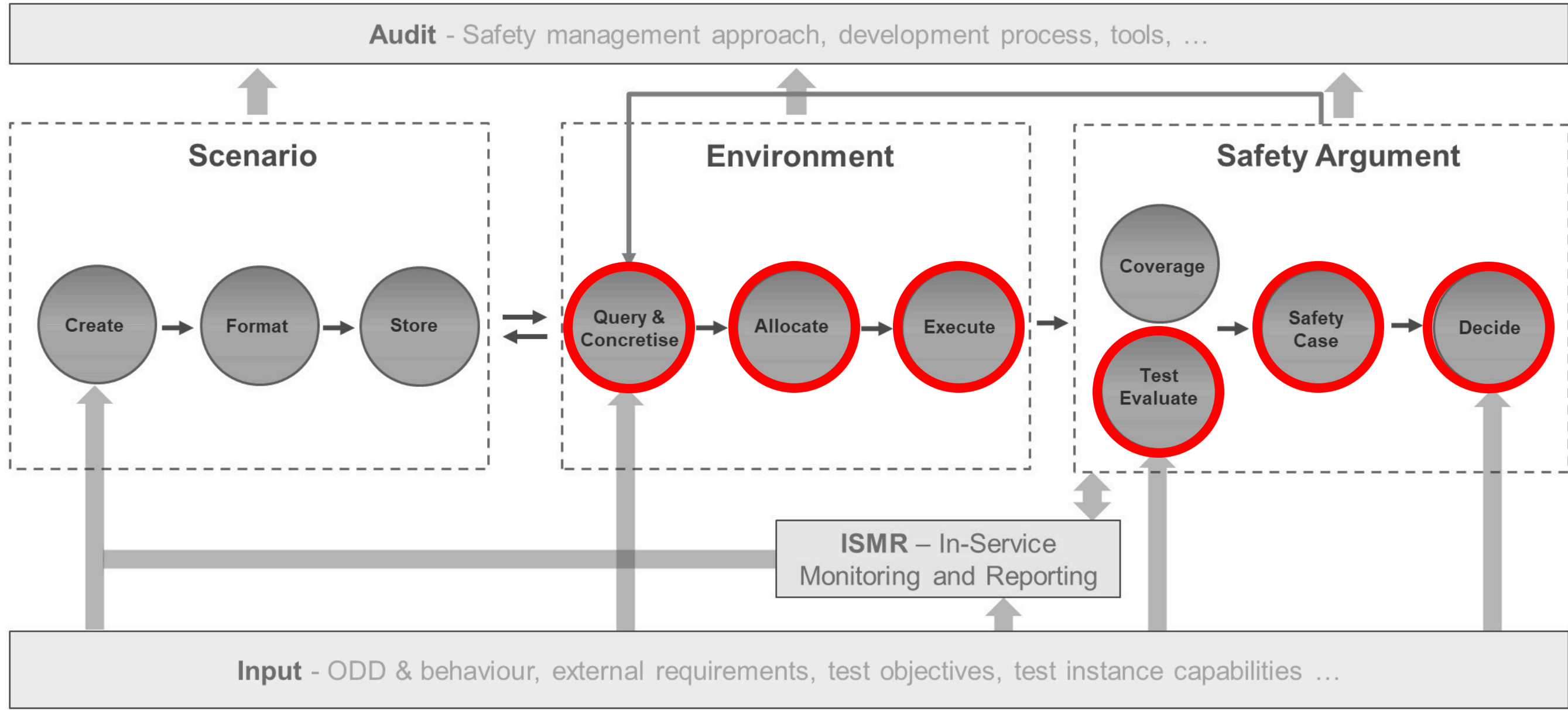


Figure 2. Overview of demonstrated SAF blocks

Test case setups

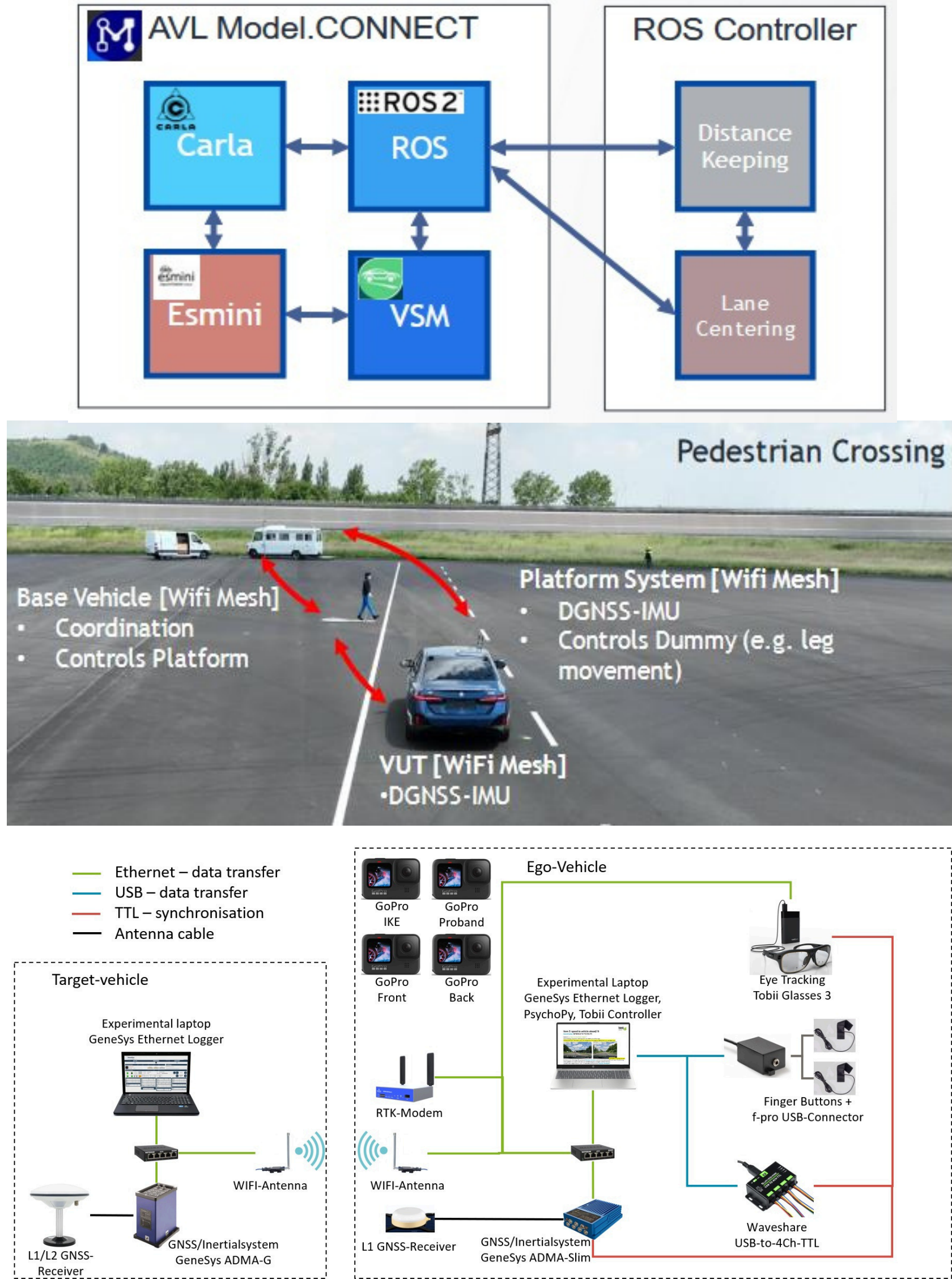


Figure 3. Test case setups for simulation, proving ground and public road

This use case involves multiple partners and includes simulation, proving ground, and public road testing. Demonstration scenarios reflect highway traffic jams and follow UN Regulation No. 157.

CCAM = Cooperative, Connected and Automated Mobility
ODD = Operational Design Domain
SAF = Safety Assurance Framework
UC = Use Case

Results

The initial allocation process of SUNRISE deliverable D3.3, has been used to compare test case requirements with test environment capabilities. Testing was conducted in 3 environments: simulation, proving ground and public roads. For testing in simulation, a developed traffic jam assistant was integrated into the simulation environment. For proving ground and public road testing, a state-of-the-art SAE level L3 vehicle was used and tested in a black-box approach, as described in SUNRISE deliverable D4.6.

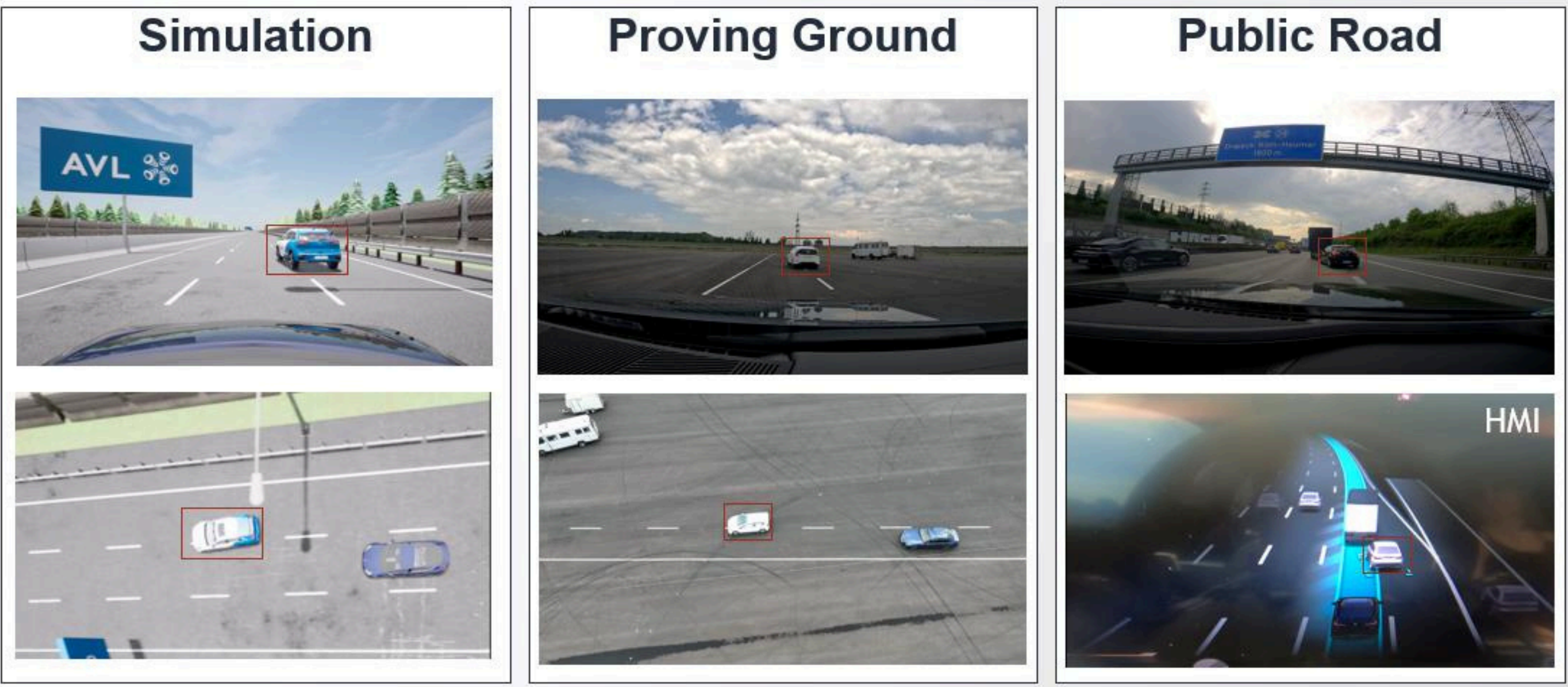


Figure 4. Exemplary Cut-In scenario in three different test environments

The evaluation of the tests was based on metrics and pass/fail criteria defined in UN Regulation No. 157.

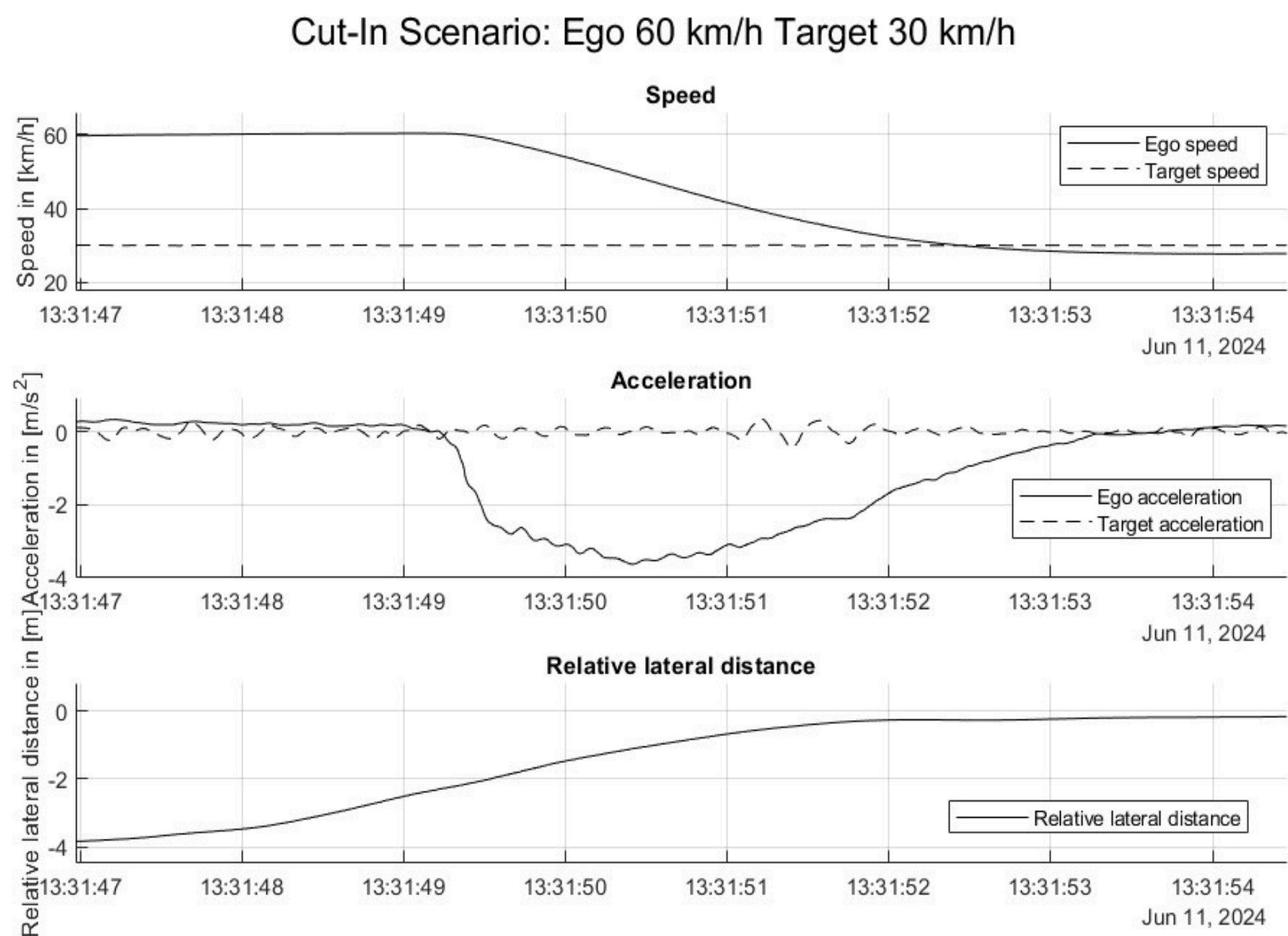


Figure 5. Exemplary test data from proving ground testing (cut-in scenario)

Key take aways

- The SUNRISE SAF provided meaningful guidance on CCAM safety validation.
- Black-box testing of an SAE level L3 production vehicle shows the SAF's scalability and versatility from the perspective of an authority or consumer testing entity.
- The test setups for simulation, proving ground and public road ensured validation in various test environments in robust and repeatable conditions.

References

- SUNRISE Deliverable D3.3
- SUNRISE Deliverable D4.6
- SUNRISE Deliverable D7.2
- UN Regulation No. 157

AD = Automated Driving
SAE = Society of Automotive Engineers
TJC = Traffic Jam Chauffeur
VRU = Vulnerable Road User

Partners



For more information, please contact:

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