

UC3.2 - COOPERATIVE PERCEPTION & DECISION MAKING & CONTROL

UC3 - HIGHWAY AD

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Use case overview

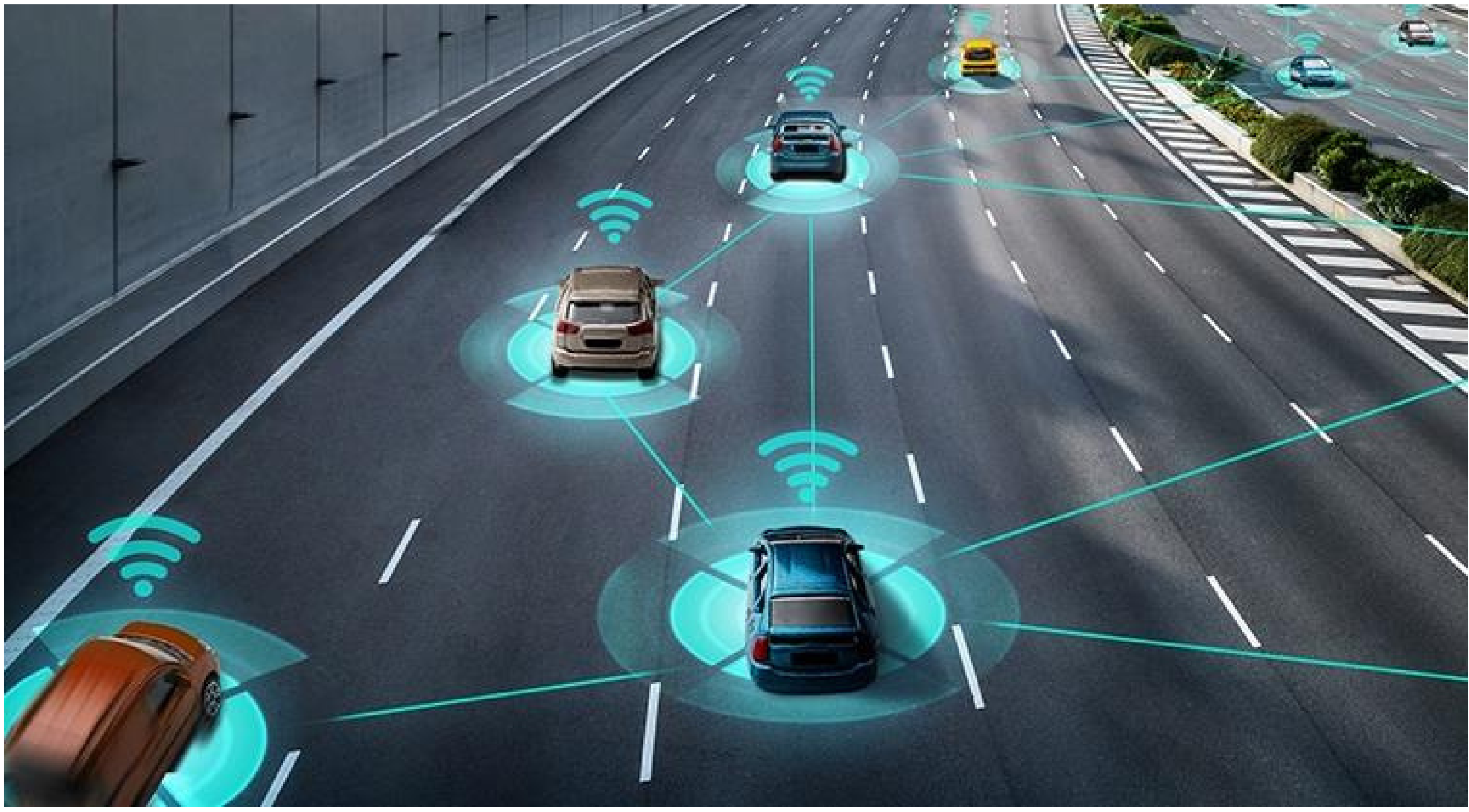


Figure 1. Overview of Use Case 3.2

UC3.2 validates Cooperative-Advanced ACC systems that incorporate augmented perception, integrating information from other road vehicles transmitted via V2X communications.

Objectives

By applying the SAF, demonstrate how safety and surrounding awareness can be improved on highways by including cooperative V2X communication with surrounding vehicles.

SAF blocks demonstrated

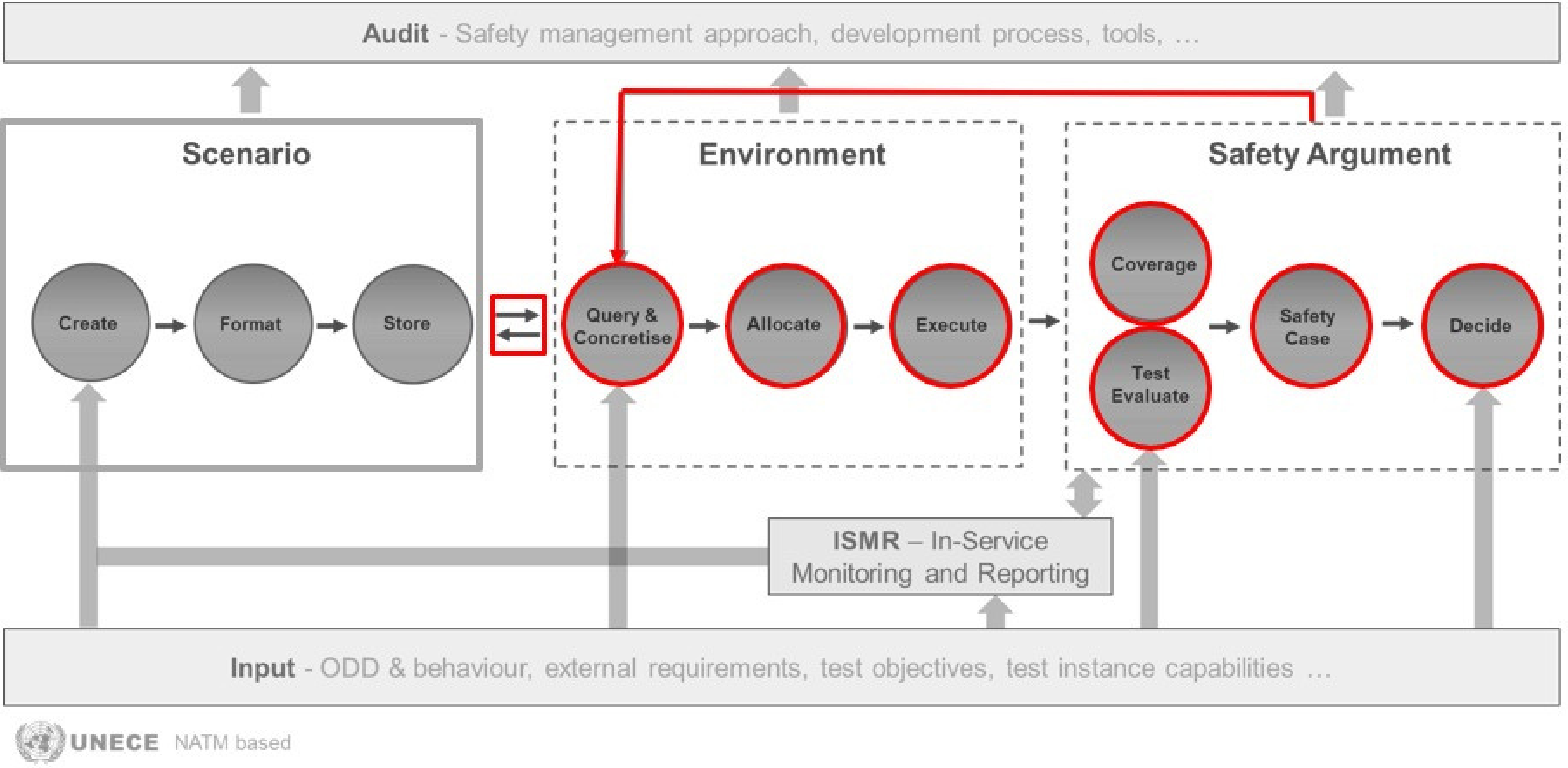


Figure 2. Overview of demonstrated SAF blocks

Test case setup

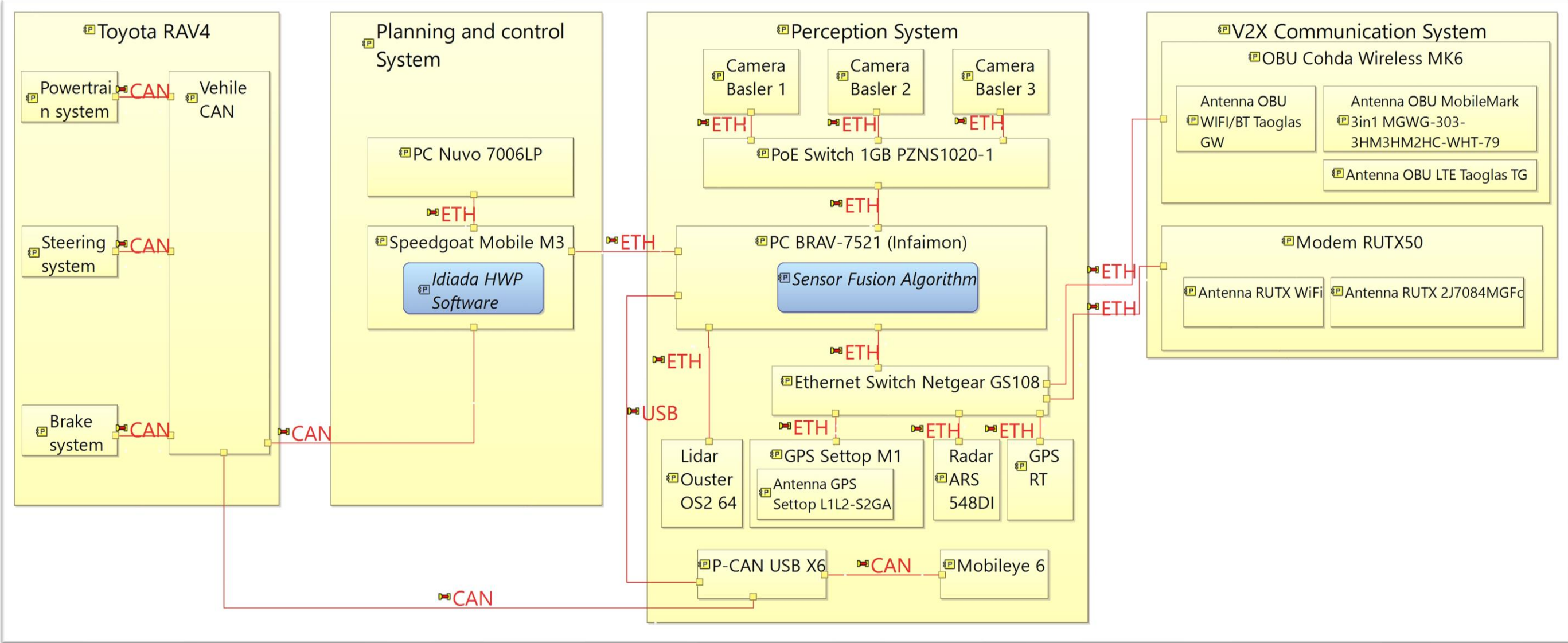


Figure 3. System's PAB diagram (Physical Architecture Blank)

UC3.2 combines different setups from various partners, including simulation and proving ground testing, to validate V2X communication and the autonomous system. It comprises scenario generation, parameter sampling, and integration of sensor and communication models.

This roll-up banner shows UC3.2 results conducted at IDIADA's proving ground.

Results

This example uses scenarios based on expert knowledge.

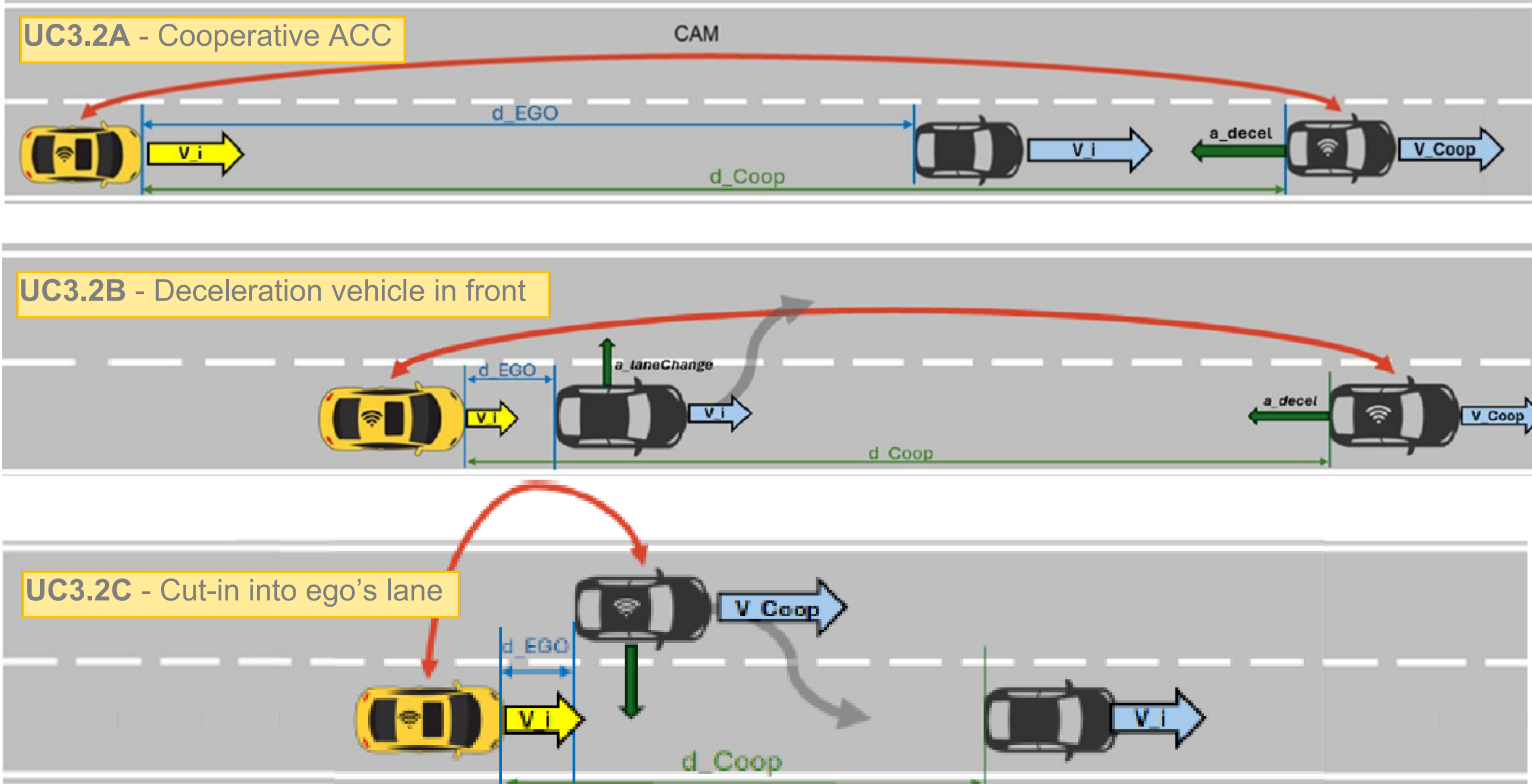


Figure 4. Scenarios executed in Proving Ground

The ACC function has been integrated into a prototype vehicle, allowing for physical testing of UC3.2.



Figure 5. Physical setup

During testing, all available data is recorded to generate specific reports. These reports were used to analyze the results and make a final safety decision.

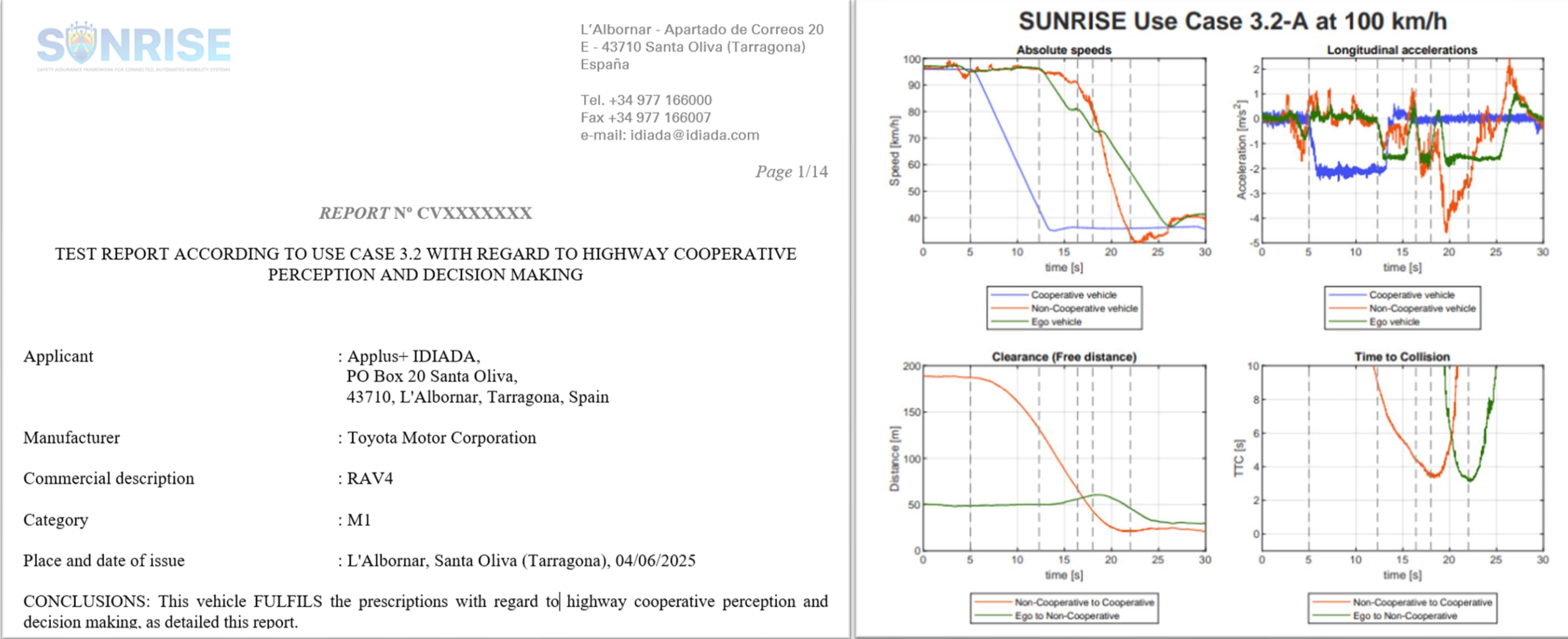


Figure 6. Generated reports

Key take aways

- Expert-designed scenarios (Figure 4) enable reliable and targeted validation aligned with safety requirements.
- Function integration into a prototype (Figure 3 and 5) shows the SAF's scalability and versatility for assessment of multiple platforms.
- The test setup (Figure 3 and 5) applies SAF principles to ensure traceable and harmonized validation.
- Reporting (Figure 6) supports SAF-guided, transparent, and structured safety argumentation.

References

- SUNRISE Deliverable D7.2
- SUNRISE Deliverable D7.3

ACC = Adaptive Cruise Control
PAB = Physical Architecture Blank
V2X = Vehicle-to-Everything

Partners



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