

Use case overview

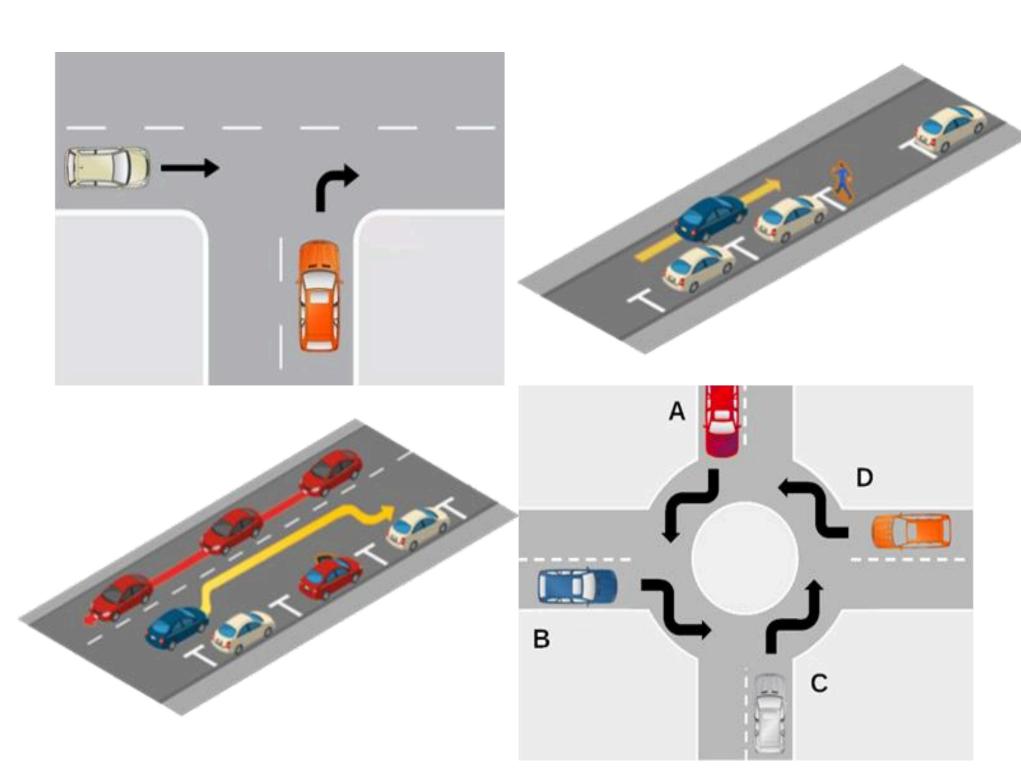


Figure 1. Overview of some of the scenarios in Use Case 1.1

UC1.1 focuses on the testing and safety validation of various components within the perception layer, specifically when the ODD of the CCAM system encompasses complex urban intersections and adverse weather conditions.

Objectives

Enhance the existing methodologies for testing and validating CCAM functions in urban settings, with particular emphasis on intersections, which are high-risk areas for accidents, primarily due to distracted pedestrians and traffic signal violations.

SAF blocks demonstrated

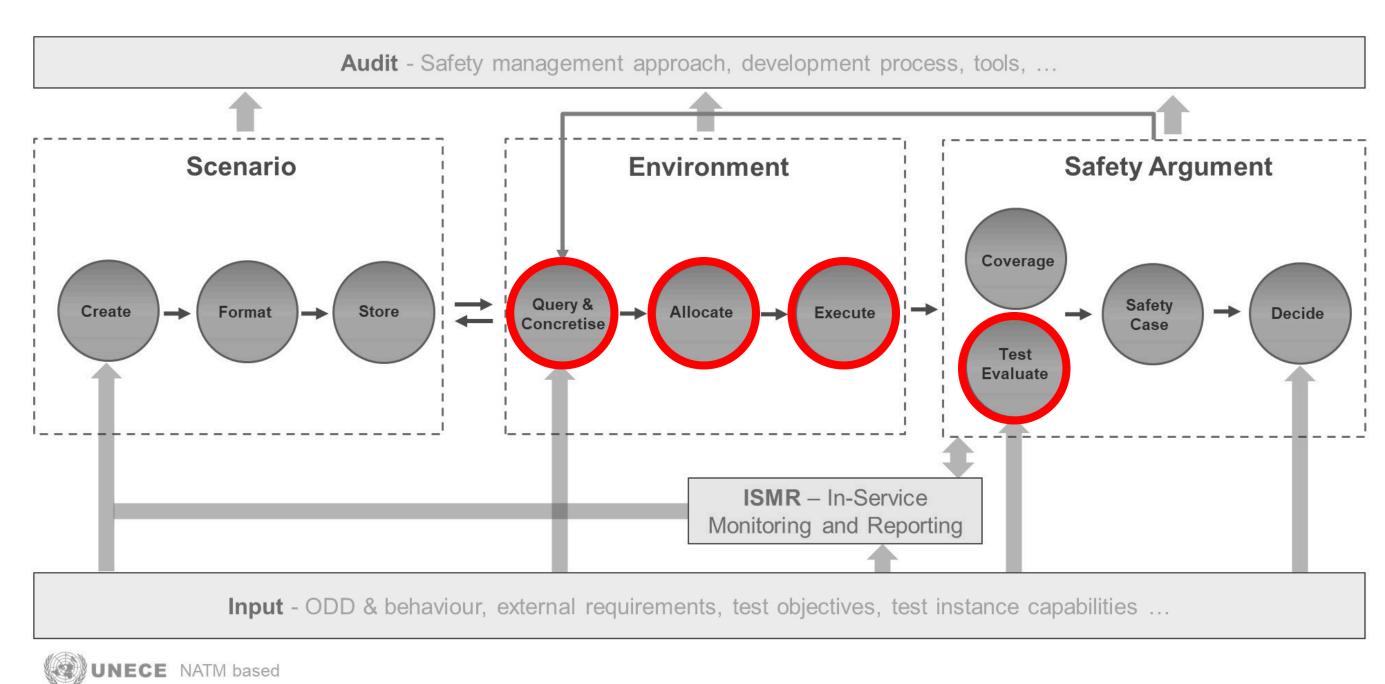


Figure 2. Overview of demonstrated SAF blocks

Test case setup

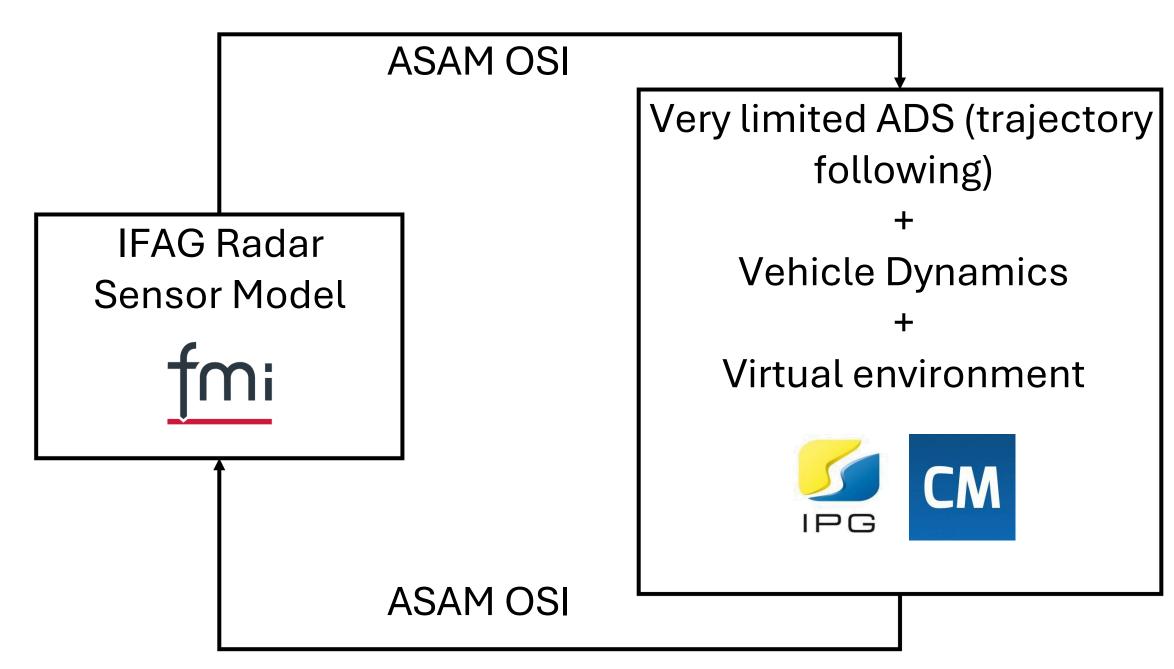


Figure 3. Test case setup

UC1.1 consists of several partners who have tested different CCAM systems. The scenarios represent various urban situations like intersections, roundabouts and parkings. Several simulation frameworks and a proving ground were available for the test execution. This roll- up shows one example from Infineon.

CCAM = Cooperative, Connected and Automated Mobility

ODD = Operational Design Domain

SAF = Safety Assurance Framework

UC = Use Case

Results

This example uses scenarios based on expert knowledge.

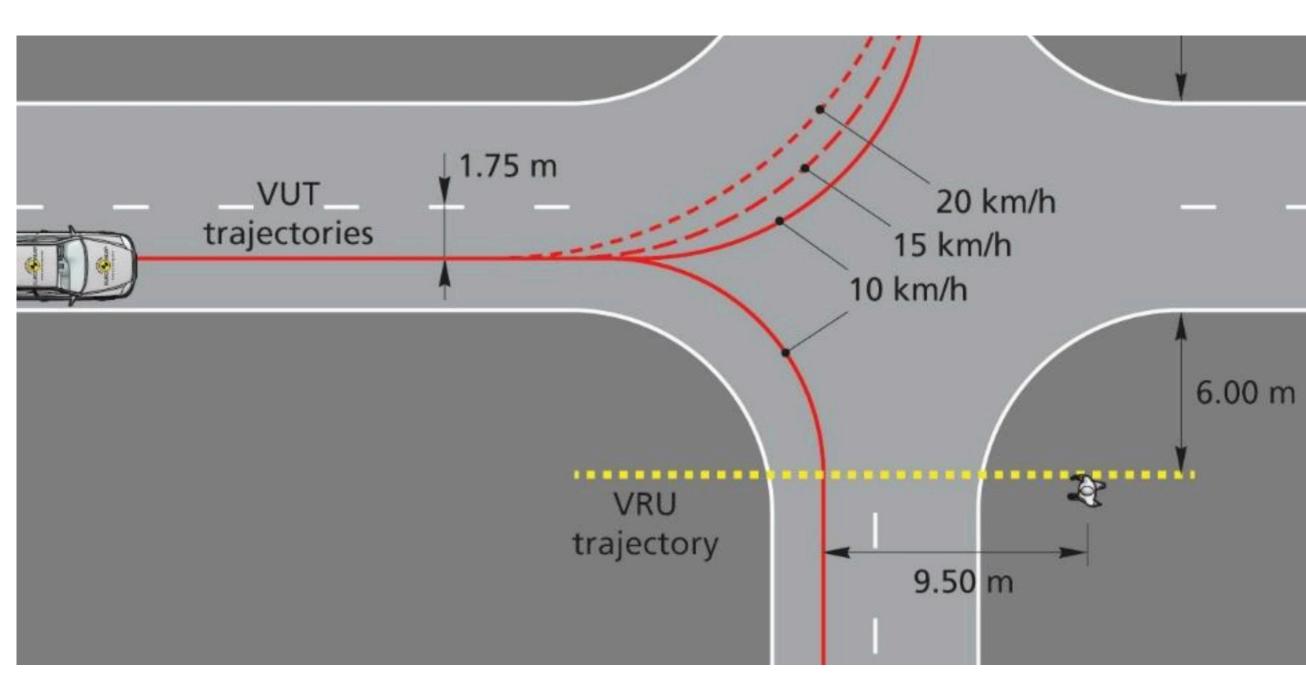


Figure 4. Car-to-Pedestrian Turning Adult Scenario (Source: Euro NCAP)

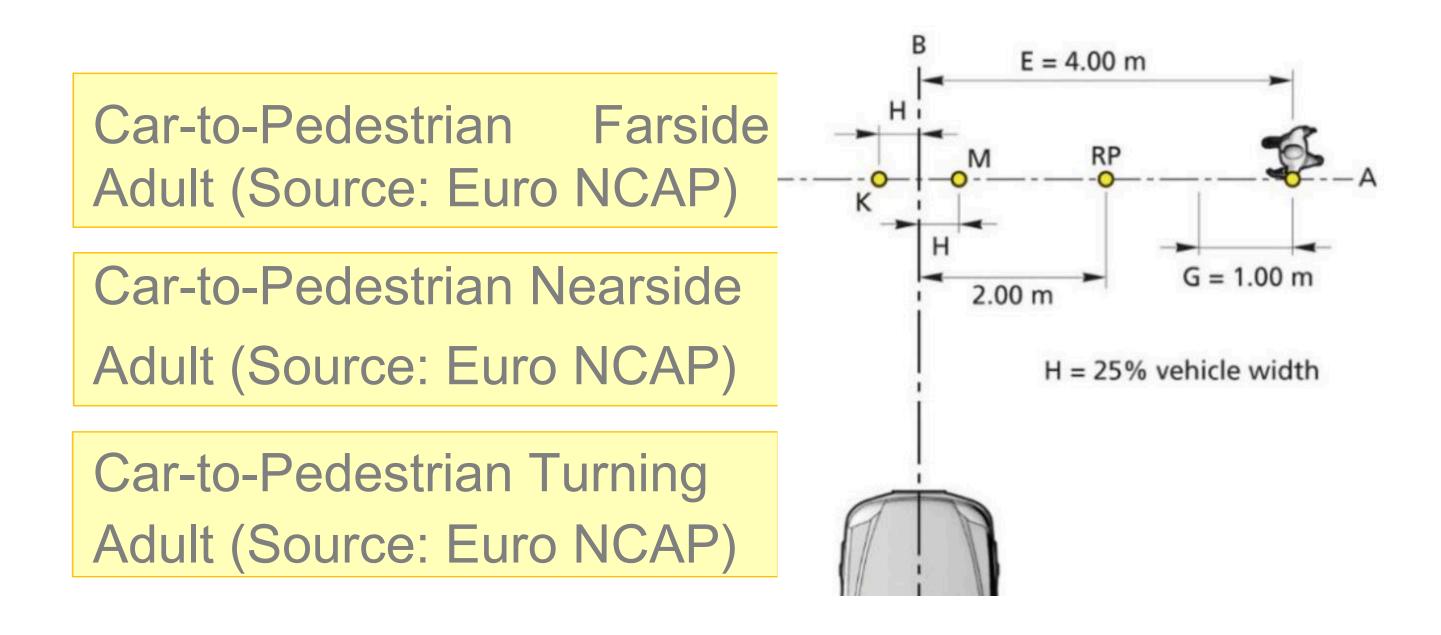


Figure 5. Car-to-Pedestrian Scenario description (Source: Euro NCAP)

The initial allocation process of SUNRISE deliverable D3.3 has been used to compare the requirements of the test case with the capabilities of the available simulation framework.

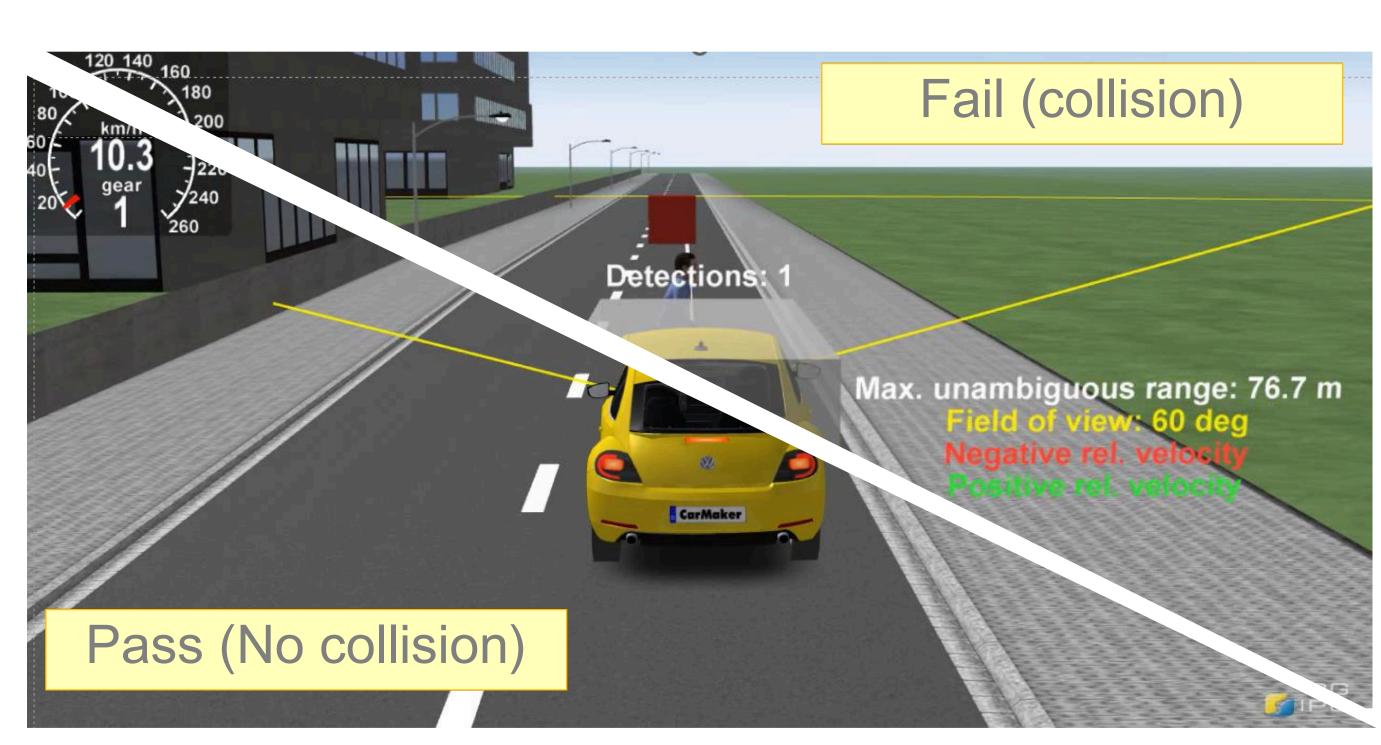


Figure 6. Scenario execution in IPG CarMaker

The test cases have been executed using the simulation framework. The results have been compared to Euro NCAP criteria to determine whether the tested CCAM system passed or not.

Key take aways

- The SAF provided meaningful guidance on CCAM safety validation
- The SAF supports the use of scenarios from various sources.
- The SAF provides a structural way to produce SOTIF known and unknown unsafe scenarios for the validation.

References

• SUNRISE Deliverable D3.3

SOTIF = Safety Of The Intended Functionality



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