

SAF INTRODUCTION & MAIN OVERVIEW



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Introduction

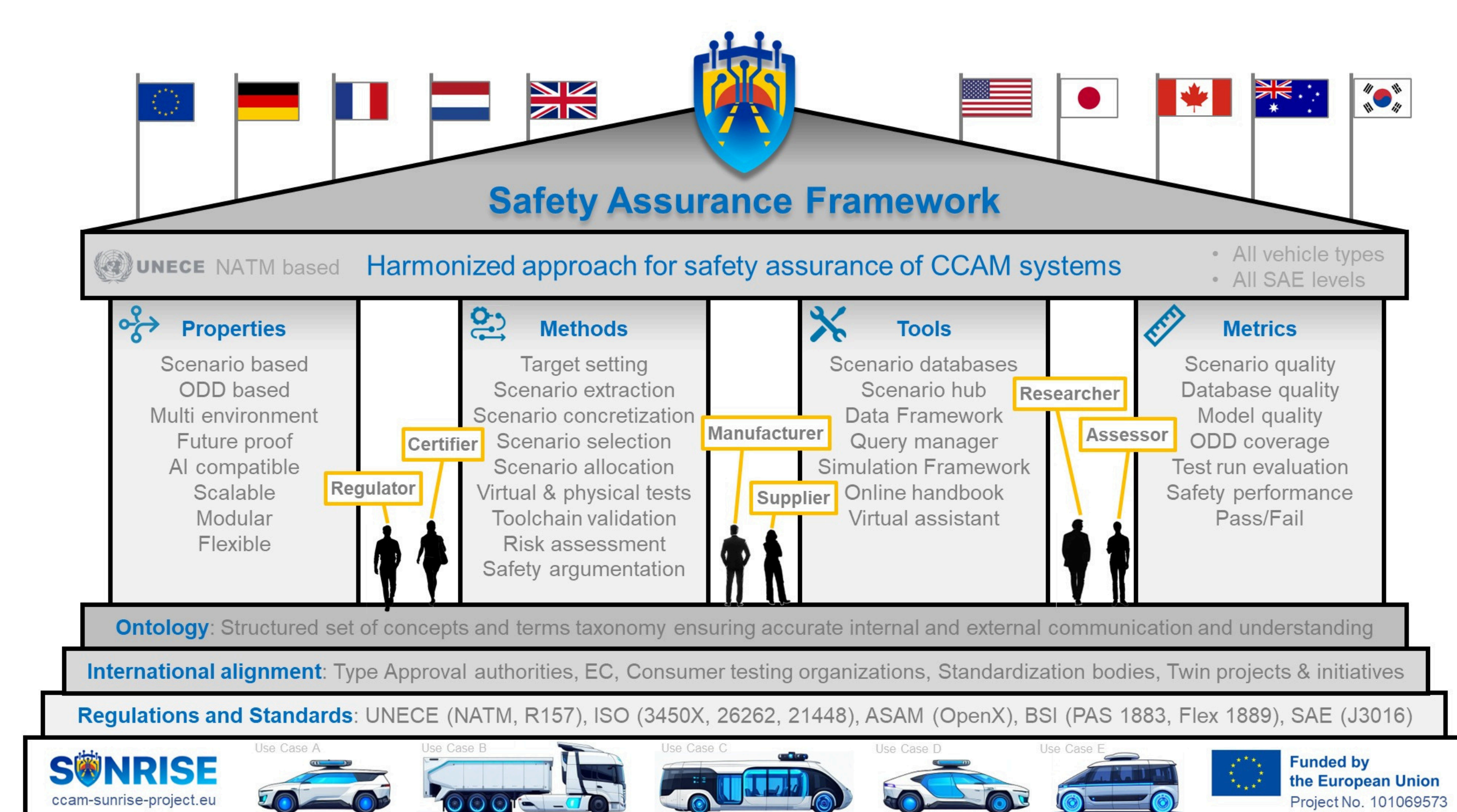


Figure 1. Concept image of the SUNRISE Safety Assurance Framework

The main **goal** of the SUNRISE project is to develop a **CCAM Safety Assurance Framework (SAF)** fulfilling the needs of different **users**, including regulators, certifiers, manufacturers and suppliers.

The SAF can be applied to **all vehicle types on all SAE levels**. Properties of the SAF include the use of scenarios and the Operational Design Domain (ODD). These scenarios are executed in multiple test environments, ranging from virtual to physical. Moreover, future technologies and scenarios can also be handled (like AI based systems). And the SAF easily adapts to new standards and regulations.

The SAF is built on 3 main pillars. The **Methods** pillar includes for example a method for target setting, scenario selection and toolchain validation. The **Tools** pillar covers a scenario hub (also called the Data Framework), a query manager to find scenarios, a simulation framework and an online SAF Handbook with a virtual assistant. Finally, the **Metrics** pillar includes for example metrics on scenario and database quality, ODD coverage, safety performance and pass/fail criteria.

The SAF is based on various **regulations and standards**, most importantly the UNECE New Assessment / Test Method (NATM). The SAF has been **aligned with international projects, initiatives and entities** operating in the field of CCAM safety assurance. The foundations of the SAF count with an **ontology** to ensure accurate information exchange among its components, and the SAF has been validated and demonstrated by a variety of **Use Cases**.

Safety Assurance Framework

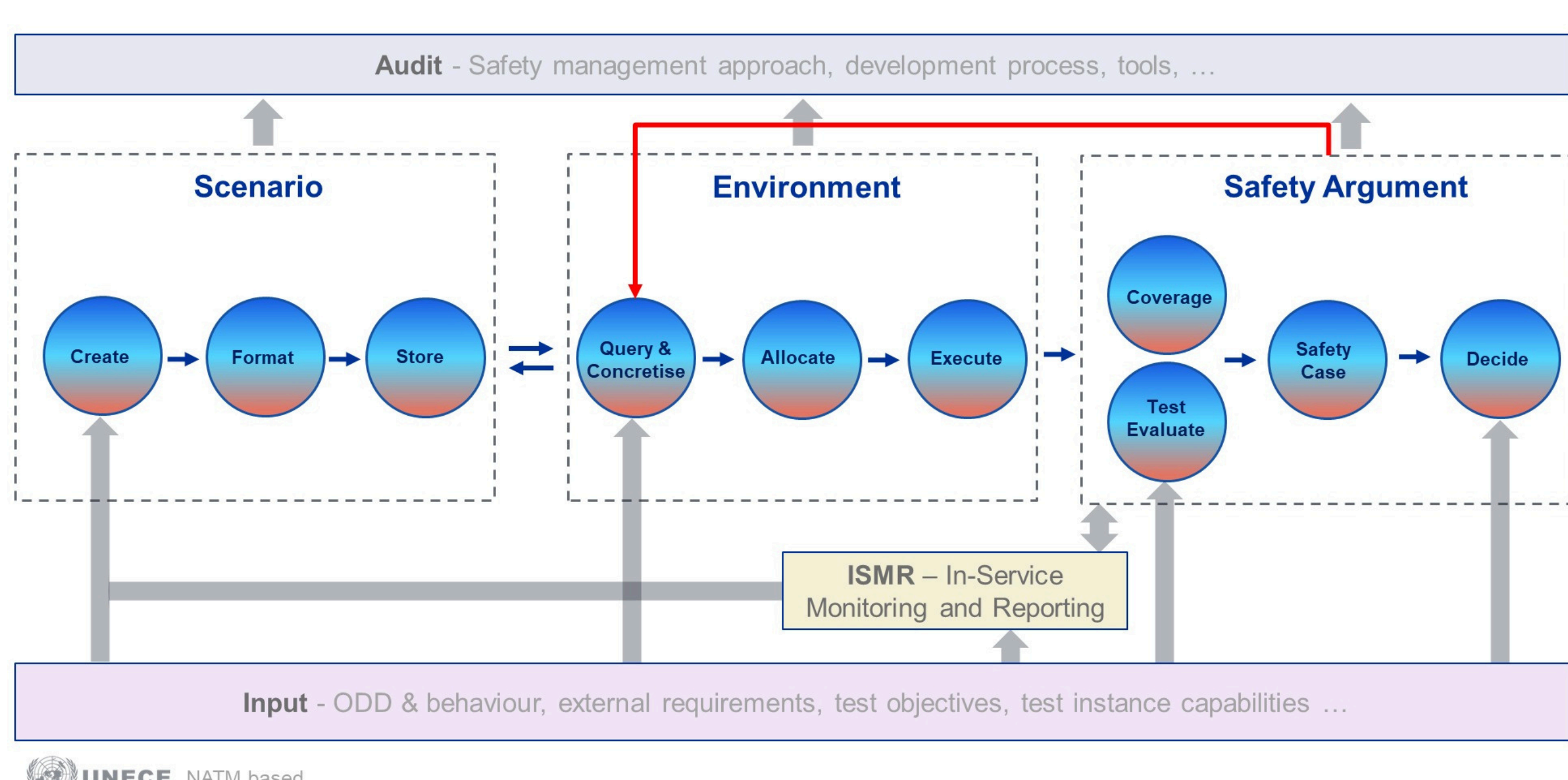


Figure 2. Main overview of the SUNRISE Safety Assurance Framework

The figure above shows an **overview** of the **Safety Assurance Framework (SAF)** and its main components, each of which are described hereafter.

Scenario manages scenarios critical for CCAM safety assurance, encompassing 3 main steps: creation, formatting and storage of scenarios.

Environment operationalizes test scenarios through 3 main steps: querying and concretizing, allocation to test environments, and execution of test scenarios.

Safety Argument evaluates test results to assess safety through 4 interconnected steps: coverage analysis, test evaluation, safety case and decision making.

Audit focuses on ensuring that the development process, tools used, and overall safety management approach are adequate. It checks if manufacturers and suppliers have proper processes in place to ensure CCAM safety before market introduction.

ISMR (In-Service Monitoring & Reporting) captures and records information during system deployment, to be considered for future designs. It runs during system operation, with continuous monitoring by the manufacturer or fleet operator, for uninterrupted safety assessment and improvement.

Input includes requirements related to ODD and behaviour, as well as other external requirements and test objectives.

Partners



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