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Introduction

The **Scenario** component of the Safety Assurance Framework (SAF) manages scenarios critical for safety assurance of CCAM systems. It encompasses 3 main blocks: Create, Format and Store.

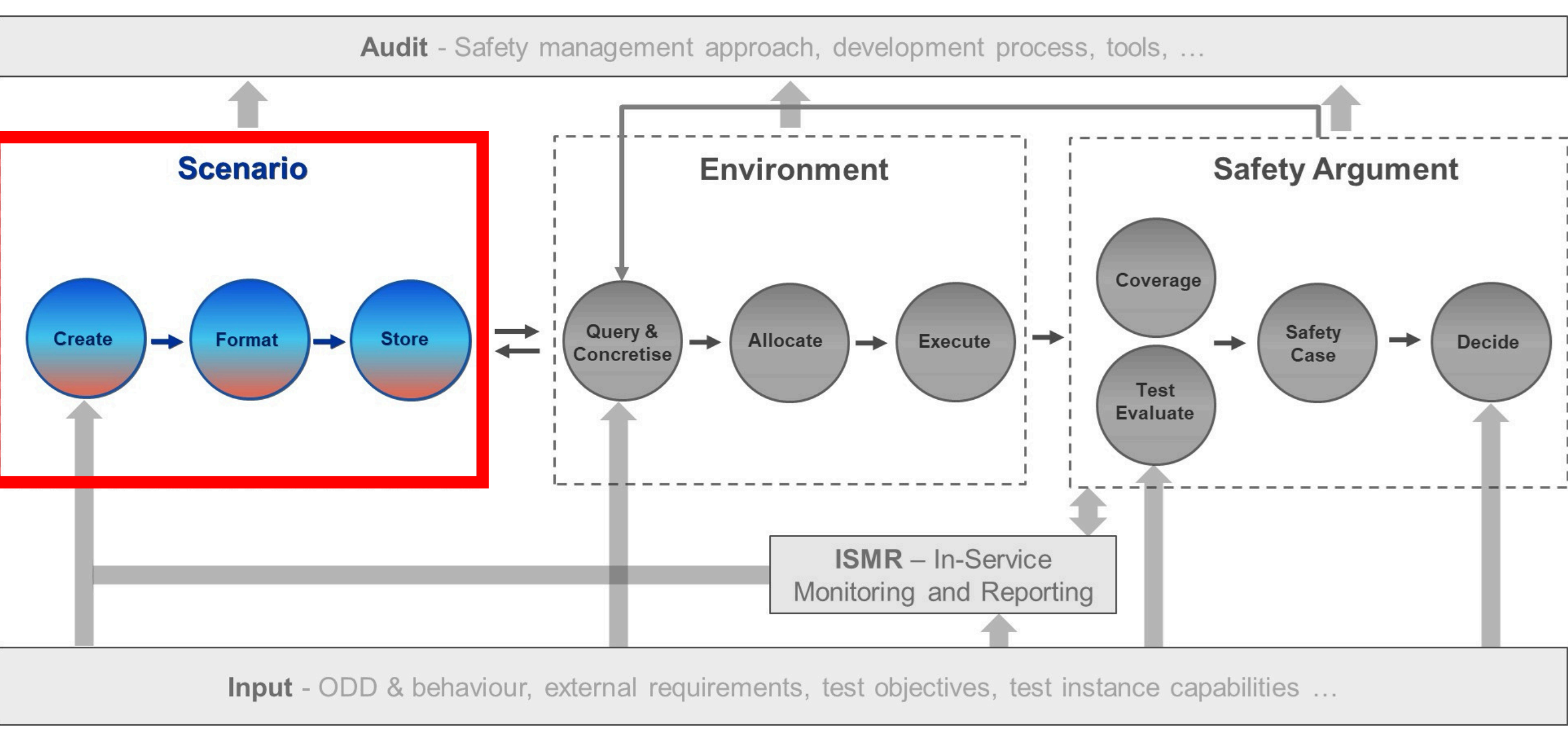


Figure 1. Scenario component of the Safety Assurance Framework

Create involves generating scenarios based on data- and knowledge-driven approaches.

Format Format structures scenarios into appropriate representations for effective communication and downstream testing.

Store consolidates formatted scenarios in databases with standardized interfaces to test environments. In SUNRISE, the Data Framework acts as a hub to multiple scenario databases connecting to it.

Data Framework

The SUNRISE **Data Framework** is a cloud application that serves as a federation layer to connect to external scenario databases.

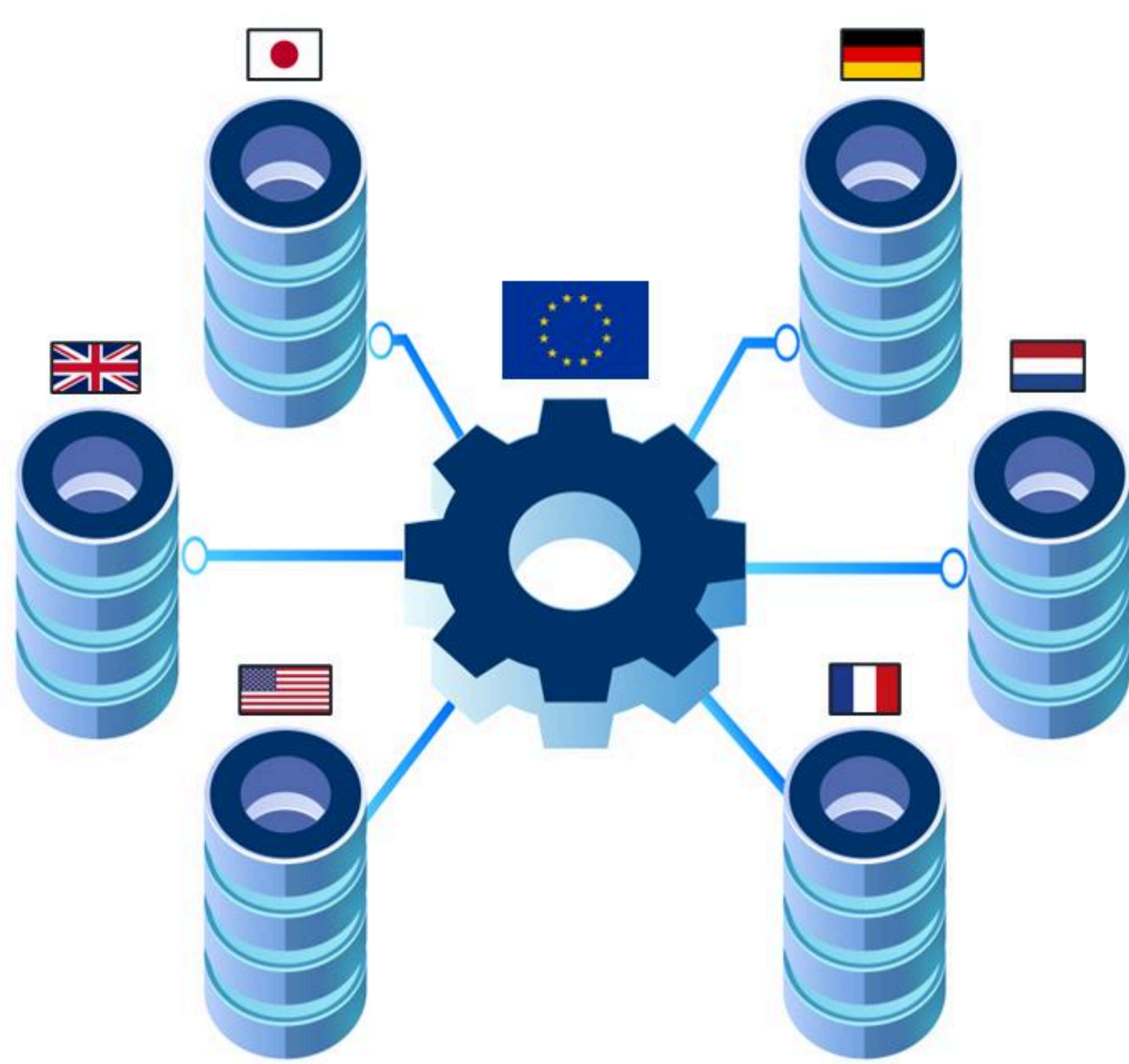


Figure 2. SUNRISE Data Framework connected to multiple scenario databases

Users of the SUNRISE Data Framework can search, filter, analyse and download scenarios, using a harmonised language, in multiple heterogeneous scenario databases. Standardised file formats are supported, including ASAM OpenDrive, OpenScenario and OpenLabel.

Scenario formats and ontologies

A common language and understanding of scenario content is required to enable communication between different databases and users of the Data Framework. The **SUNRISE ontology** provides this common understanding by defining relationships between elements of a commonly accepted taxonomy based on ISO standards.

This enables the definition of scenario content like scenery, environment conditions and dynamic behaviour, for use in querying the external databases connected to the Data Framework.

Additionally, many **formats** are used within the SUNRISE Data Framework, mostly based on the ASAM OpenX family.

Scenario quality metrics

SUNRISE developed **metrics** that are used to characterize the content of a scenario database and can be utilized in various parts of the SAF, as shown in Figure 3.

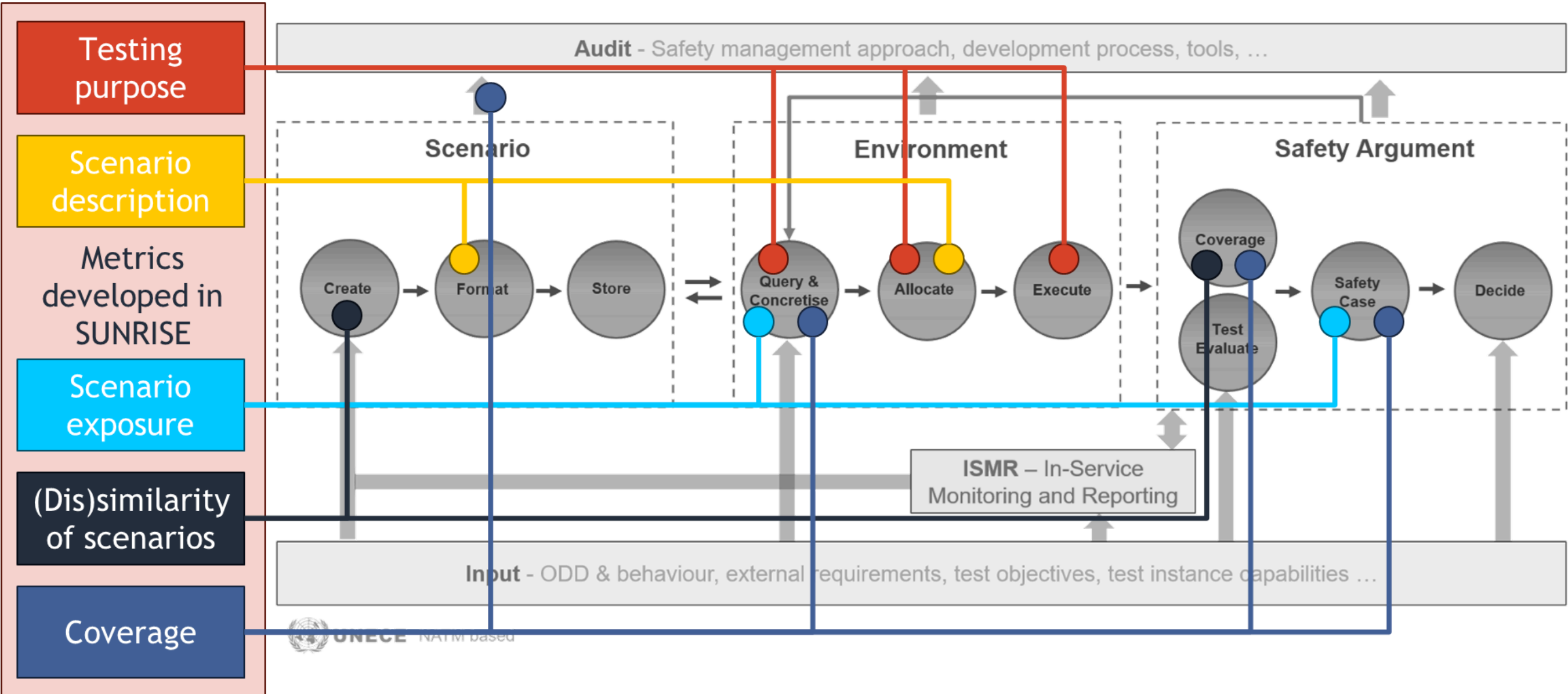


Figure 3. Developed scenario quality metrics and their uses within the SAF

Developed **metrics** include:

- Relevance based on associated risk
- Criticality based on scenario description or test scenario outcome
- Complexity for example based on road complexity
- Description for example "incomplete", "missing information" or "complete"
- Exposure i.e. likelihood of occurrence
- (Dis)similarity
- Coverage of the Operational Design Domain (ODD) by scenarios and of the parameter space

Partners



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