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SafeComp2025

Scenarios applied to system engineering process for AD/ADAS safety demonstration

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Context of automated systems engineering

Automated Systems validation and Safety demonstration are huge challenges:

- Automated vehicle operation in an **open environment** using **computer vision**
- **Combinatorial explosion** of interactions between the system and its environment

Consensus to address these issues with a scenario-based approach:

NATM (New Assessment and Test Method)

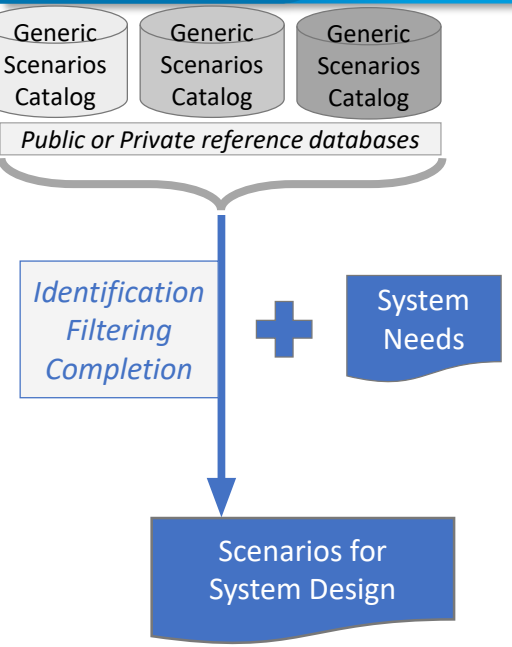
United Nations World Forum for Harmonization of Vehicle Regulations (WP.29)

Scenarios catalog shall support 5 pillars approach:

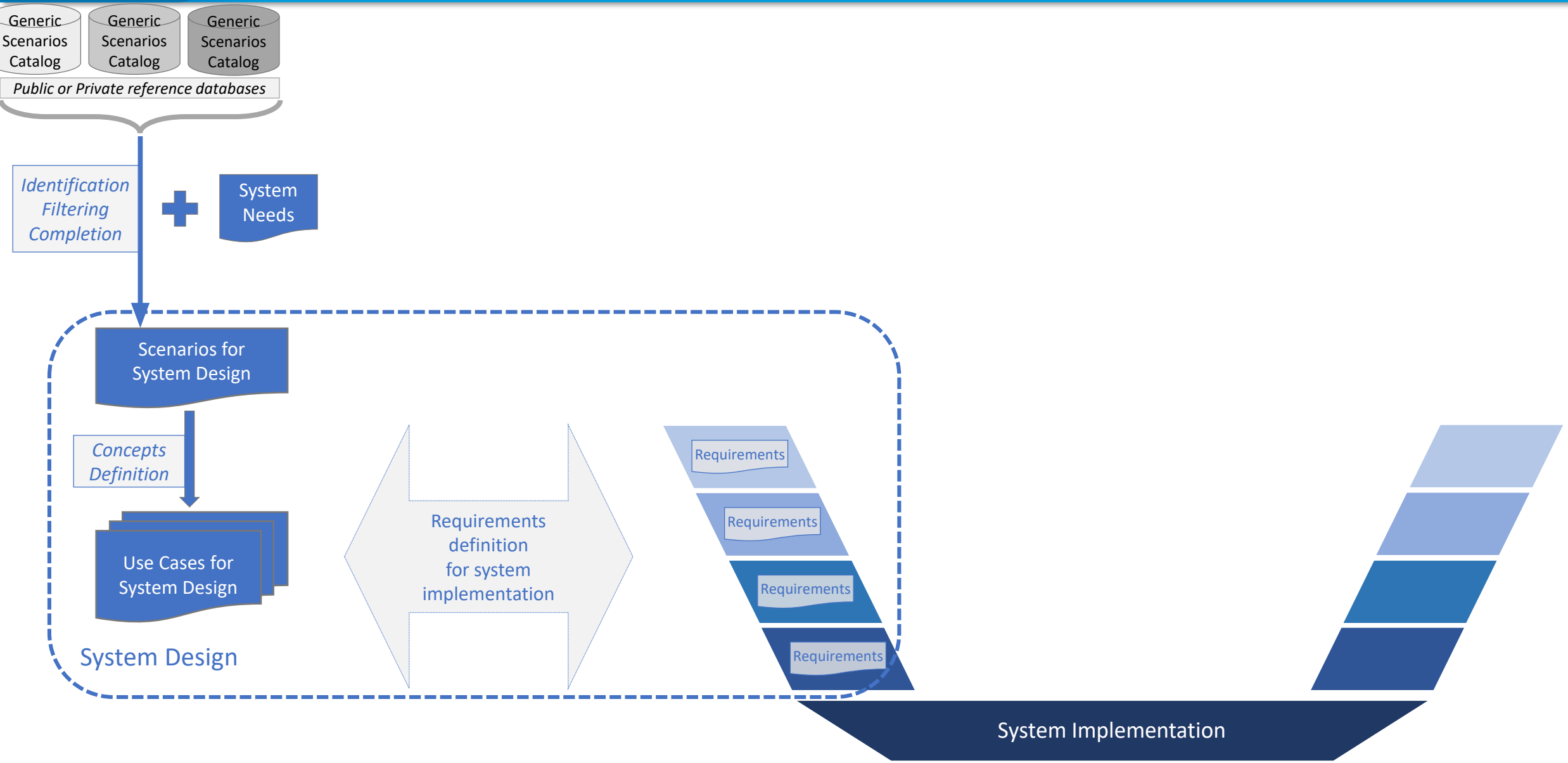
- Simulation/virtual testing
- Track testing
- Real world testing
- Audit/assessment
- In-service monitoring and reporting

➔ How to take benefits of scenario approach for the whole engineering process ?

Scenarios applied to Engineering Process



Scenarios applied to Engineering Process



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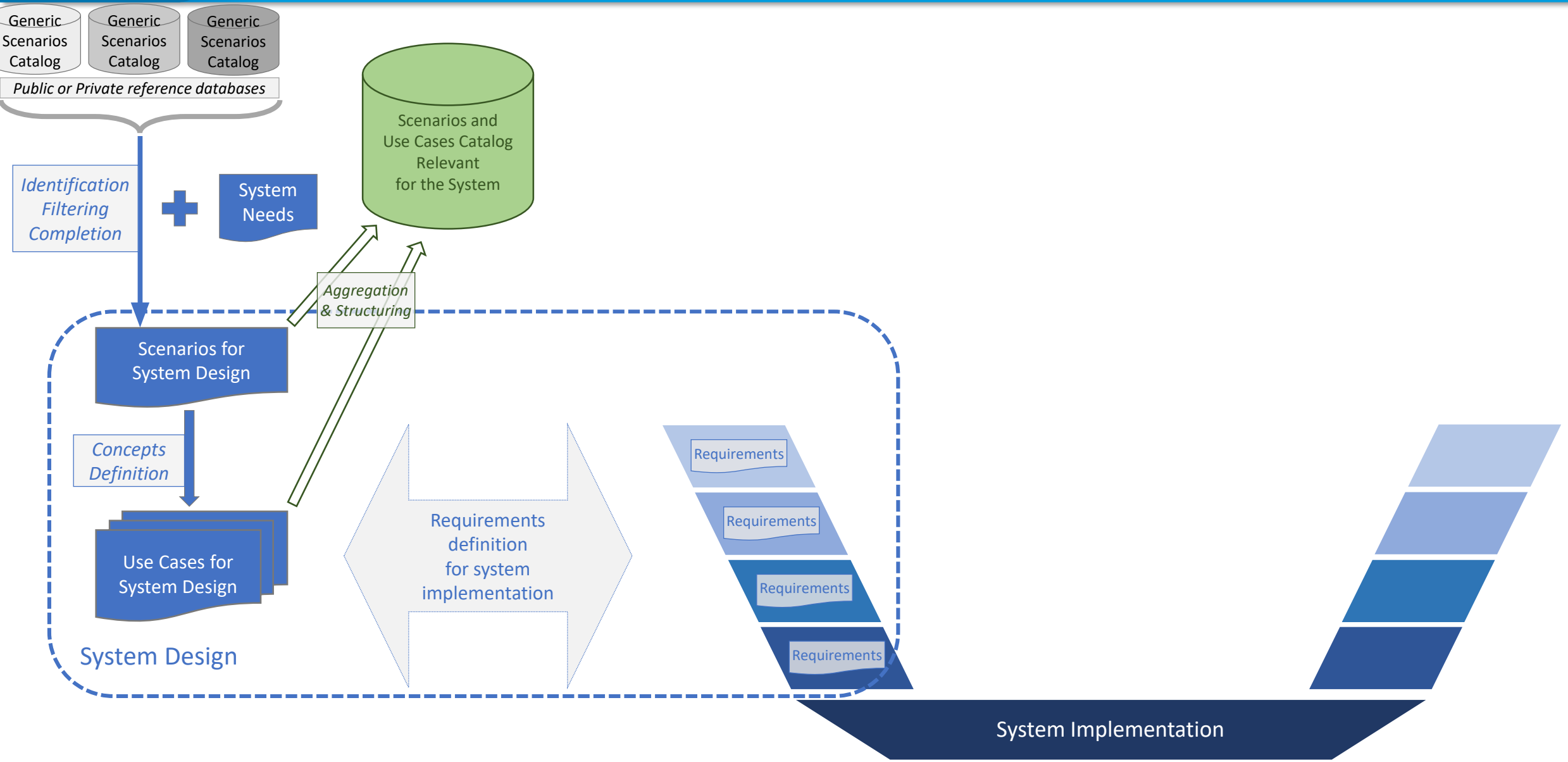

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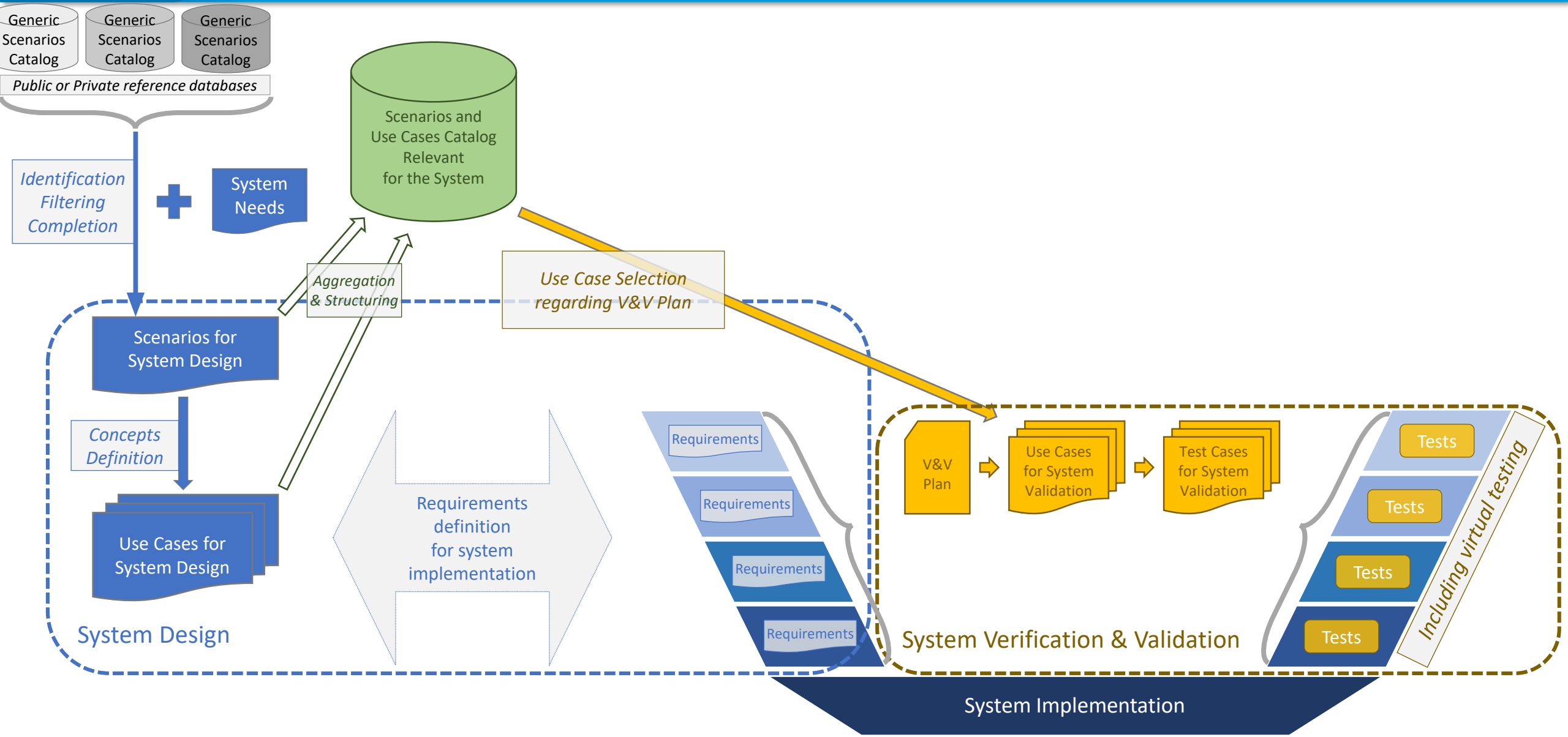

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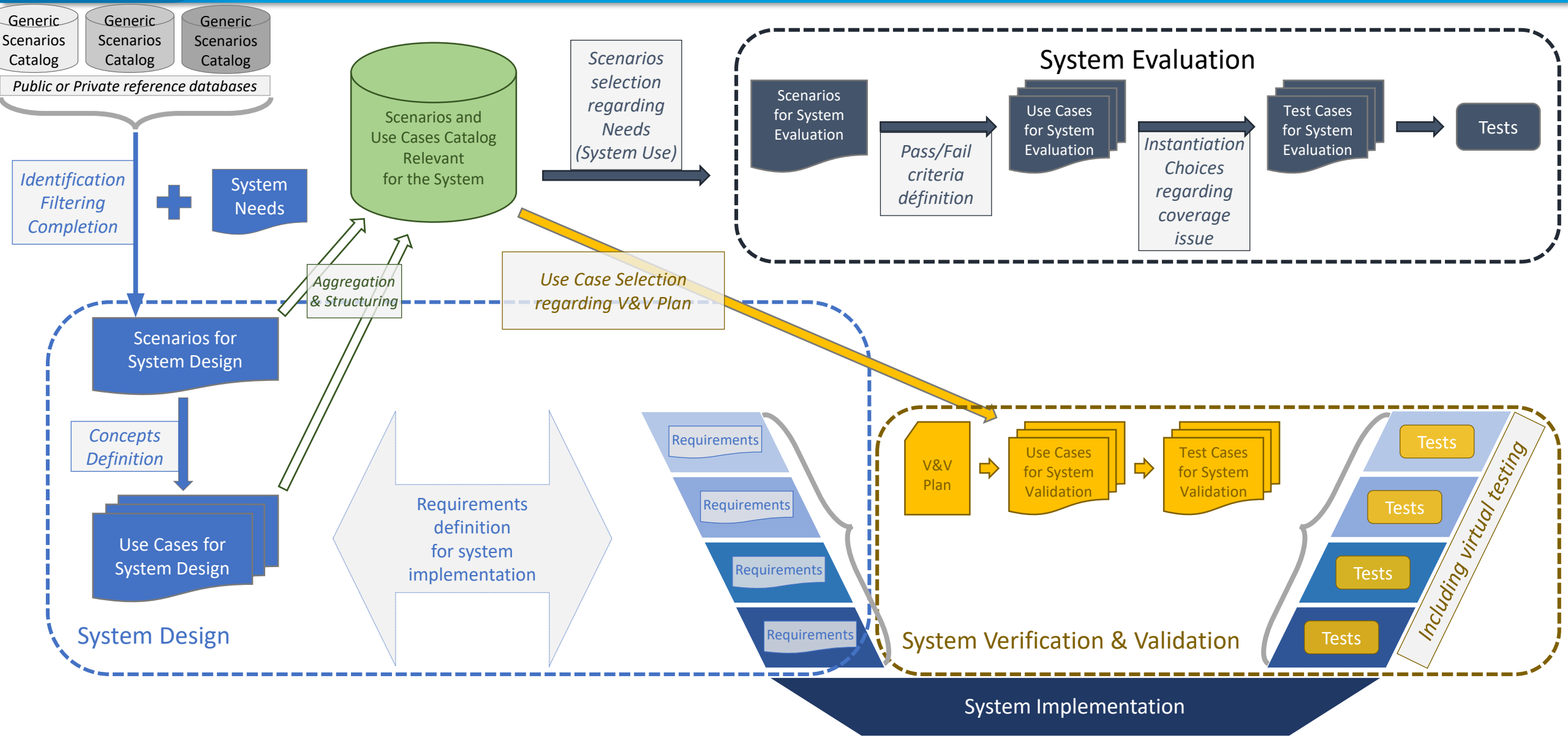

Take Away

Scenario-based approach improve engineering process:

- Identifying the **scenario space** to be considered by **System Design as a Need extension**
- Addressing this **scenario space** with **design concepts** thanks to **Use Cases**
- **Contextualizing requirements** during V&V activities
- Defining the scope of **system performances evaluation** regarding its **intended use**

The usage of scenarios and Use Cases catalogs supports system engineering with:

- Versioning and traceability
- Coverage evaluation for each step of the validation process:
  - **Scenarios** for **system design** by **Use Cases** for **system design**
  - **System requirements** by **Use Cases** for **system validation**
  - **Scenarios** for **system evaluation** by **Use Cases** for **system evaluation**

➔ This methodological approach requires a Tool Chain to be applied

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Let’s met at poster expo !

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