Scenario-based Testing –
Potential for (ASAM) Standardization

Dr. Jobst Richert, Director Testing & Data Management, 4.8.2020
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Massive Parallelism: A Test Framework for Highly Automated Driving

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Steps of Scenario-based Testing Workflow

Scenario Developer
defines or imports:
- Road,
- Maneuver,
- Traffic,
- Ego Vehicle
- Parameters declarations
- Parameter ranges

Test Developer
selects
- Logical Scenario and defines
- V-ECU (Variant and Version)
- Tunable Parameters, i. e. the limits of the tunable parameters in the context of the function to be tested
- Observers, i. e. Online calculatable Objectives (KPI)
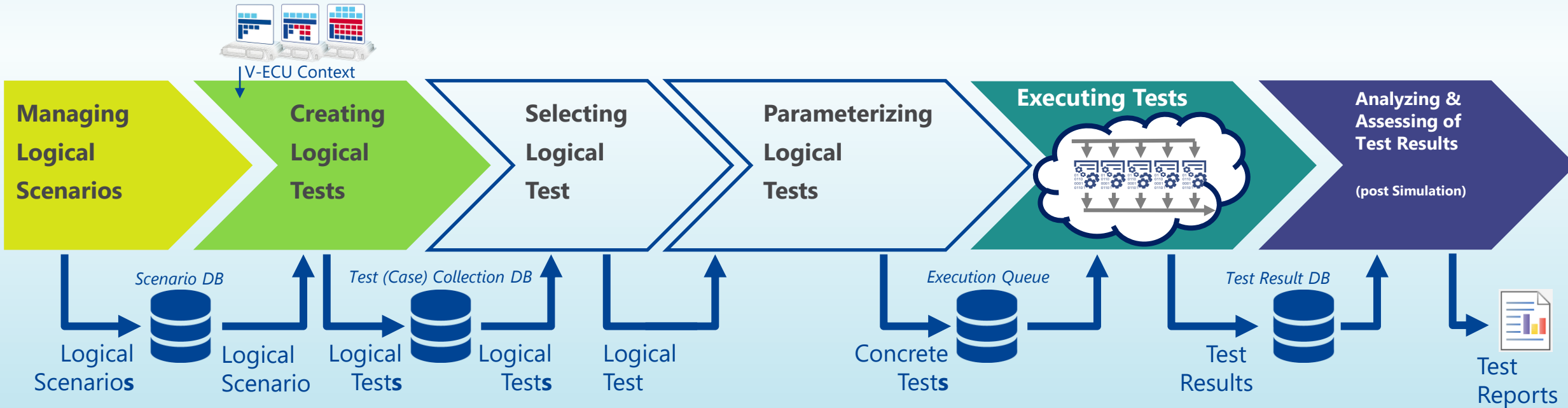- Data Capturing

Test Developer
- Selects Logical Tests
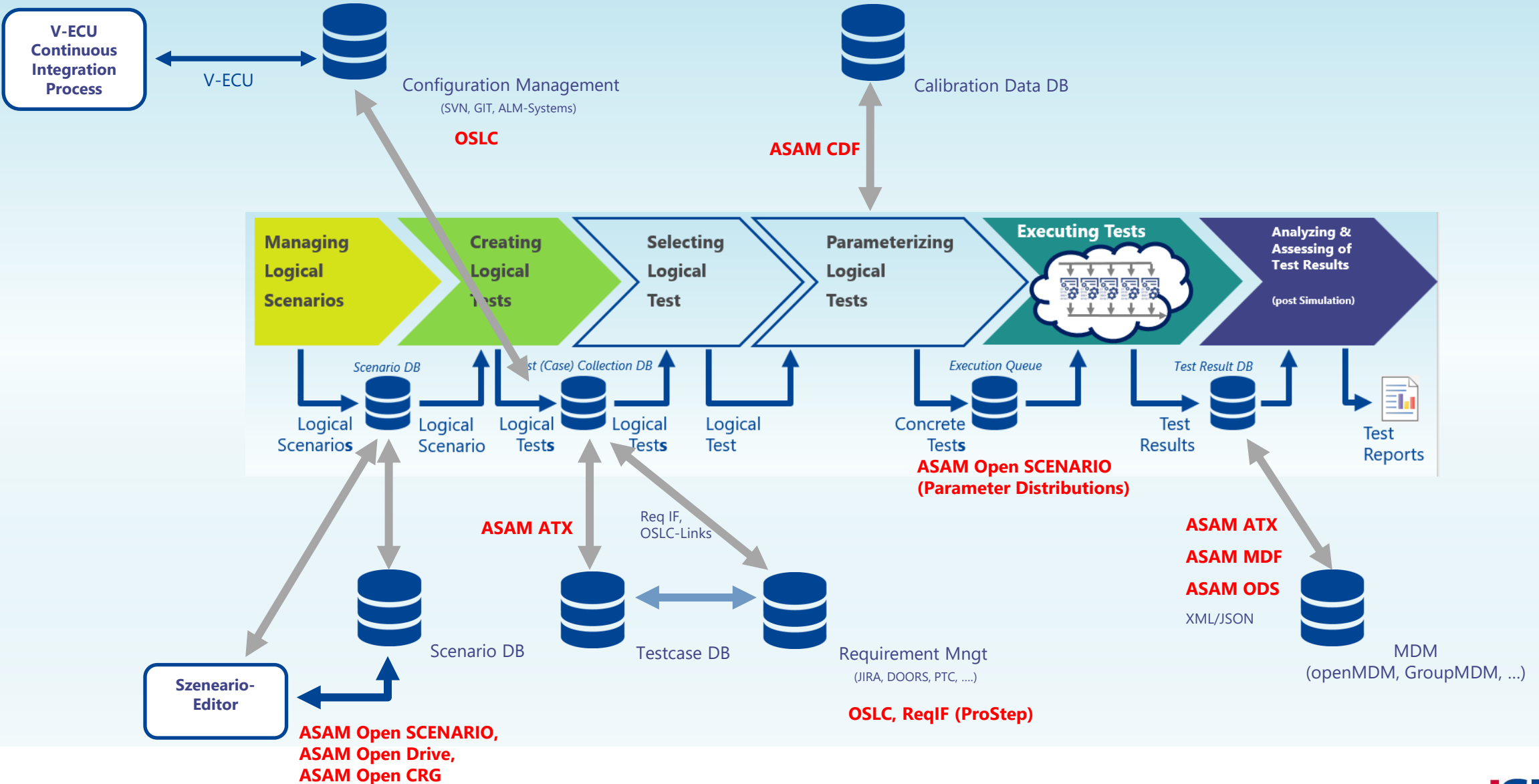
Test Developer
- Sets Parameters

(Outer) Test Execution Framework
- Creates new concrete Test Jobs according to Parameters
- Allocates/manages/monitors hybrid computing resources
- Organizes data transfer TO and FROM worker nodes from/to Data Management Systems
- Monitors the Test Execution

V-ECU Context

Managing Logical Scenarios

Creating Logical Tests

Selecting Logical Test

Parameterizing Logical Tests

Executing Tests

Analyzing & Assessing of Test Results
(post Simulation)

Scenario DB

Test (Case) Collection DB

Execution Queue

Test Result DB

Logical Scenario**s**

Logical Scenario

Logical Test**s**

Logical Test**s**

Logical Test

Concrete Test**s**

Test Results

Test Reports

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Integration with existing Data Management Infrastructure

V-ECU Continuous Integration Process

V-ECU

Configuration Management
(SVN, GIT, ALM-Systems)

OSLC

Calibration Data DB

ASAM CDF

| Managing Logical Scenarios | Creating Logical Tests | Selecting Logical Test | Parameterizing Logical Tests | Executing Tests | Analyzing & Assessing of Test Results (post Simulation) |

Scenario DB

Test (Case) Collection DB

Execution Queue

Test Result DB

Logical Scenarios — Logical Scenario — Logical Tests — Logical Tests — Logical Test — Concrete Tests — Test Results — Test Reports

ASAM Open SCENARIO (Parameter Distributions)

Scenario DB

ASAM ATX

Testcase DB

Req IF, OSLC-Links

Requirement Mngt
(JIRA, DOORS, PTC, ...)

OSLC, ReqIF (ProStep)

Szeneario-Editor

**ASAM Open SCENARIO,
ASAM Open Drive,
ASAM Open CRG**

ASAM ATX

ASAM MDF

ASAM ODS

XML/JSON

MDM
(openMDM, GroupMDM, ...)

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Interfacing the Simulator: Worker Node Architecture

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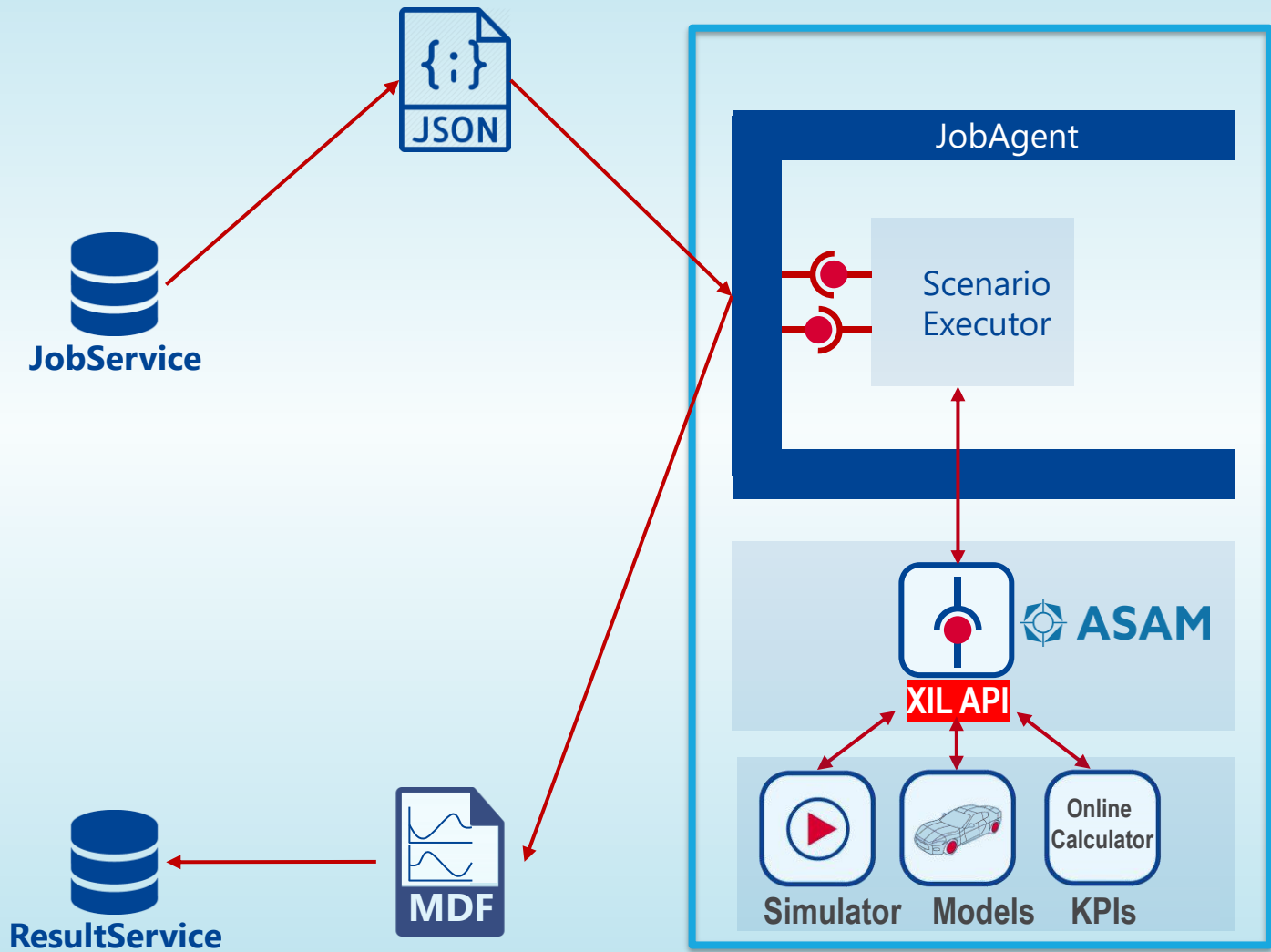
Opinion / Proposal

- Do not seek for more new Standardization topics.
  - *Too much work has already been done, other work is already on-going*

- Clearly identify use cases, end customers pain points and resulting business models.

- Approach:
  Combine and connect existing standards from 'old' (i.e. traditional resp. established) ASAM areas
  (i.e. ASAM MCD) and (i.e. ASAM TESTING)
  (disclaimer: „Combine" can mean: adaptation, tailoring, smaller additions)

- Create an overall and overarching marketing story, how a well-selected set of EXISTING ASAM
  standards will support the entire community to become more efficient
  (end-user but also tool providers!)

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