ASAM Technical Seminar 2021

ASAM XIL V3.0

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AUDI AG

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Online-Meeting

ASAM
Association for Standardization of
Automation and Measuring Systems

Agenda

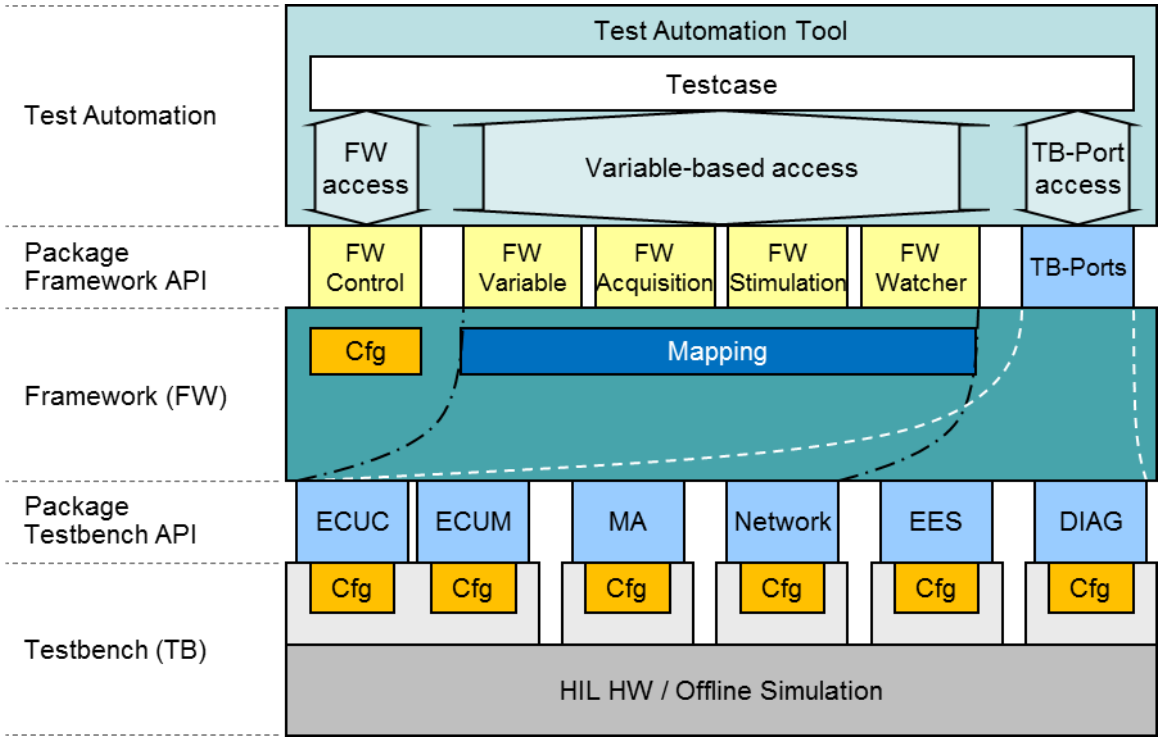
1	Introduction to the XIL Standard
2	Motivation and Topics of Project XIL V3.0
3	Use Cases Service Oriented Communication
4	Use Cases from VDA Project Group „SIL Standardization“
5	Improvement of the Documentation
6	Timeline and Participants

Introduction to the XIL Standard

Motivation of the XIL Standard

- Standardize the communication between test automation software and X-in-the-loop test benches
  -> Interaction of different test automation tools with different test bench tools via one interface
  -> Reduction of total costs

- XIL Concept of Ports and Framework:
  - Testbench API (Port Access)
  - Framework API (Variable Access)



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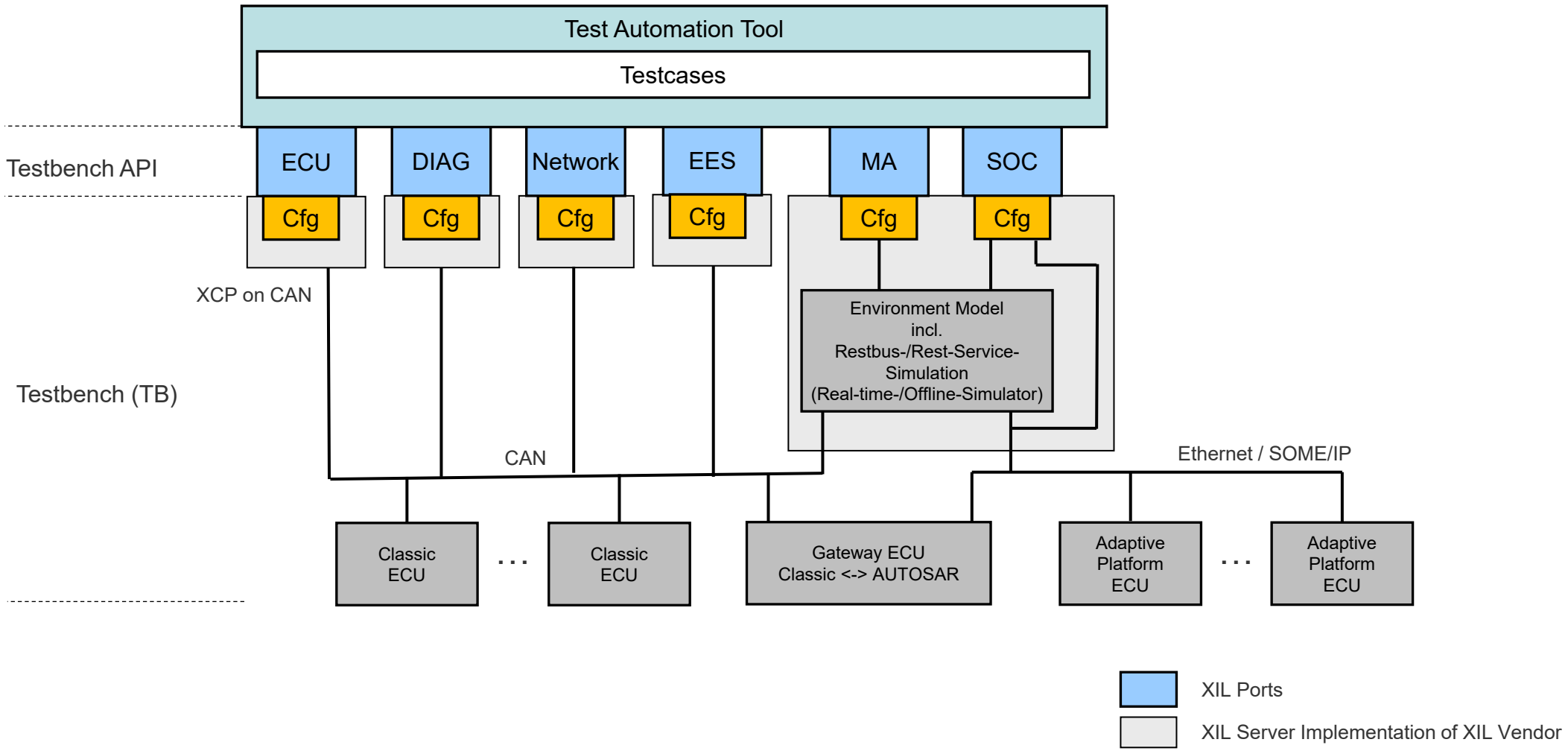
Motivation and Topics of Project XIL V3.0

- Service oriented communication has become an important foundation in automotive software architecture. And its importance will further increase in the coming years. This creates a great need for APIs that enable and facilitate test and validation of services and their communication. The XIL API should be extended accordingly.
- Consideration of requirements from the VDA* project group “SIL Standardization” . Some of these requirements are optionally dependent on the resources that are provided to the project.
- Consolidation of ECUM and ECUC Testbench ports into a common ECU Testbench port.
- Usage of XIL on LINUX platforms.
- The consideration of these goals also leads to fundamental changes in the existing interfaces, especially in the value container.

*VDA: Verband der Automobilindustrie e.V. (German Association of the Automotive Industry)

Motivation and Topics of Project XIL V3.0

Future XIL Architecture Draft (illustration without Framework)



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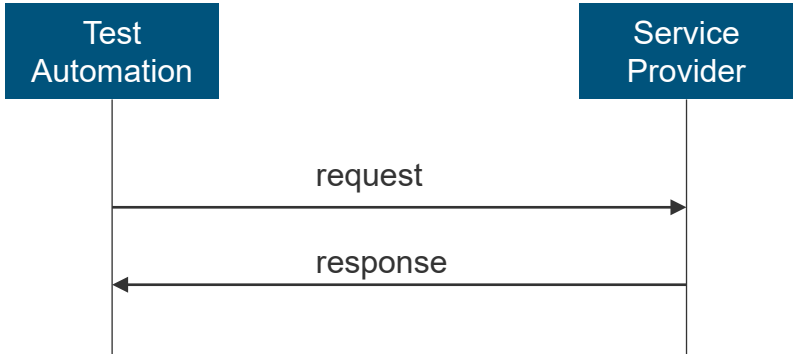
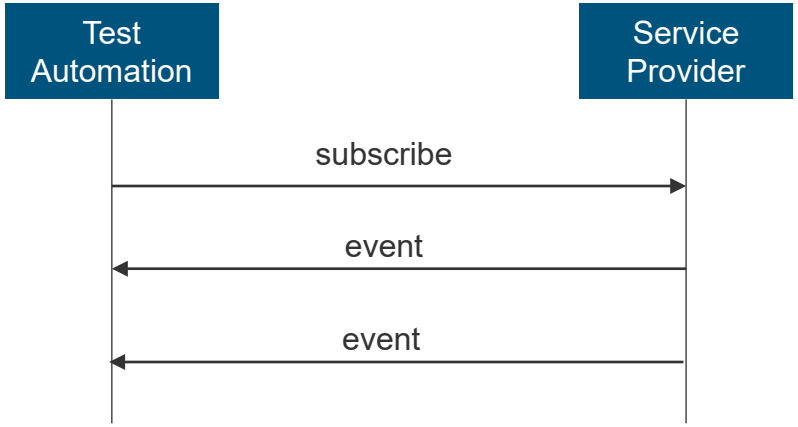
Use Cases Service Oriented Communication

Test of a Service Provider

- Asynchronous and synchronous calls of services methods and reception of responses.



- Register as event listener and receive notifications. Events can be transmitted by callback or polling.



- Provider-sided handling of fields.

Use Cases Service Oriented Communication

Test of a Service Consumer

- Rest service simulation (including configuration, start and stop the simulation of single services, methods, events, and fields)

- Event actuation (including the usage of values from the simulation).

Use Cases Service Oriented Communication

Integration Test of an ECU Network

- Logging of network traffic (including service discovery) on service level (configuration, support of triggered logging and data access to logged data)

- Dynamical change of simulation behavior (configuration and execution of scripts).

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Use Cases from VDA Project Group „SIL Standardization“

Planned Features

Use Case	New Feature
Traceability of test case execution based on documentation of tool incidents and logs	Gathering of tool-specific log file locations via the XIL API after test execution, s.th. the test tool can collect all logs.
	Logging of simulation implementation events via the XIL API during test execution, s.th. tool-incidents can be related to the test result data.
Processing in test automation based on data streaming (variable values together with timestamp)	Support of data streaming (timestamped data).
Fault injection	Activate / Deactivate model instrumentation via API while running test case (Open loop / Closed loop switches).

Use Cases from VDA Project Group „SIL Standardization“

Optional Features

Use Case	Optional Feature
Usage of complex setup routines (addressing tool interdependencies and implementation of automated error handling strategies)	Support for multiple events (especially status events) independent of their order of occurrence
Performant setup (especially for large systems with large sets of metadata)	Performant gathering of system information (with reduced amount of API calls)
Control of simulation systems via Testbench API	Access to system description
	Control of Simulation Systems
Deployment of simulation artefacts	
Recording of user defined events/conditions	

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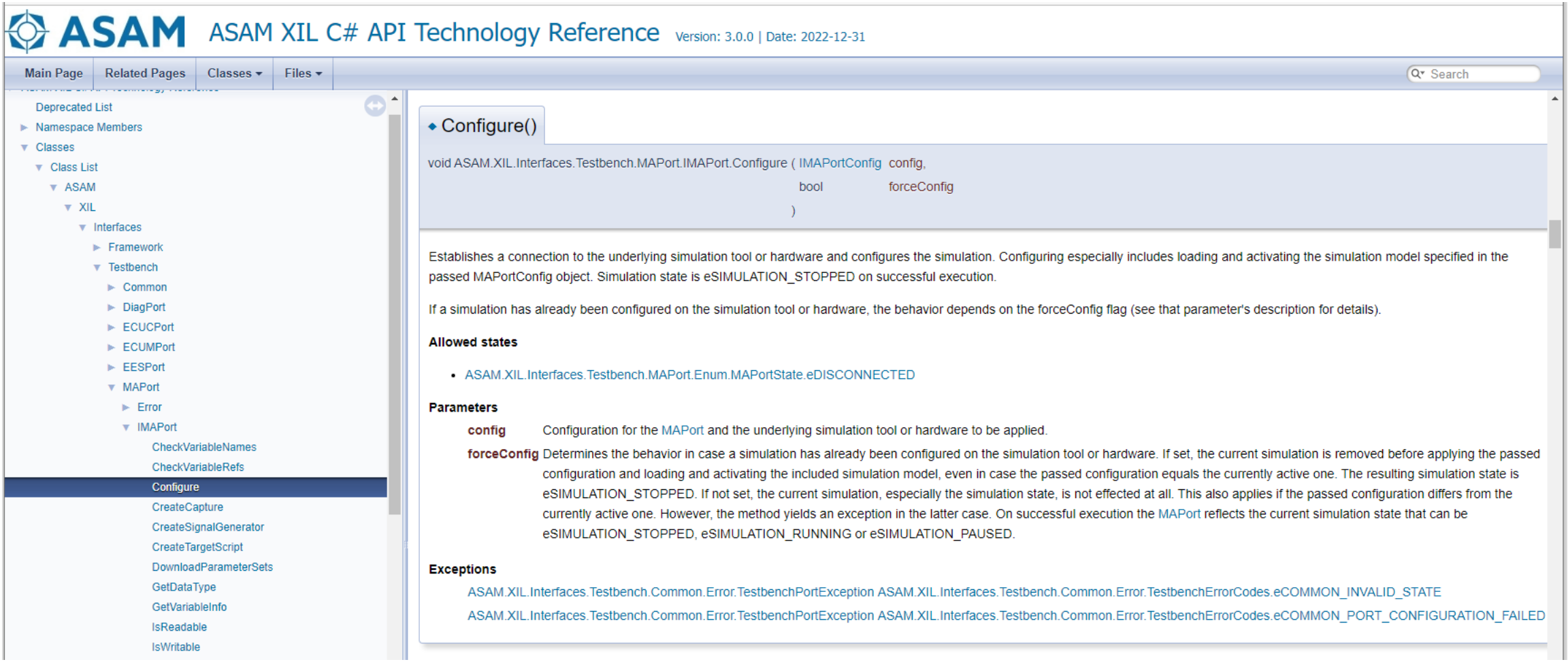
Improvement of the Documentation

API Documentation as HTML Export



...will also be provided retrospectively for XIL 2.2

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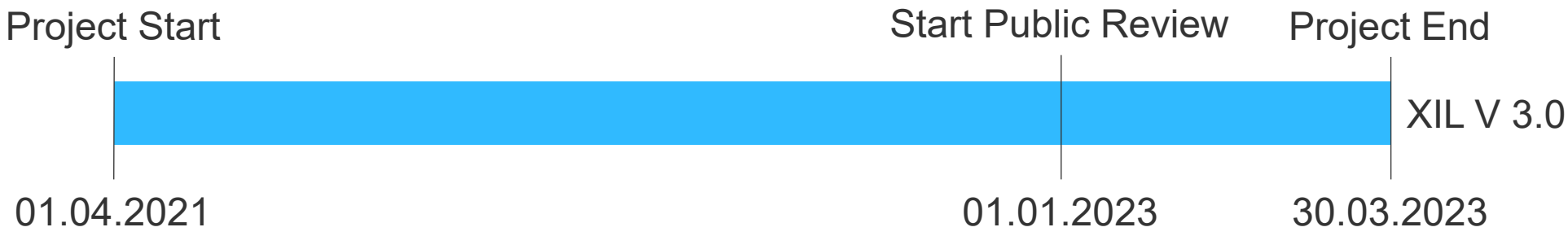
Timeline and Participants

Timeline



Timeline and Participants

Participants

- AUDI AG
- dSPACE GmbH
- ETAS GmbH
- Iasys Technology Solutions Private Limited
- MicroNova AG
- RA Consulting GmbH
- Robert Bosch GmbH
- TraceTronic GmbH

Thank you for your attention!

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