ASAM Regional Meeting North America 2023

ASAM Update

Marius Dupuis
Chief Executive Officer, ASAM e.V.

September 19th, 2023
Santa Clara, CA

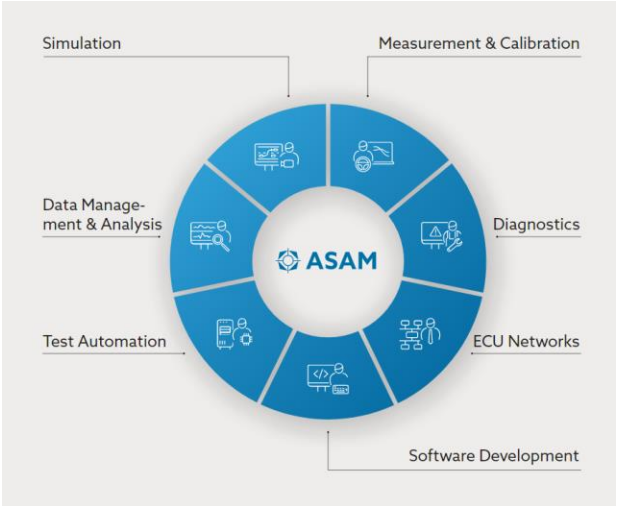
ASAM Association for Standardization of Automation and Measuring Systems

Welcome

Many reasons to be here…

Regional Meeting North America in California

Inform



Discuss

Inspire

Connect

Grow

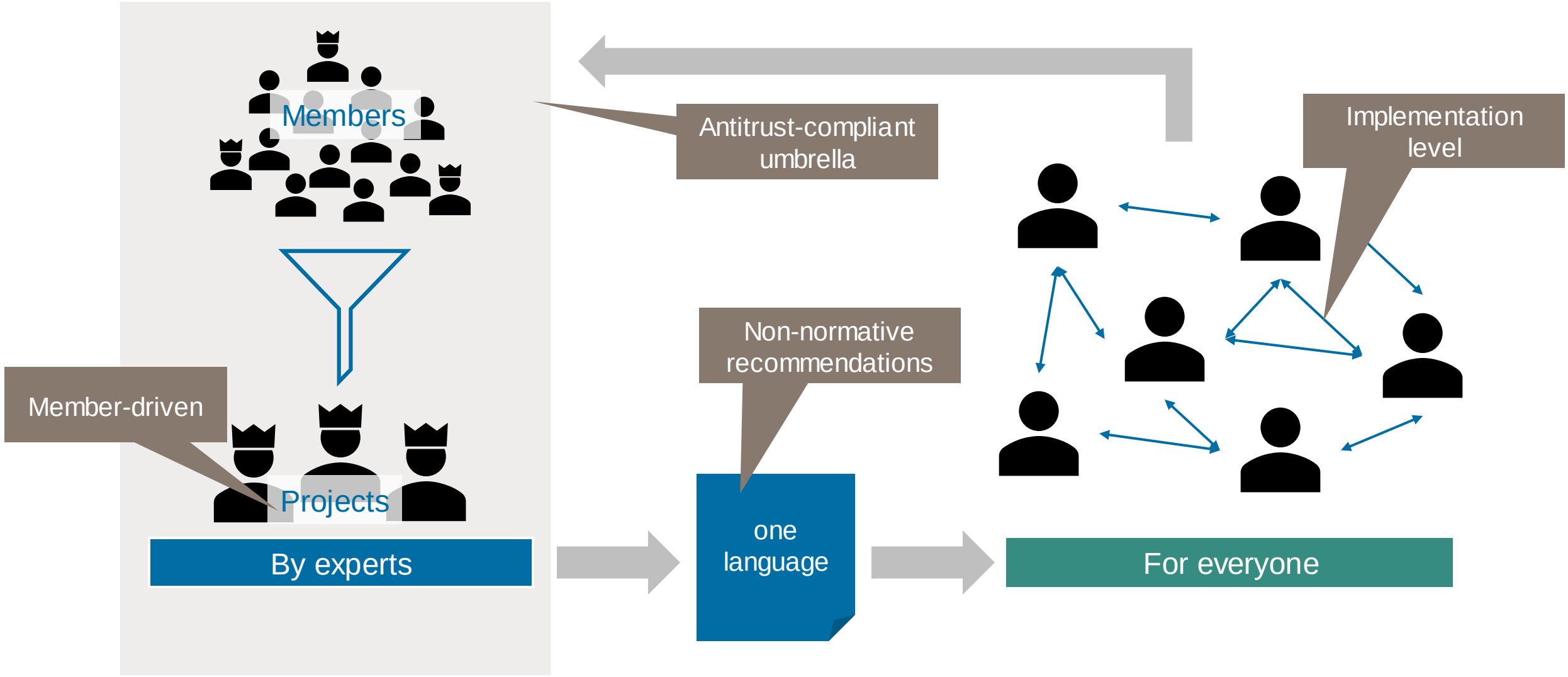
Celebrate

ASAM

ASAM in a nutshell

The essence of ASAM (Association for Standardization of Automation and Measuring Systems) since 1998

How it works

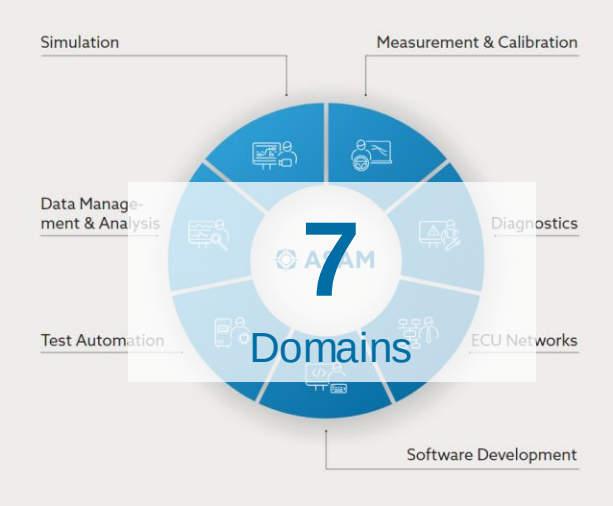


ASAM in a nutshell

Statistics July 2023

ASAM = Association for Standardization of Automation and Measuring Systems

- founded in 1998 -



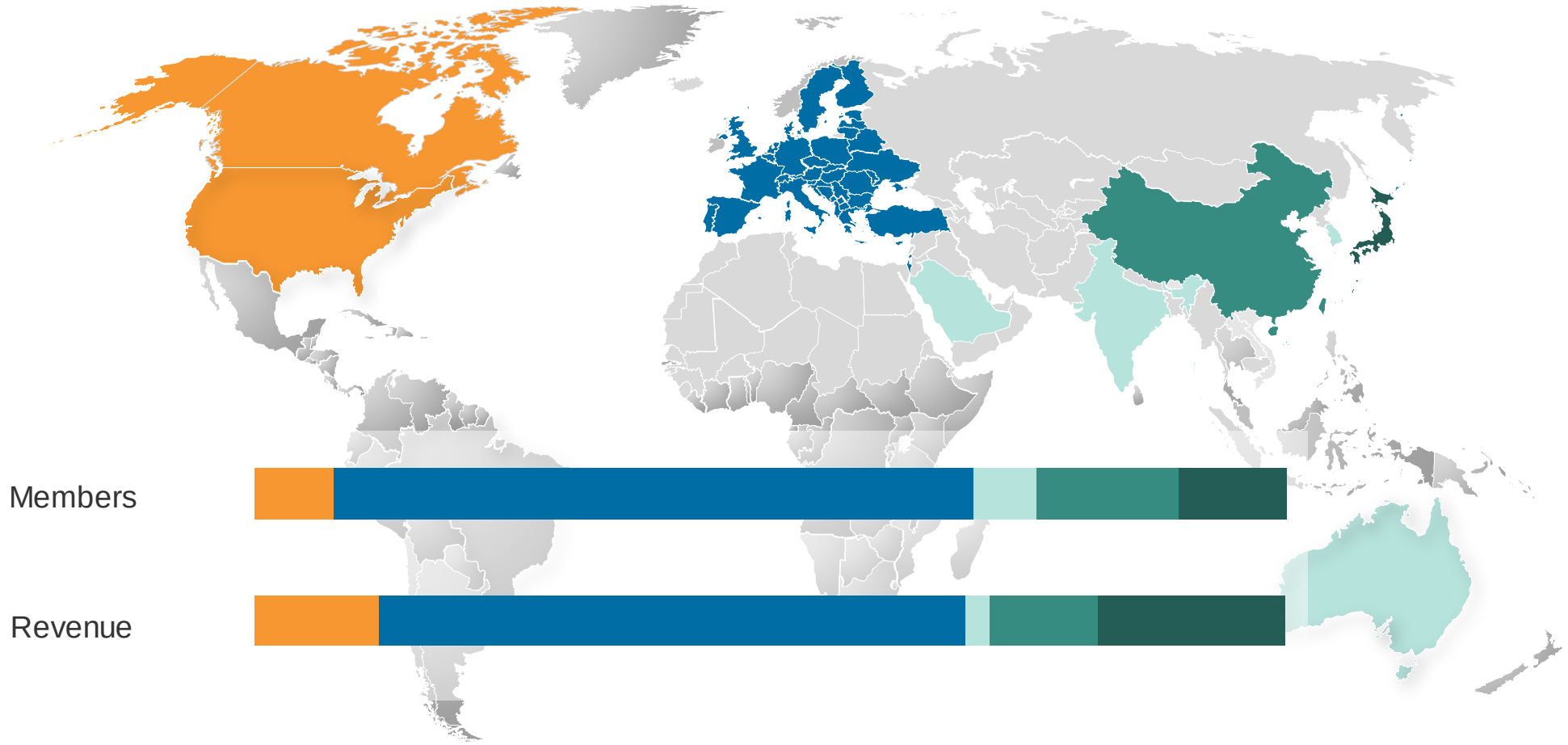
Measurement & Calibration	Diagnostics	ECU Networks	Software Development	Test Automation	Data Management & Analysis	Simulation
ARTI	MCD-2 D	MCD-2 NET	CC	ACI	CEA	OpenCRG
CDF	MCD-3 D		FSX	ASAP 3	ODS	OpenDRIVE
CMP			ISSUE	ATX		OpenLABEL
CPX			MDX	GDI		OpenODD
HMS			SCDL	iLinkRT		OpenSCENARIO
MCD-1 CCP				MCD-3 MC		OSI
MCD-1 POD				OTX Extensions		
MCD-1 XCP				XIL-MA		
MCD-2 CERP						
MCD-2 MC						
MDF						

37
Released Standards

ASAM

ASAM – a truly international association

Global distributions of members and revenue, forecast for 2024 (as of July 20th, 2023)



New ASAM members in 2023

Since Jan 2023, 29 new organizations joined ASAM (+1 honorary member, +1 rebranded member)

Status: Jul 31, 2023

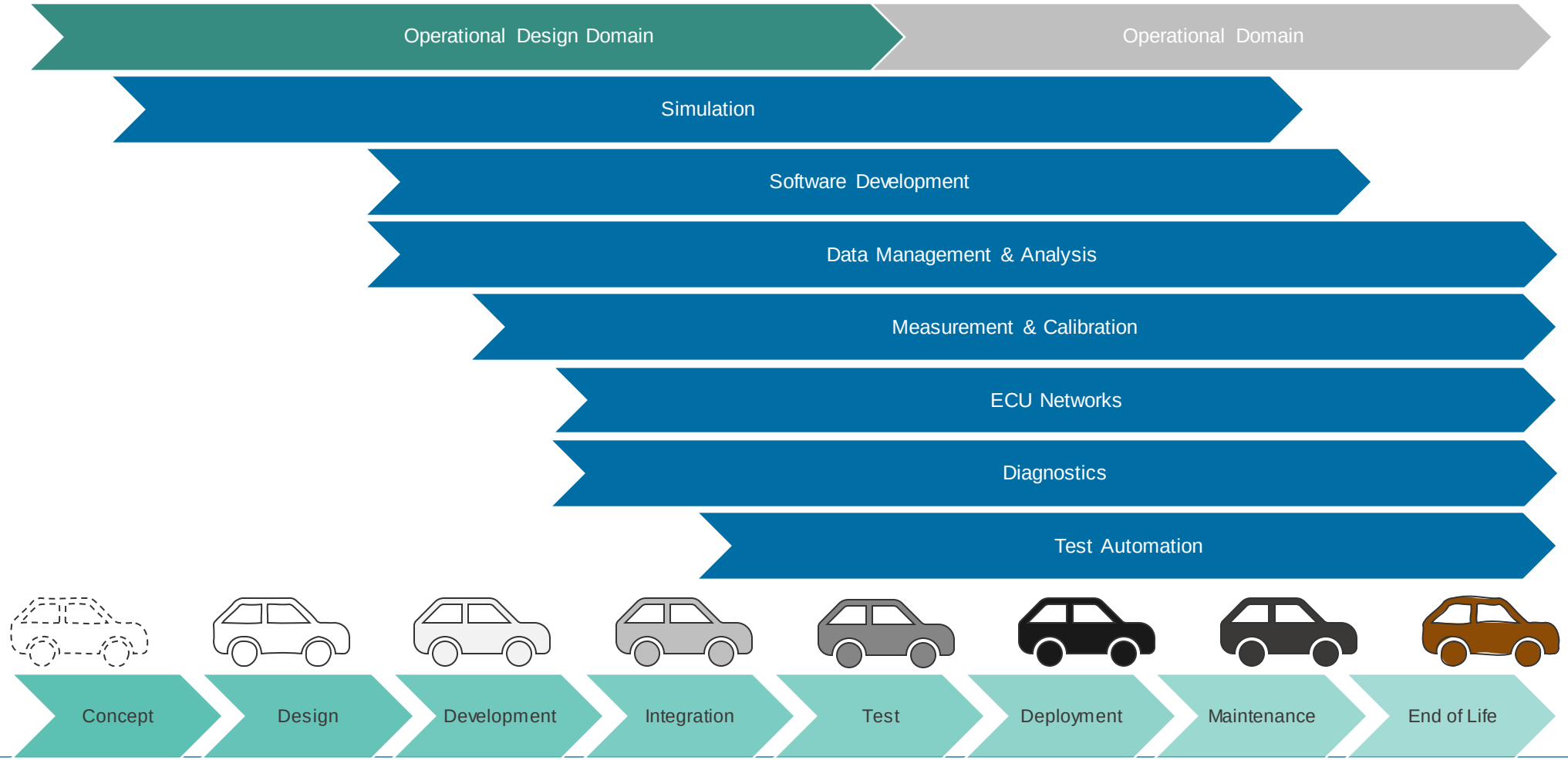
ASAM

Scope

Covering the entire vehicle lifecycle

ASAM standards

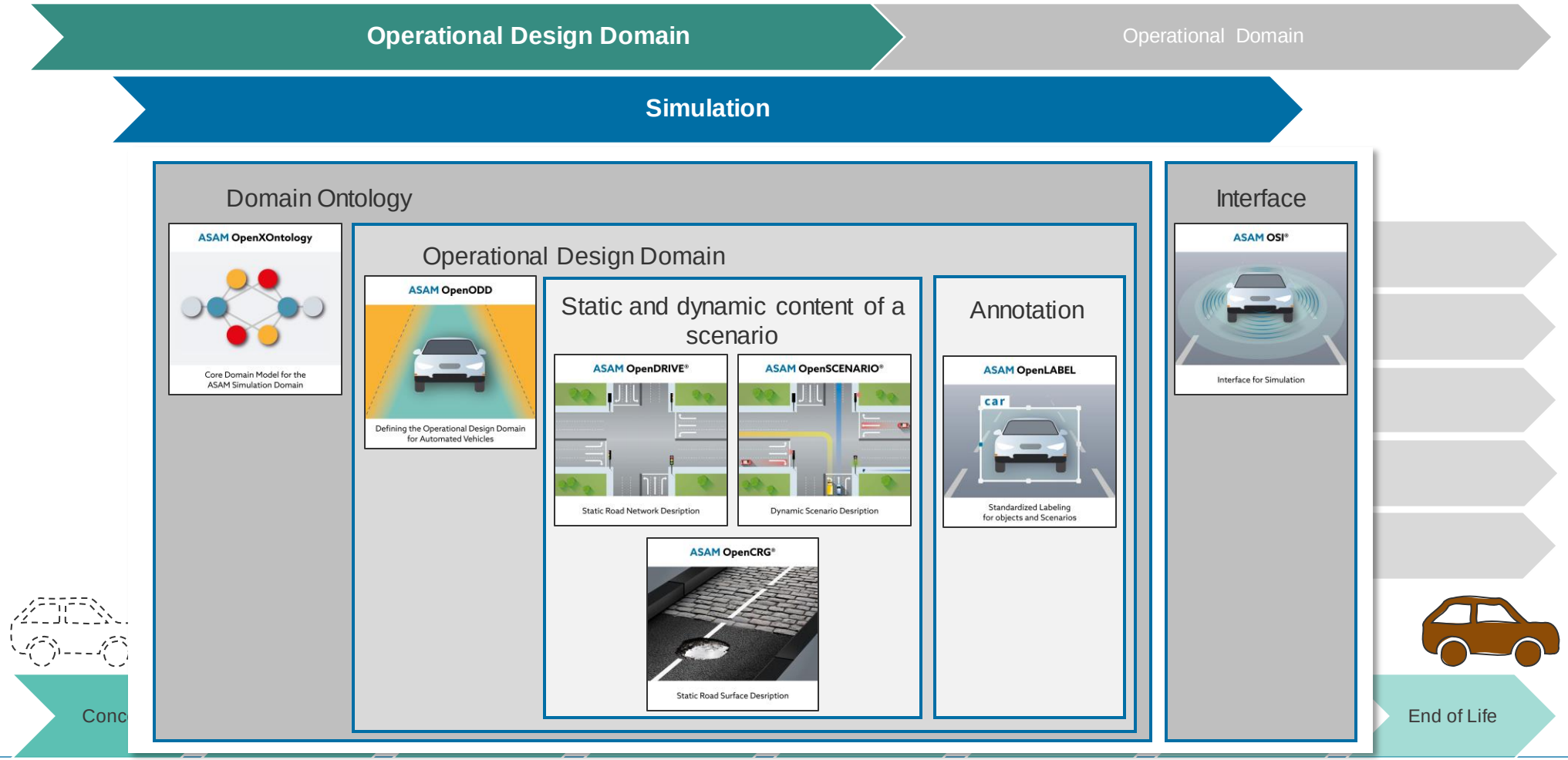
The V-cycle and beyond – covered by ASAM domains



ASAM

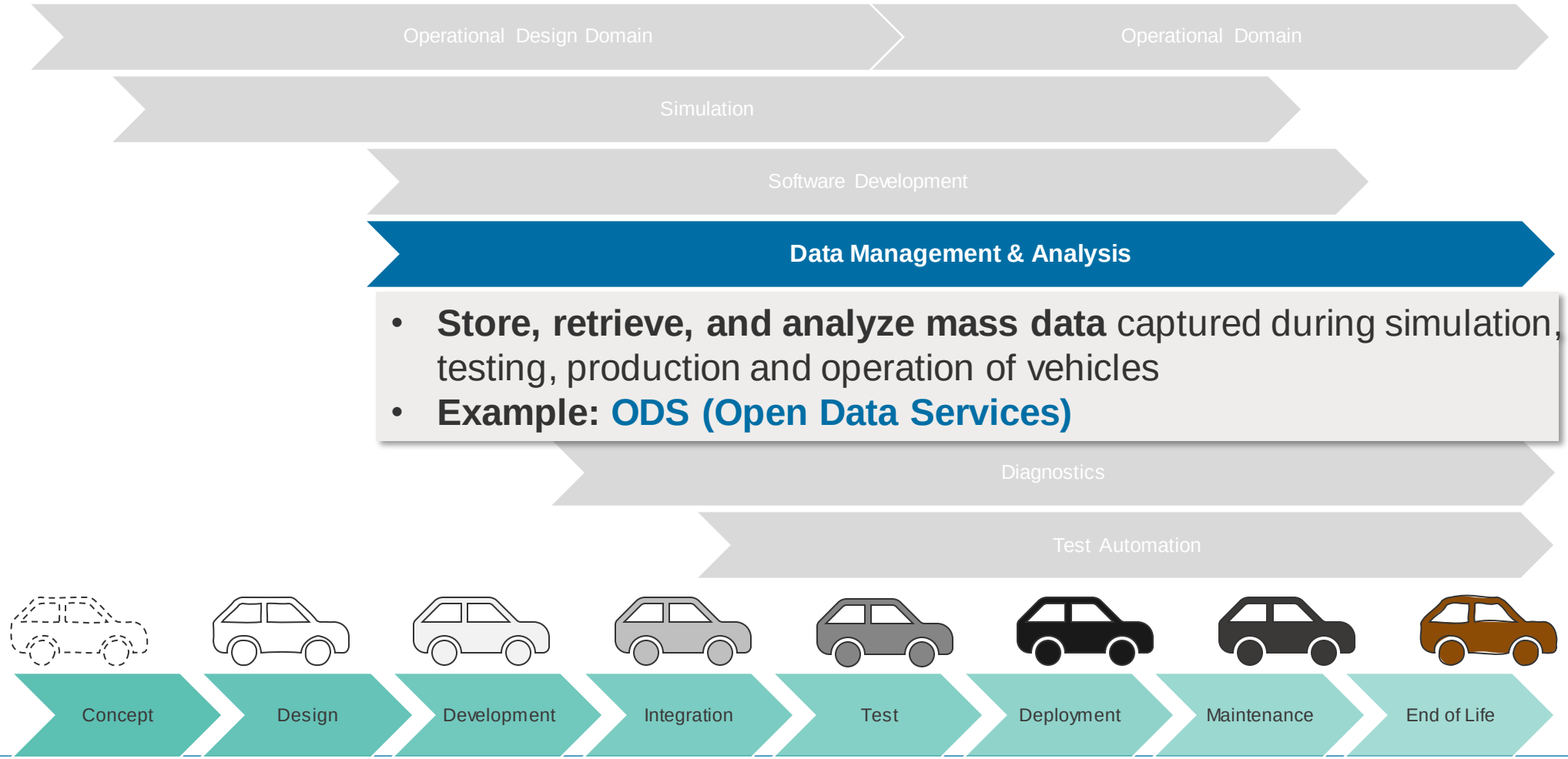
ASAM standards for ADAS/AD

Domains in Detail



ASAM standards

Domains in detail

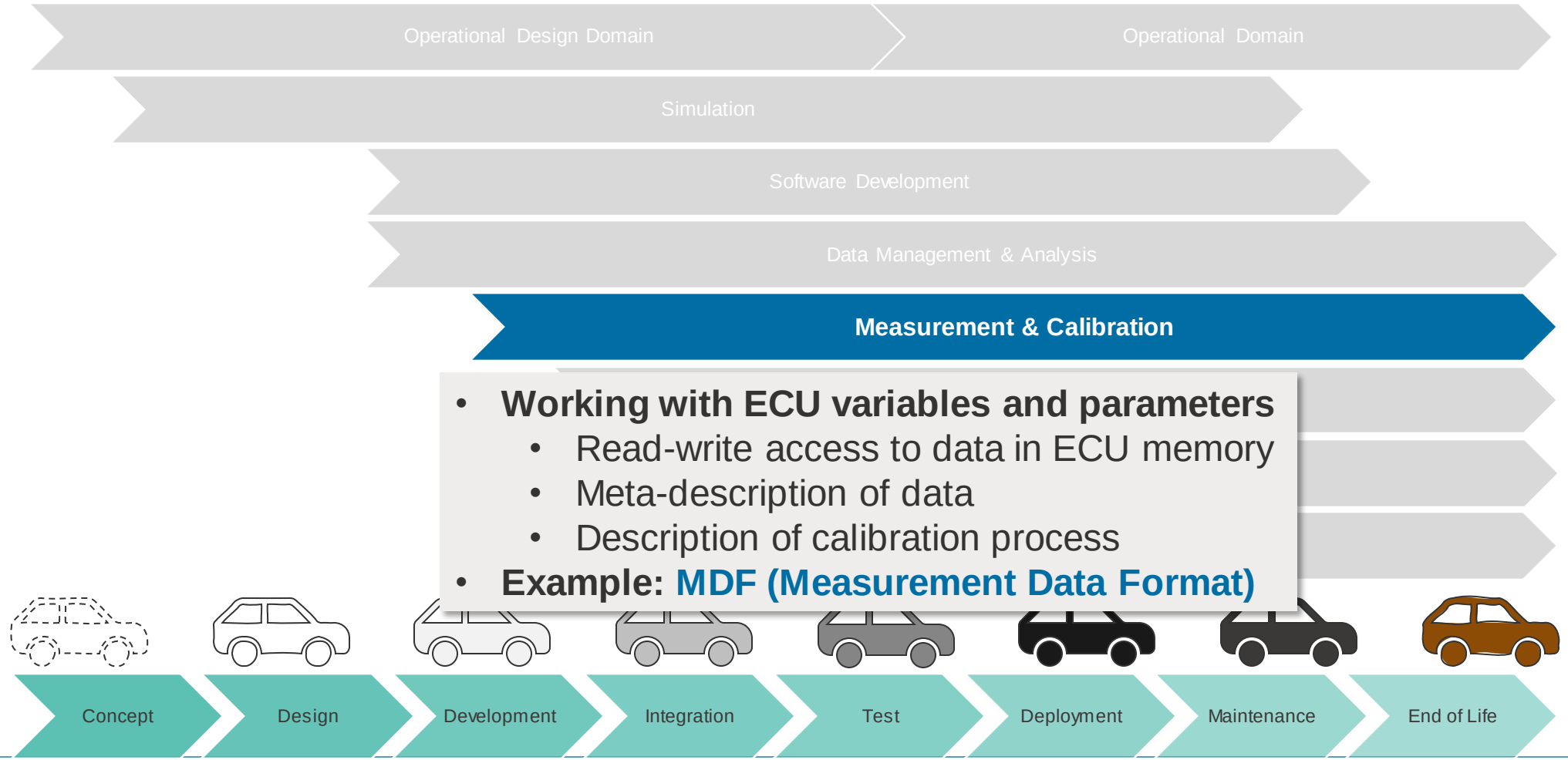


- **Store, retrieve, and analyze mass data** captured during simulation, testing, production and operation of vehicles
- **Example: ODS (Open Data Services)**

ASAM

ASAM standards

Domains in detail

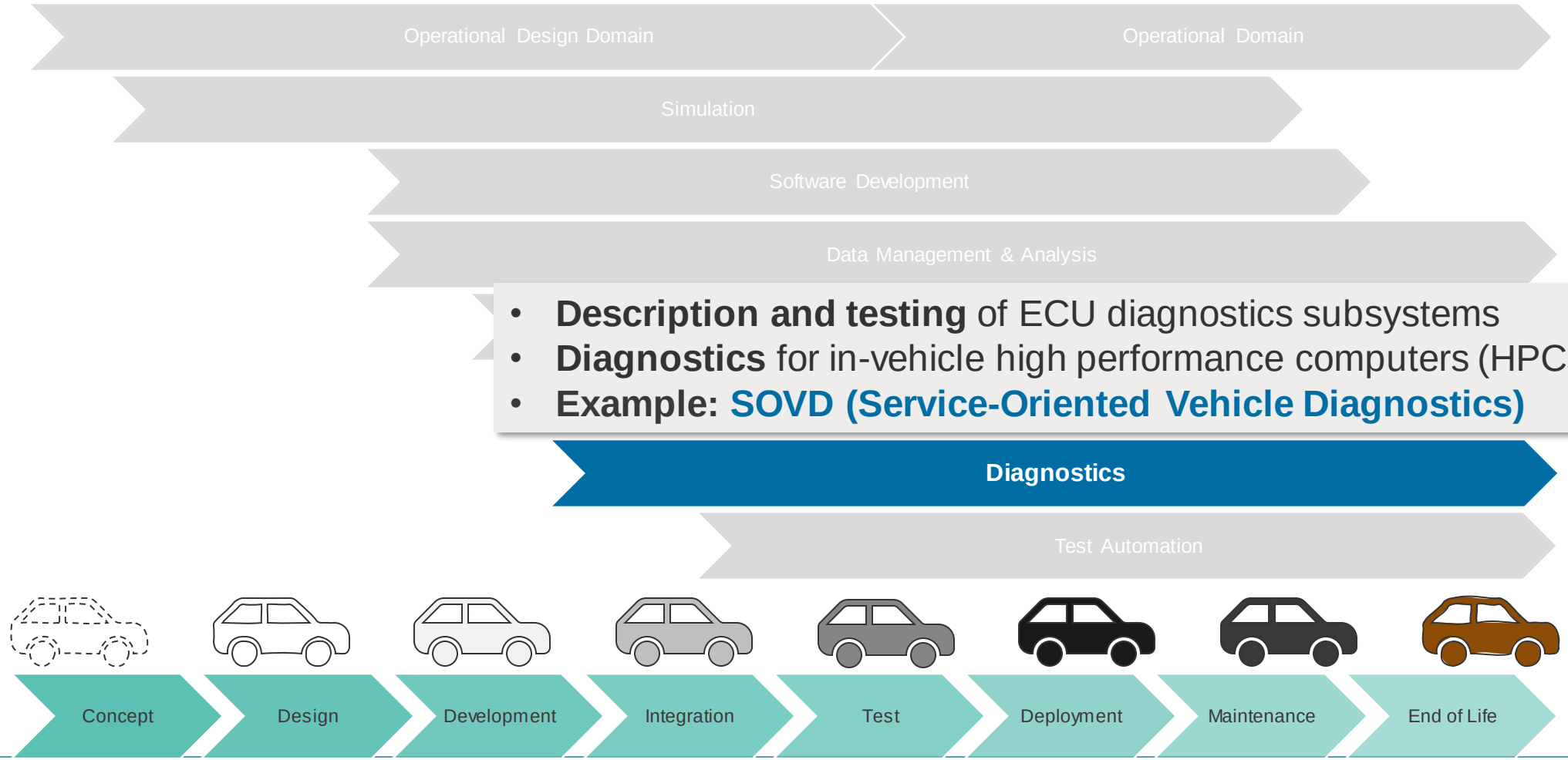


- **Working with ECU variables and parameters**
  - Read-write access to data in ECU memory
  - Meta-description of data
  - Description of calibration process
- **Example: MDF (Measurement Data Format)**

ASAM

ASAM standards

Domains in detail

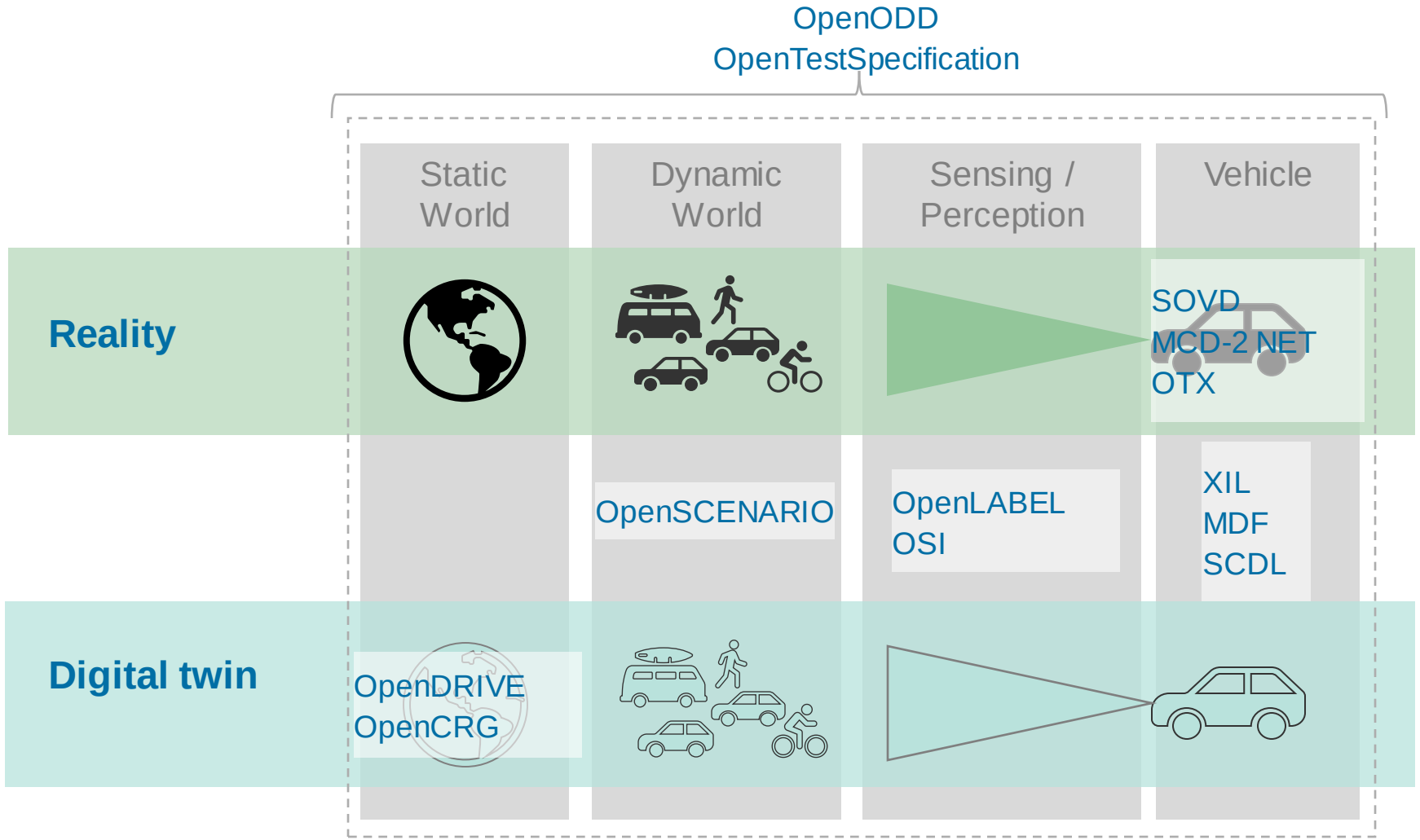


- **Description and testing** of ECU diagnostics subsystems
- **Diagnostics** for in-vehicle high performance computers (HPCs)
- **Example: SOVD (Service-Oriented Vehicle Diagnostics)**

ASAM

ASAM's offer

Connecting the real and the virtual world

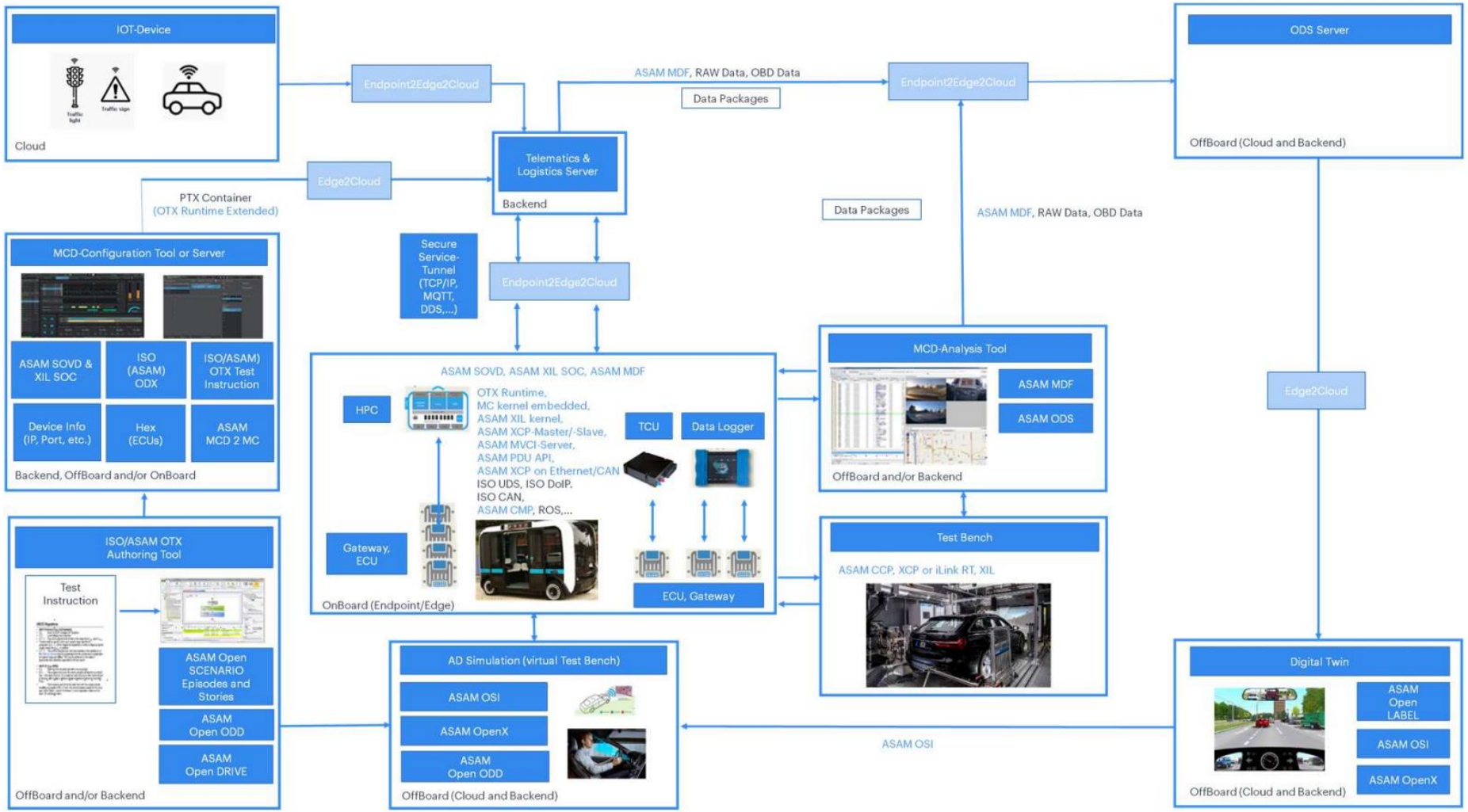


and many more….

ASAM

ASAM's offer

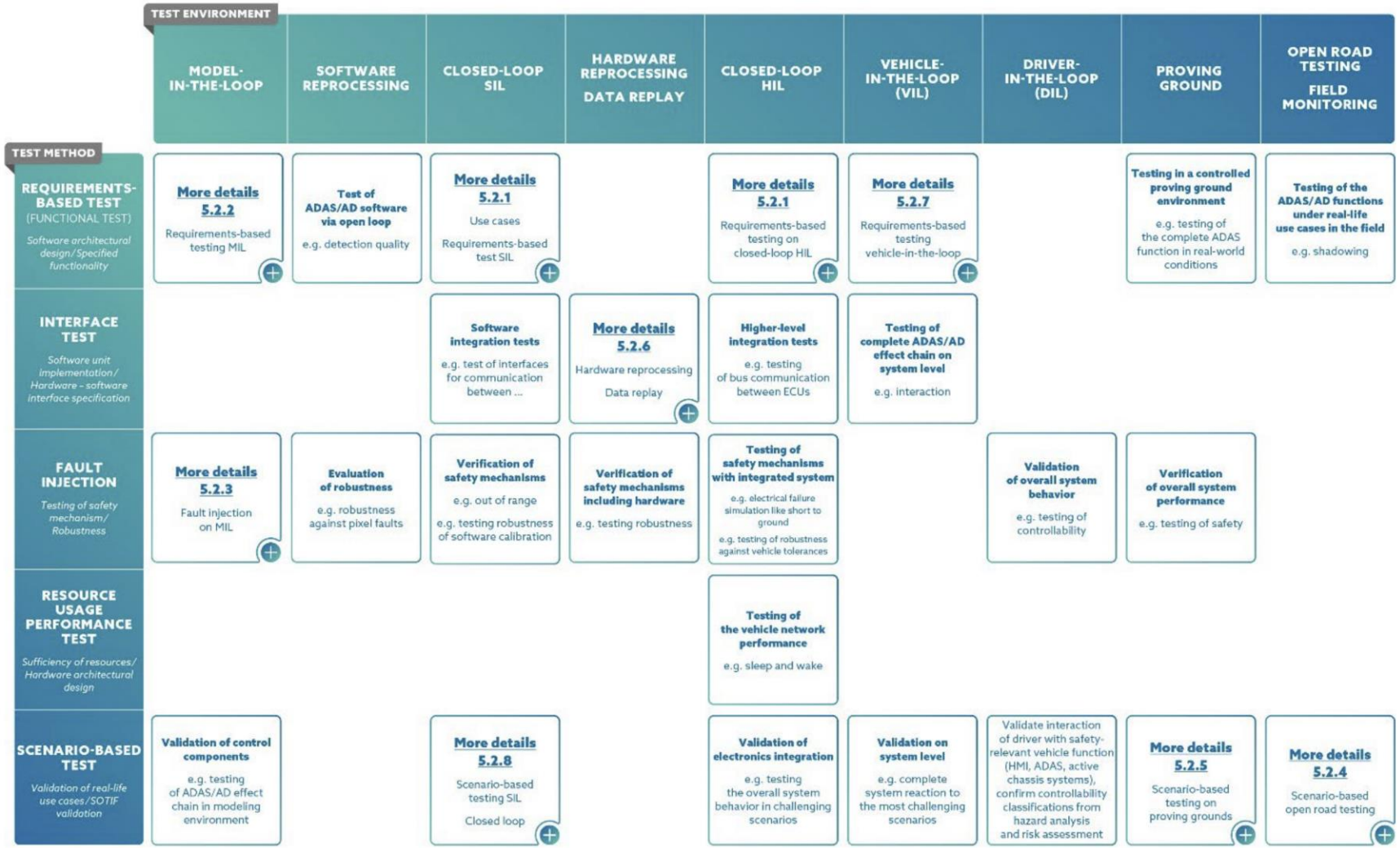
Development and testing



Source: RAC

ASAM's offer

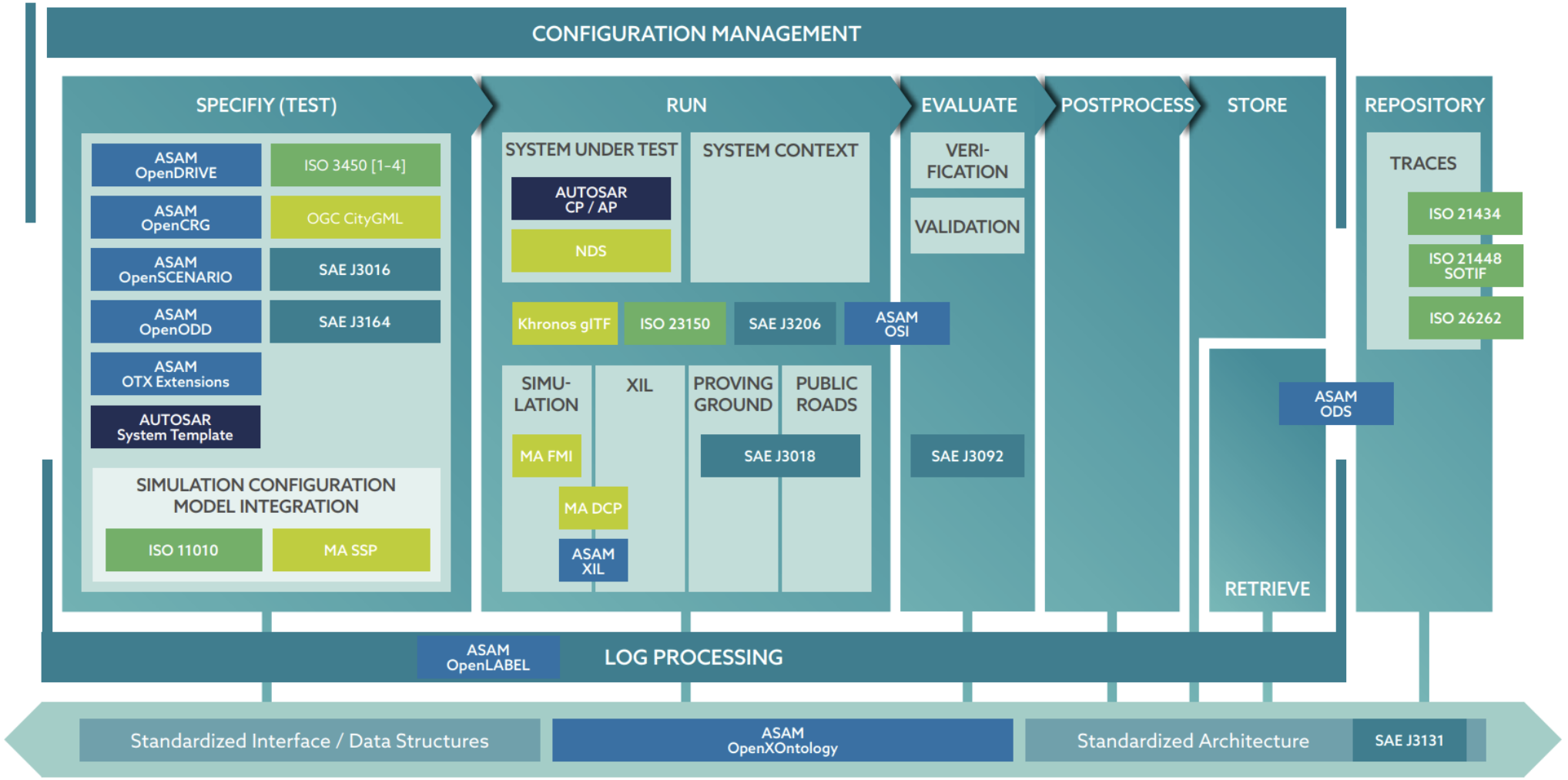
Environments and methods: seeing the big picture



https://www.asam.net/standards/asam-test-specification/

The landscape of (open) standards in ADAS/AD testing

Abstract architecture of a simulation environment



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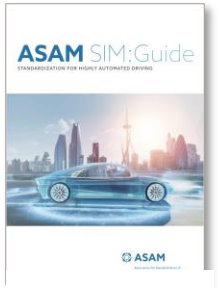
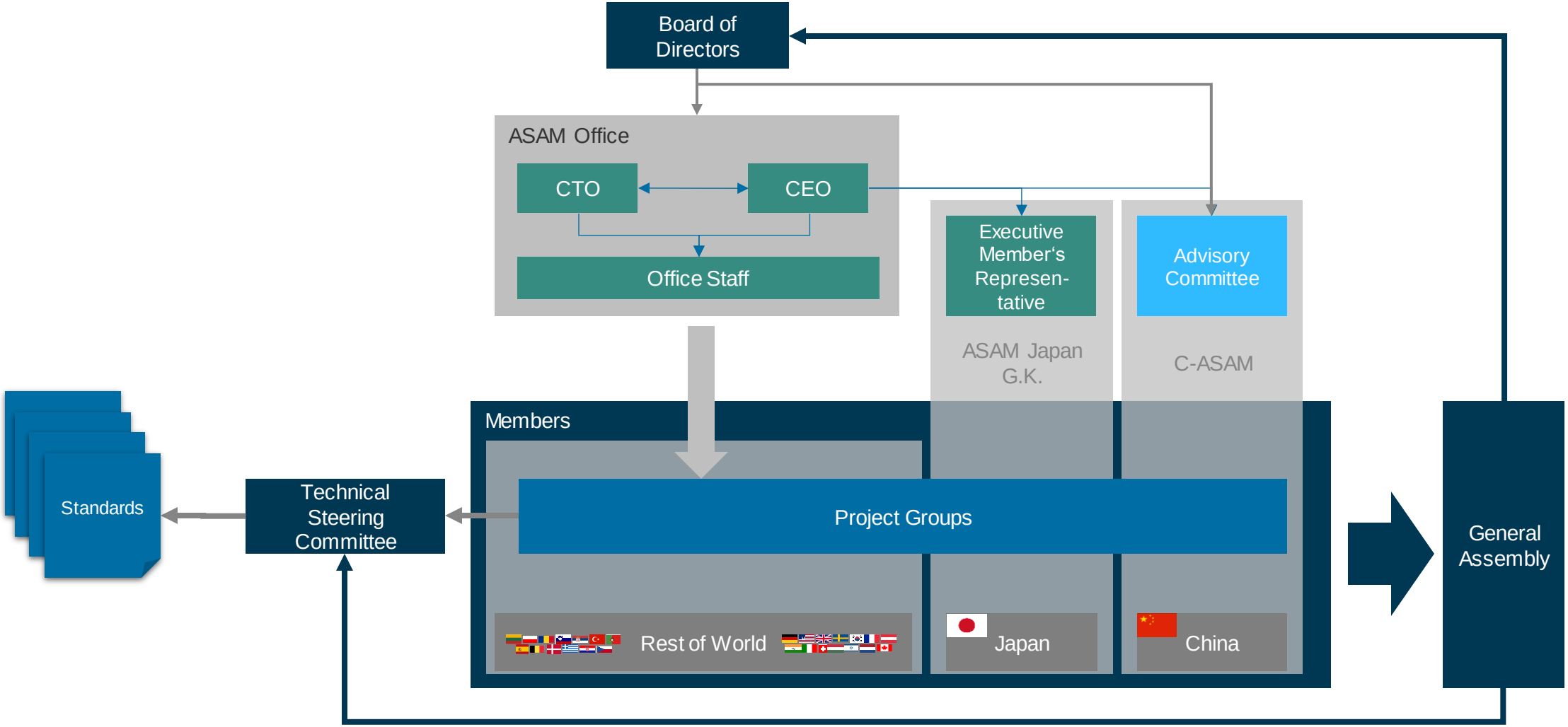


ASAM

Office and Organization

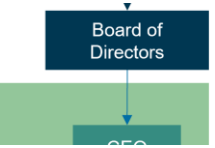
ASAM Organization

Shared Responsibilities – Combined Forces



ASAM Board of directors 2023-2025

Leading the association



Dr.
René Grosspietsch
BMW AG
Profile

Dr.
Andras Kemeny
Driving Simulation Association
Profile

Dr.
Ralf Nörenberg
HighQSoft GmbH
Profile

Prof. Dr.
Frank Köster
DLR
Profile

Speaker

Armin Rupalla
RA Consulting GmbH
Profile

Technical Steering Committee – Term 2022 - 2024

Leading the standardization

Make an impact!

Technical Steering Committee

2024 ELECTION

Term 2024-2026

Gil Amid
Foretellix Ltd.

Dr. Christoph Dallmayr
Vector Informatik GmbH

Christian Pahlke
TÜV SÜD

Oliver Philipp
Siemens Industry Software GmbH

Dr. Andreas Richter
Volkswagen AG

Dr. Gerald Sammer
AVL List GmbH

Speaker

Michael Schwarzbach
BMW Group

Markus Steffelbauer
Softing Automotive Electronics GmbH

Dr. Jörg Supke
EMOTIVE GmbH & Co KG

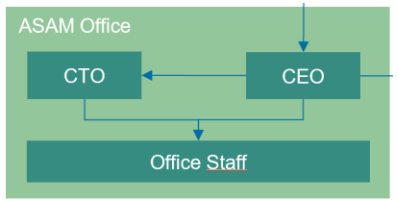
Jacques Weber
Vitesco Technologies France

Thilo Wenzel
ETAS GmbH

ASAM

ASAM Office 2023

The ASAM team “at your disposal” – at any time



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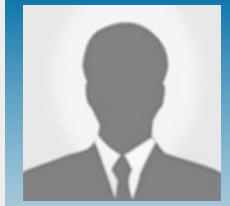
Technology Manager
(from Nov 1st, 2023)

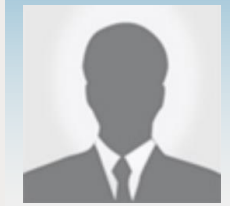
NN 2
Technology Manager
(from Nov 1st, 2023)

Mohammed Habib
Technology Manager
Phone: +49 8102 70139-088
mohammed.habib@asam.net

Extension 2023



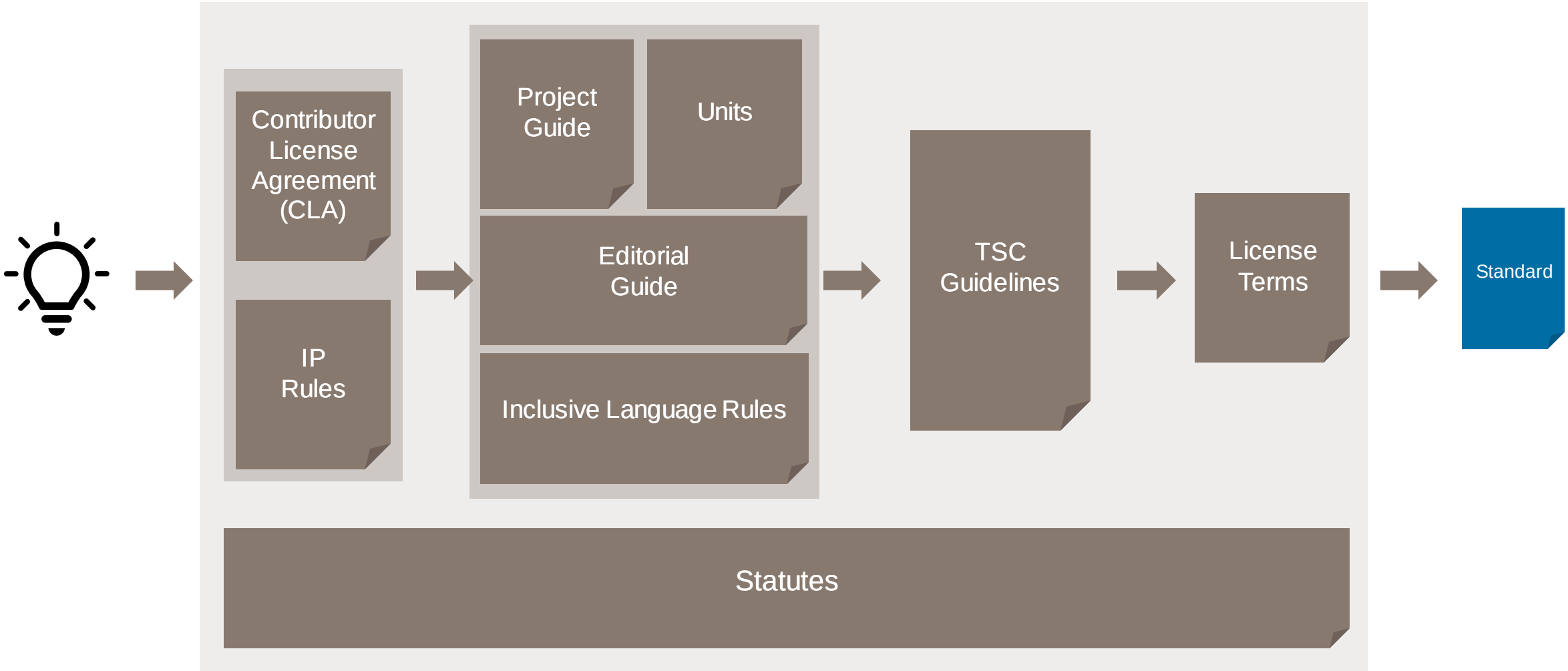
NN
IT Administrator and Software Developer



NN
Technology Manager

ASAM Regulations

Updating the framework along the workflow



ASAM

ASAM Strategy

Re-thinking the organization

Core values → Vision → Mission → Strategy

Sequence of strategy workshops

Apr 18, 2023

Strategy discussion initiation

- *BoD*
- *CEO / CTO*

Apr 19, 2023

Strategy discussion initiation

- *TSC*

May 11, 2023

Strategy discussion kick-off

- *BoD*
- *CEO / CTO*

Jul 11, 2023

Strategy brainstorming

- *TSC*

Jul 25/26, 2023

Office Workshop

- *Office*

Sep 27/28, 2023

ASAM Strategy workshop

- *BoD*
- *TSC*
- *Office*

Oct 18, 2023

Feedback and Review

- *TSC*

Events

ASAM – a truly international association

Lobbying for ASAM and its standards worldwide

ASAM

Partnerships

Strategic partnerships

AUTOSAR –
AUTomotive Open System ARchitecture
www.autosar.org

Eclipse Foundation
www.eclipse.org

IAMTS e.V.
International Alliance for Mobility Testing and Standardization
www.iamts.org

ISO
International Organization for Standardization
www.iso.org

MIPI Alliance
www.mipi.org

Modelica Association / FMI - Functional Mock-up Interface
www.fmi-standard.org

MOST Cooperation
www.mostcooperation.com

prostep ivip Association
www.prostep.org

SAE International
www.sae.com

The Autonomous
www.the-autonomous.com

Government funded R&D projects

KisSME

Artificial Intelligence (AI) for the selective near-real-time recording of scenario- and maneuver data during the testing of highly-automated vehicles

- Funded project, Germany
- Duration:
- http://www.kissme-projekt.de/

RDV - Real Driving Validation

Extension of the verifiability of continuous SW Integration in communication with vehicles in the field

- Funded project, Germany
- Duration
- www.eclipse.org

Set Level

SET Level creates an environment for simulation-based testing and development of automated driving functions (simulation platform).

- Funded project, Germany
- Duration: 2019 - 2022
- https://setlevel.de/

SIP-adus

(Strategic Innovation Program - Innovation of Automated Driving for Universal Service)
Implementation of cooperative automated driving.

- Funded project, Japan
- Duration: 2014 - 2023
- https://en.sip-adus.go.jp/

TreuMoDa

(Trust Office for Mobility Data)
Guidelines for the data protection-compliant exchange, processing and storage of data.

- Funded project, Germany
- Duration: 2022 – 2024
- https://www.treumoda.de/

AVEAS

(Absicherungsrelevante Verkehrssituationen Erheben, Analysieren, Simulieren)
Detect critical real-world situations and transfer them into models for scenario generation and simulation.

- Funded project, Germany
- Duration: 2021 – 2024
- https://www.aveas.open-set.org/

Government funded R&D projects

ASAM acting on the advisory board

Sunrise - (Safety assUraNce fRamework for connected, automated mobIlity SystEms)
PL: IDIADA (H2020 project)
The project will define, implement and demonstrate the building blocks of this Safety Assurance Framework: harmonized and scalable safety assessment methodologies, procedures and metrics tailored for use cases, a federated European Scenario Database framework and its necessary data interfaces, a commonly agreed simulation framework including tools and interfaces.
Duration: 2022-2025
SUNRISE - ika (rwth-aachen.de)

VIVID
PARTNER PROJECT OF THE DIVP PROJECT

VIVID
PL: DLR (BMWI/VDI)
In the framework of VIVID, industrial and academic partners work on the design and implementation of a high-fidelity virtual validation tool chain, connecting software-based traffic and sensor simulations with environmental and signal propagation modelling as well as installed sensor performance testing in virtual environments.
https://www.safecad-vivid.net/

ArchitectECA2030

ArchitectECA2030
PL: Infineon (H2020 project)
ArchitectECA2030 envisions to cover both safety assurance by design and safety assurance in-operation.
- Manage failure modes, uncertainties, and failure probabilities
- Develop a widely agreed homologation framework
- Propose, align and develop a concept
- Bring together the representative stakeholders from ECS industry

https://autoc3rt.automotive.oth-aw.de/

GAMMS
ROBOTS MAPPING FOR ROBOTS

GAMMS
PL: GEOSAT(H2020 project)
The overall objective of GAMMS is to develop an autonomous terrestrial mobile mapping system (AMMS),
based on the tight integration of
- Autonomous vehicles (AVs)
- Navigation/geodetics
- Artificial Intelligence (AI) technologies.

https://gamms.eu/index.php/robots-mapping-for-robots/

V4SAFETY

V4Safety
PL: TNO (H2020 project)
The main objective of V4SAFETY is to provide a comprehensive procedure for conducting computer simulations to determine the long-term performance and impact of road safety solutions, from the identification and collection of the relevant input data to the projection of the results to a region of interest (e.g., the EU) and a prediction of changes in performance and impact that might be expected in the coming years.
V4SAFETY (v4safetyproject.eu)

ASAM membership

Great value for a moderate investment

The value

Why join ASAM?

Speed

- Ideation at any time
- **12-18 months from idea to standard**
- Committee meetings every 4 months

Assets

- 37 released and regularly updated standards
- 7 domains
- **Free access to all assets for active members**

Leadership

- Committees of industry professionals
  - 5 Board members
  - 12 TSC members

Coverage

- **Standards across the entire vehicle lifecycle**
- Standards for real world and digital twin
- Cutting-edge technologies addressed
  - Simulation
  - HPCs in the vehicle
- Unmatched coverage of the simulation domain

Community

- **430+ like-minded companies**
- Regional study groups
- Global project groups
- Annual member meeting
- Annual technical seminar
- Up-to-date information by newsletters
- Online Member directory
- Easy networking between members

Activity

- 9 releases in 2022
- **400+ participants in technical meetings from 200+ companies**
- 7 active standardization projects
- 1 concept project
- 1 ideation topic
- 2 study groups
- 1 alignement project

Focus

- **Focus on implementation standards**
- Regular scan of technology landscape

Processes

- **Well-established processes**
- Flexibility where necessary
- Permanent monitoring and optimization

Value

- Early access to information
- **Influence on future standards**
- Increased efficiency by standards
- Creation of a competitive market

Conclusion

Why ASAM?

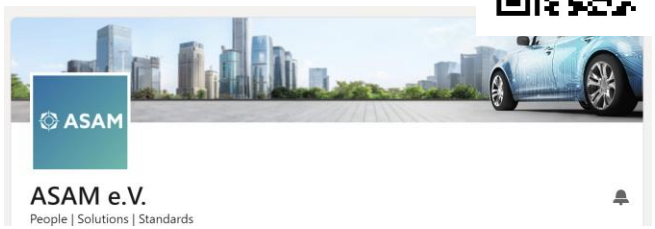
Conclusion

There is no standard answer

but standards are key to the answer – today and tomorrow!

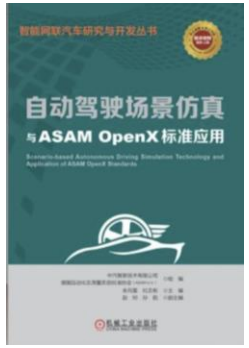
More information about and from ASAM

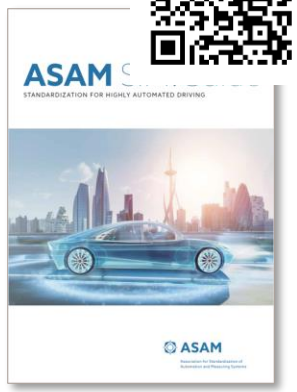
LinkedIn



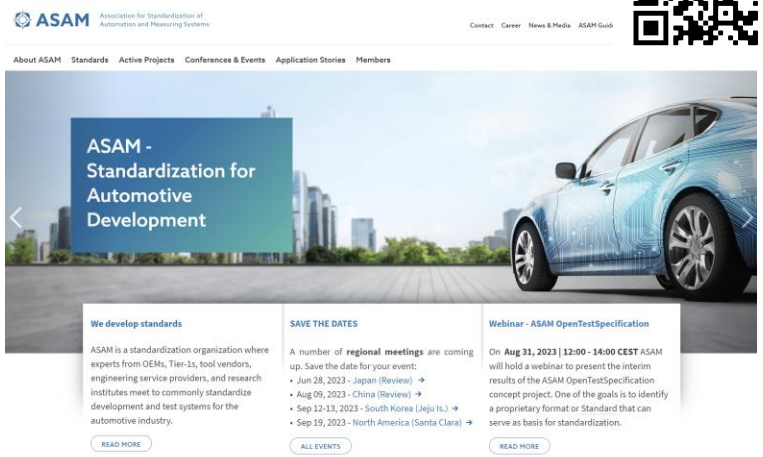
Newsletter

Publications

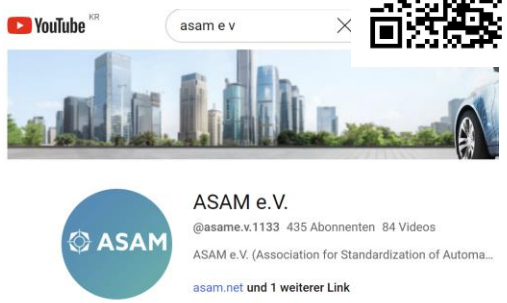




Website



YouTube



WeChat (C-ASAM)

Thank you for your attention!

Visit our booth #209 at the Autonomous Vehicle Technology Expo on Wed/Thu.

Marius Dupuis
CEO
ASAM e.V.

email: marius.dupuis@asam.net

ASAM Regional Meeting North America 2023

Session wrap-up

Marius Dupuis
Chief Executive Officer, ASAM e.V.

September 19th, 2023
Santa Clara, CA

ASAM Association for Standardization of Automation and Measuring Systems

Q&A

Open discussion

Lessons learned

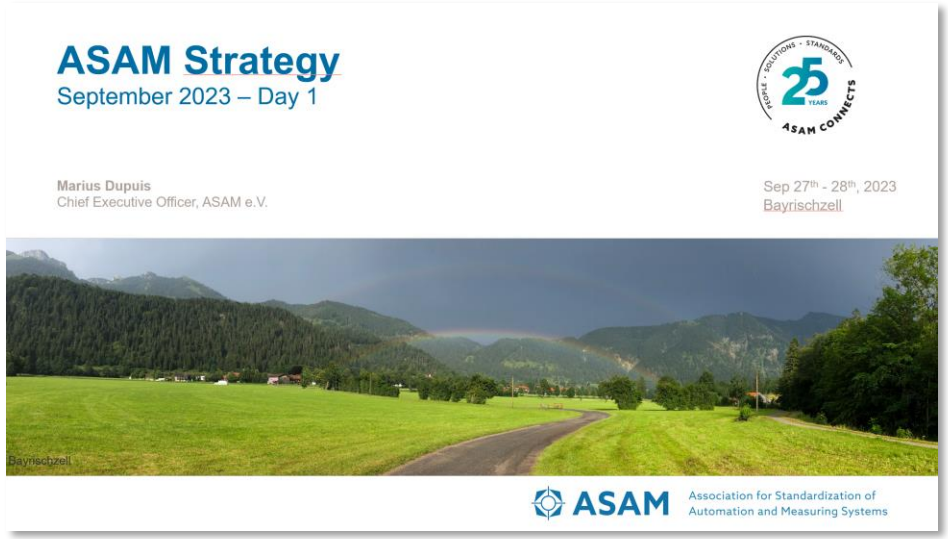
- Your take-aways from today‘s sessions

Lessons to be learned

- Are we approaching the US in the right way?
- What are we missing in our portfolio?
- How could we better support our global membership?

Not-so-frequently asked questions

- Where does standardization (not) work?
- What other industries should we address?



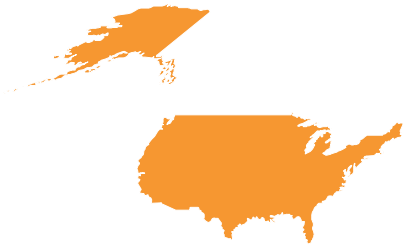
Strategy workshop Sep 27-28, 2023

Future activities

Local workgroups

Future activities

Local



- Ideation
- Workshops
- Webinars
- Projects for local market (e.g., SCDL in Japan)
- Expert groups

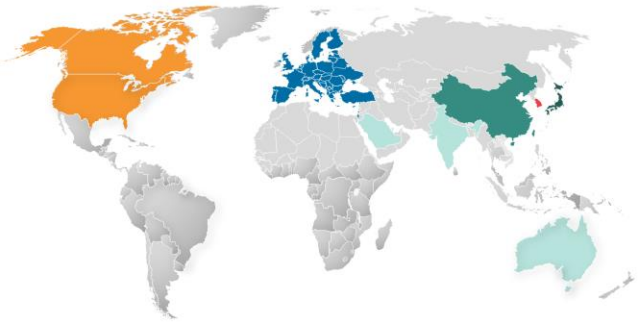
- Few time zones

Regional

- Ideation
- Workshops
- Webinars
- Joint project groups
- Local or joint sub-groups

- Compatible time zones

Global



- Ideation
- Workshops
- Webinars
- Global project groups
- Local or regional sub-groups

- English language
- Conflicting time zones

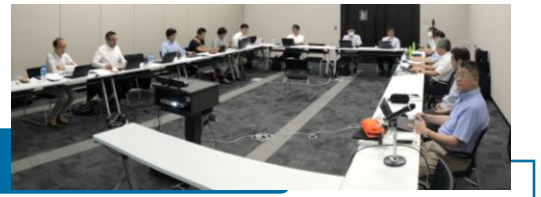
Engagement beyond ASAM

Study groups and committees for members and non-members

ASAM study groups and advisory committees

Lowering the barrier of interaction

Japan



ODS Study Group

- 20+ participants (ASAM members and non-members)
- OEMs, tool vendors, service providers
- Moderated by Yoshiaki Shoi (ASAM Japan G.K.)
- Monthly meetings
- Purpose:
  - Understand the standard‘s latest version and its application in the local market
  - Define use cases and propose requirements for the on-going development of the standard

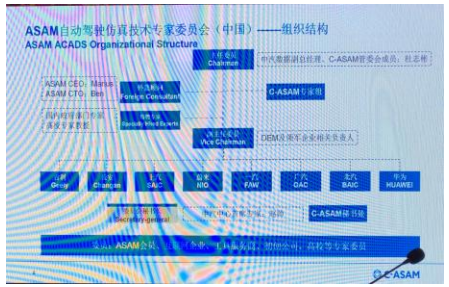
OEM committee

- Representatives of Japanese automotive OEMs (members and non-members)
- Moderated by Yoshiaki Shoi (ASAM Japan G.K.)
- Purpose:
  - Understand ASAM and its standards
  - Share experience with the application of ASAM standards
  - Provide feedback into ASAM for improving / extending the standards

China

Advisory Committee for Automated Driving Simulation (ACADS)

- 34 participants (ASAM members and non-members)
- OEMs, tool vendors, Academia
- Moderated by C-ASAM
- Purpose:
  - Drive the certification of datasets‘ standard compliance
  - Co-ordinate the creation of standard-compliant scenario libraries
  - Drive efforts to achieve credibility assessment for simulation tools



Note: It is in ASAM‘s interest to provide the room for study groups and committees if it helps understand and propagate ASAM‘s standards and assists in the recruitment of new members. It is NOT in ASAM‘s interest and it violates ASAM‘s statutes if such groups are used to form a trust or otherwise agree on measures that influence the market to the benefit of the involved parties only.

Thank you for your attention!

Visit our booth #209 at the Autonomous Vehicle Technology Expo on Wed/Thu.

Marius Dupuis
CEO
ASAM e.V.

email: marius.dupuis@asam.net

Quality checks and certification

Taking responsibility beyond defining standards

Motivation

A real-world example

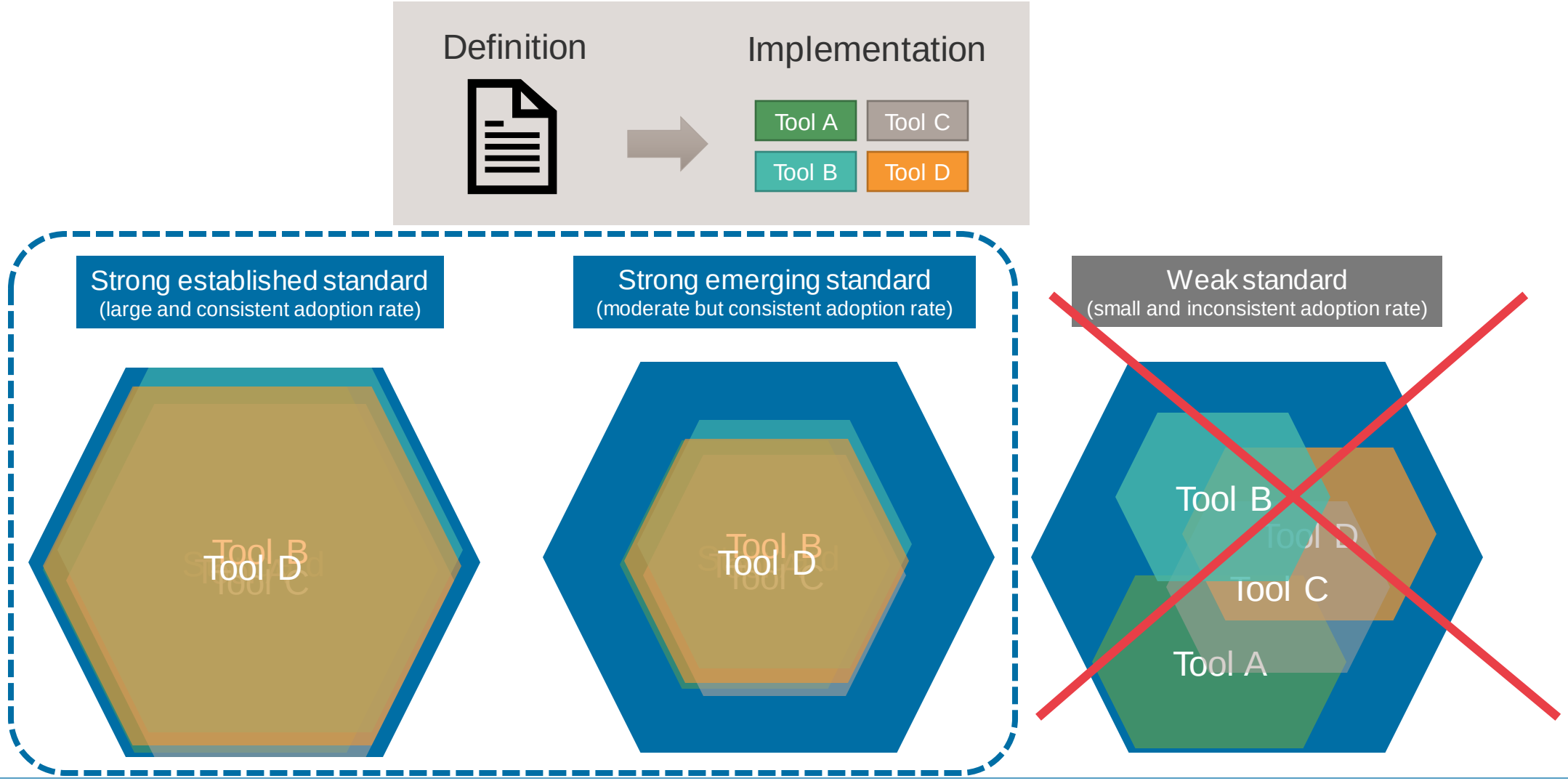
Definition

Implementation

Eight ways to buy a single coffee.

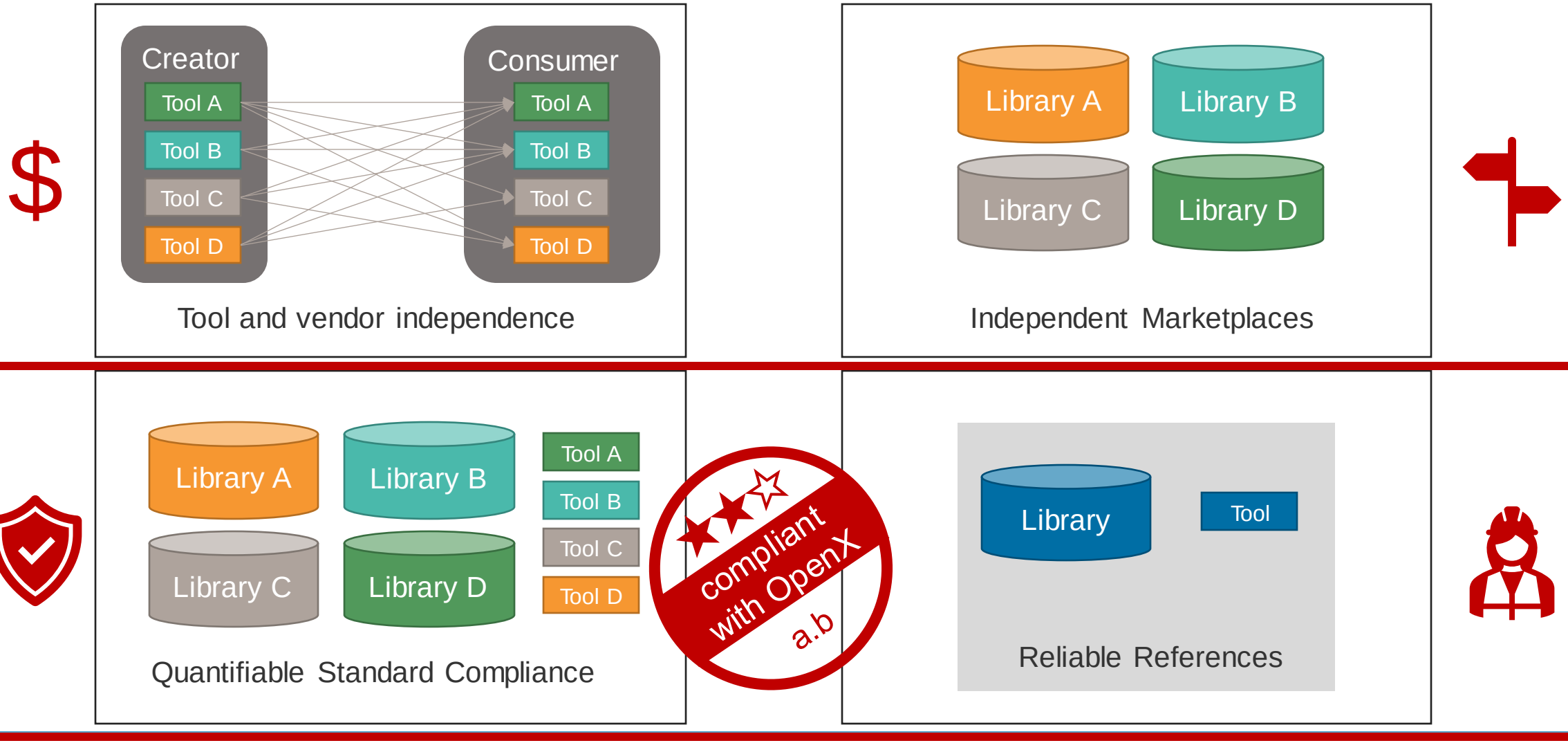
Motivation

Creating strong standards



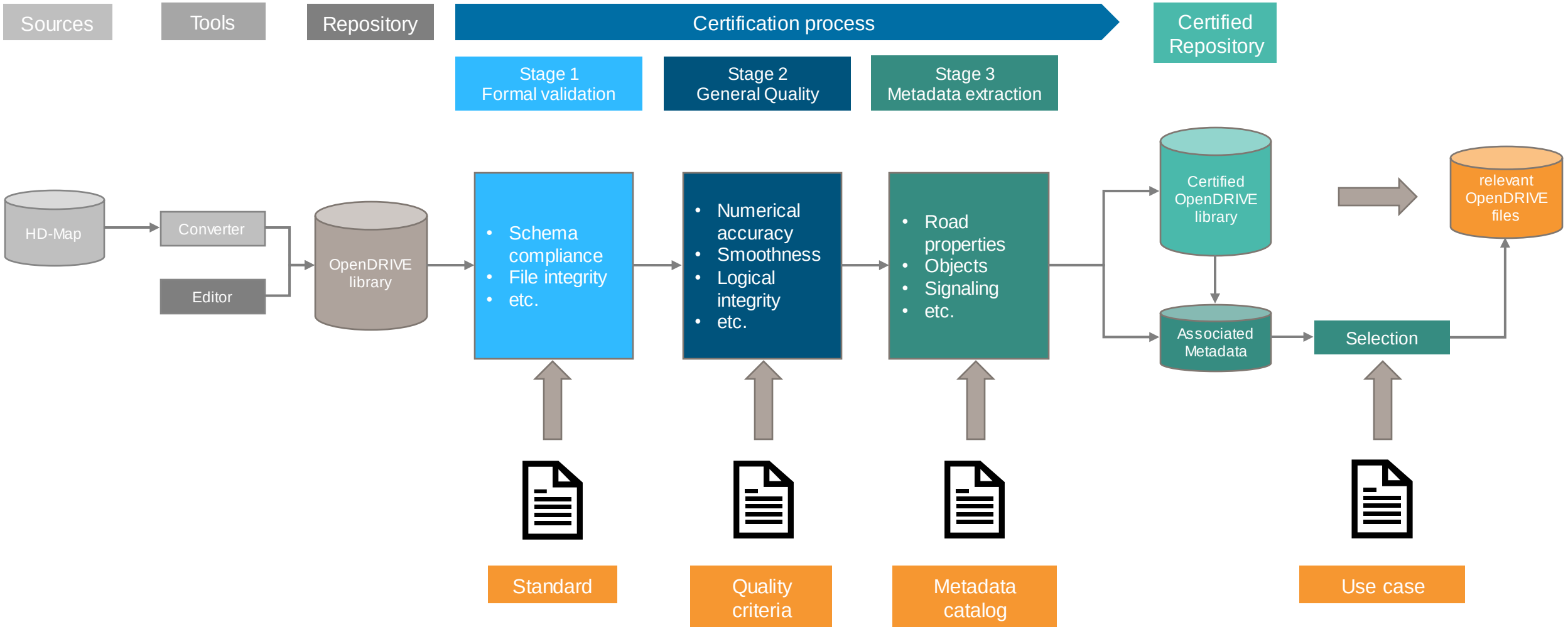
The value of standards

Consistent implementation is key



Data flow for ASAM OpenDRIVE certification

Prototype concept w/ C-ASAM



ASAM

Our reference

Quantifying quality in non-simulation domains

ASAM ODS Cross Test

on: Nov 02 - 03, 2022

at: BMW Training Academy, Unterschleissheim (near Munich), Germany

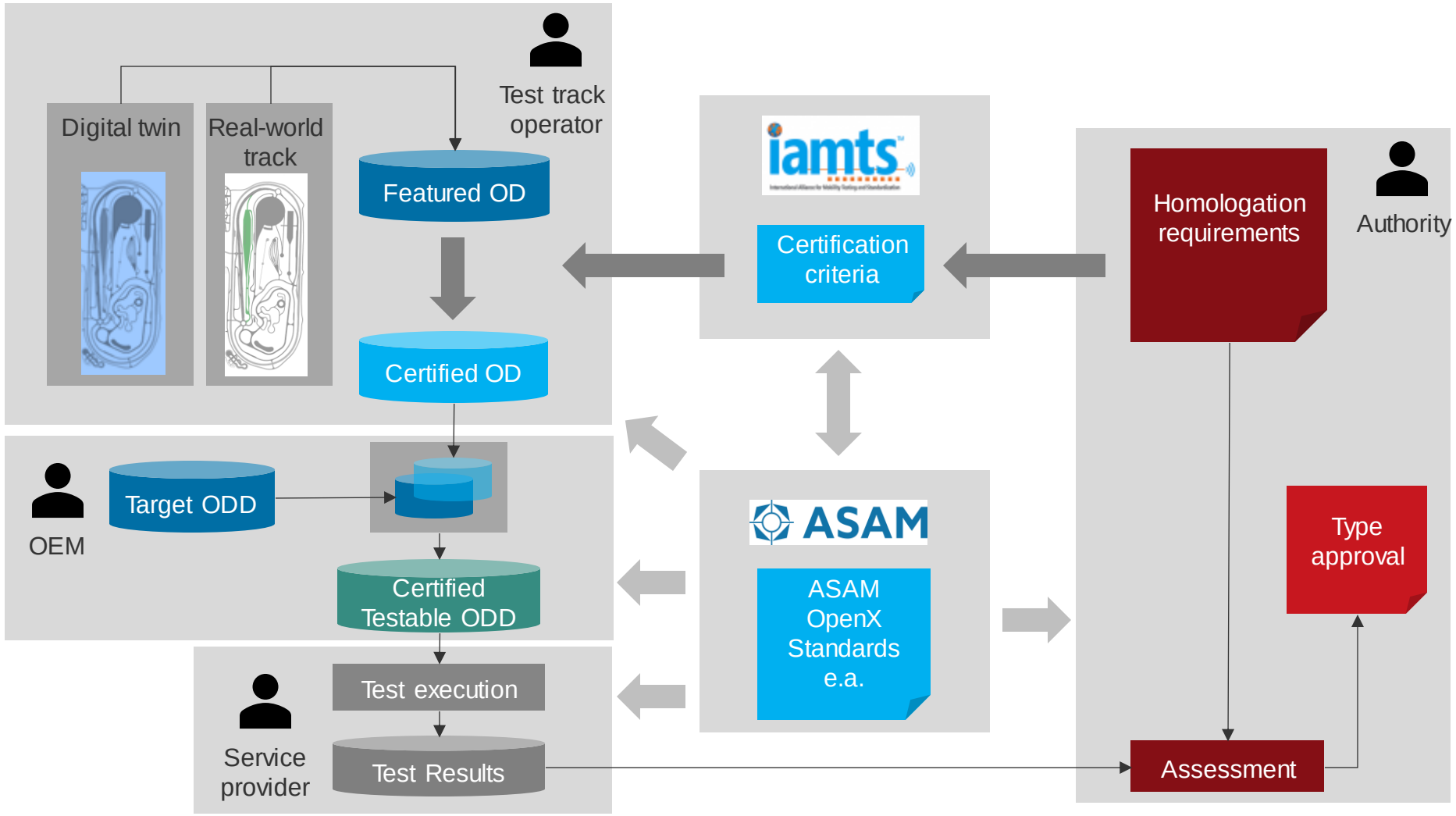
https://www.asam.net/conferences-events/detail/asam-ods-cross-test-2022

Homologation w/ cyber-physical testing

Processes built on ASAM standards

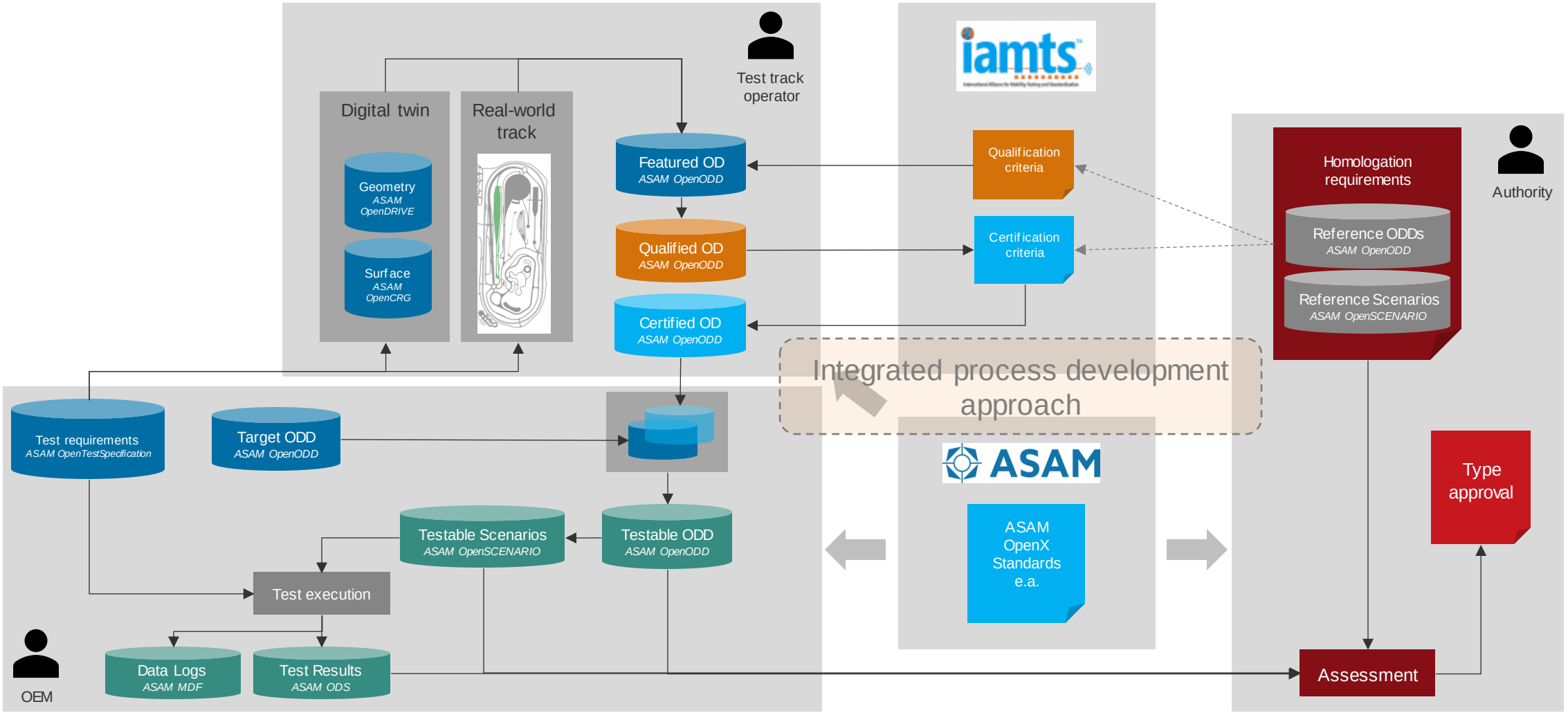
Collaboration along the workflow for cyber-physical testing

How it works – on OD(D) level



Collaboration along the workflow for cyber-physical testing

How it works – the details



Thank you for your attention!

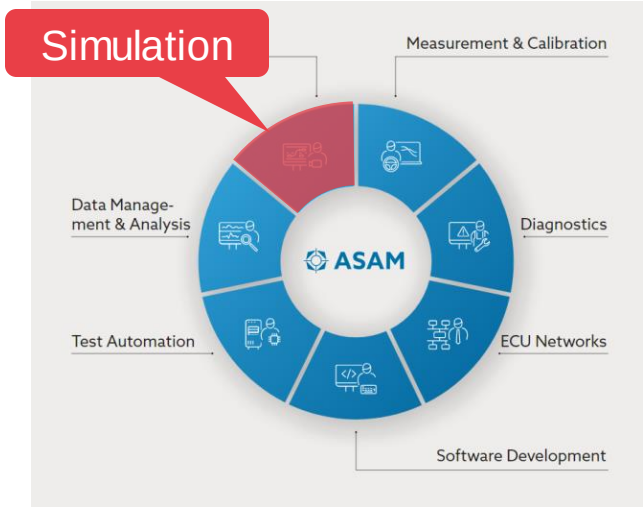
Marius Dupuis
CEO
ASAM e.V.

email: marius.dupuis@asam.net

Fact sheet

ASAM OpenDRIVE®

Positioning



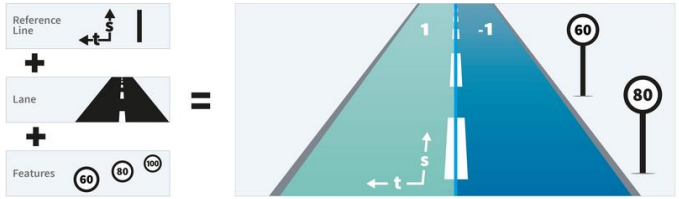
Topics

Daimler DRIVE → OpenDRIVE (VIRES, 2005) → ASAM OpenDRIVE (2018)

- First OpenX-standard to be transferred to ASAM
- Foundation for ASAM's domain „Simulation"

Scope

- Description of static road networks



Connects with

- ASAM OpenCRG
- ASAM OpenSCENARIO

Application areas

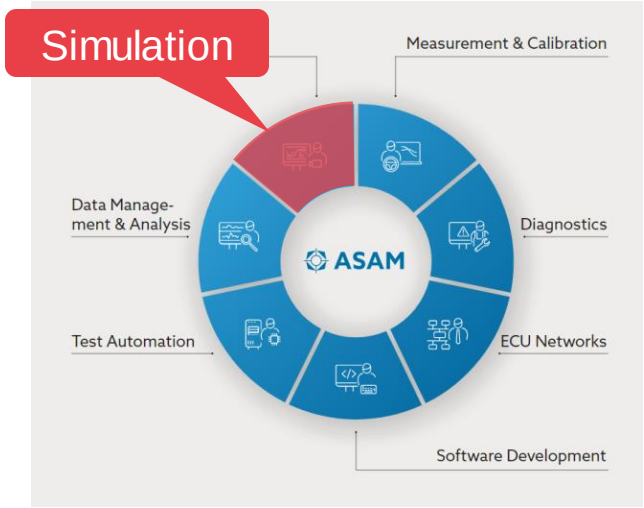
- Description of synthetic and real-world road networks
- Driving and traffic simulation

Version	Format	License	First release
1.8	XML XSD	free	2018

Fact sheet

ASAM OpenCRG® (Curved Regular Grid)

Positioning



Topics

Daimler CRG → OpenCRG (VIRES, 2008) → ASAM OpenCRG (2018)

- OpenCRG was a joint effort by Daimler, BMW, Audi, Porsche, Volkswagen
- Transfer to ASAM in 2018 along other OpenX-standards

Scope

- Description of road surfaces

Connects with

- ASAM OpenDRIVE

Application areas

- Driving simulation
- NVH simulation
- Endurance testing

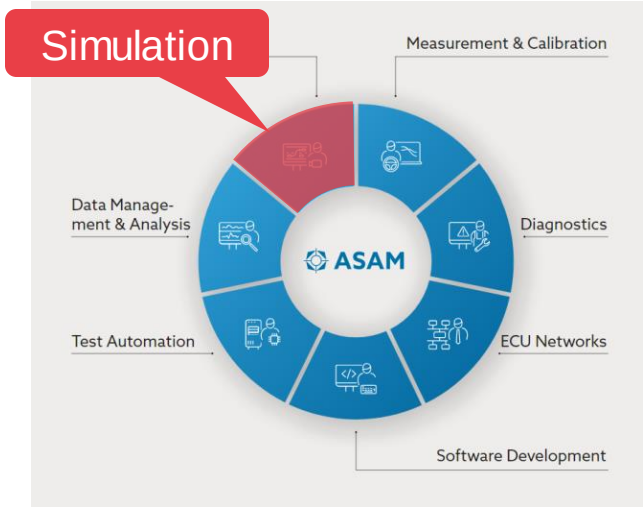
Version	Format	License	First release
1.2.0	CRG + s/w	free	2018

ASAM

Fact sheet

ASAM OpenSCENARIO®

Positioning



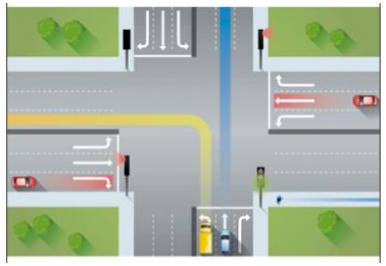
Topics

OpenSCENARIO (VIRES, 2013) → ASAM OpenSCENARIO (2018)

- Intended for logical (paramerized) and concrete scenarios
- Reference implementation: esmini (on github)
- Large user base

Scope

- Description of dynamic elements in road networks



Connects with

- ASAM OpenDRIVE

Application areas

- Traffic simulation
- Scenario simulation
- Vehicle maneuvers and actions

Version 1.2.0

Format XML XSD

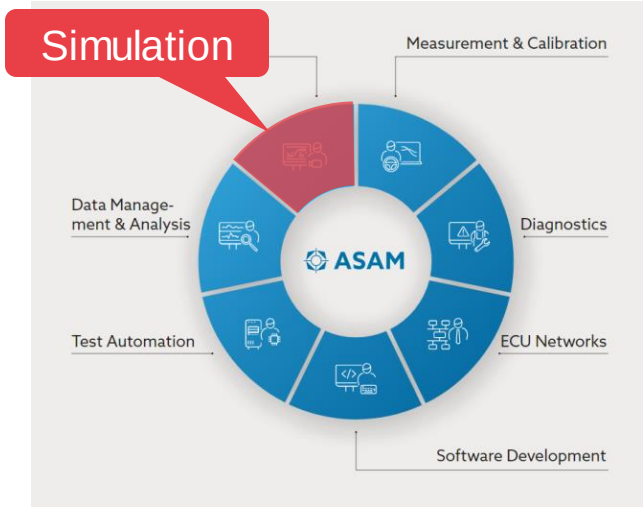
License free

First release 2018

ASAM

ASAM OpenSCENARIO ® 2

Positioning

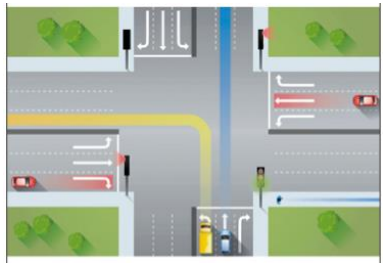


Topics

- Developed by ASAM
- Ideal for abstract and logical (paramerized) scenarios
- Abstraction of actions from static environment (road)

Scope

- Dynamic scenario description



Connects with

- n/a

Application areas

- Coverage-based testing
- X-in-the-loop testing
- Scenario simulation

Version

2.0.0

Format

Language + Domain model

License

free

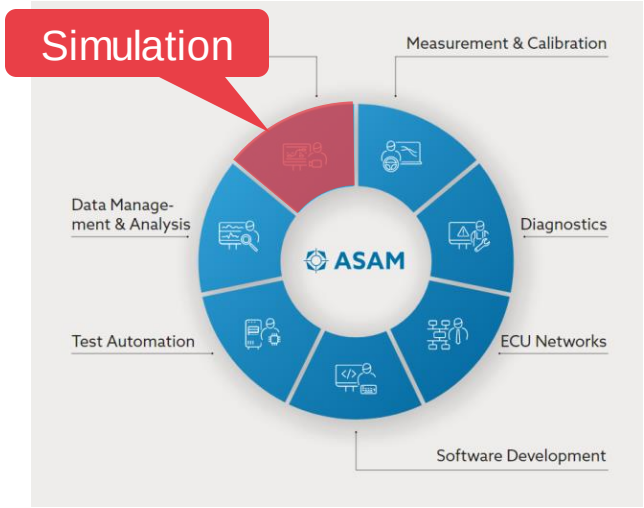
First release

2022

Fact sheet

ASAM OpenLABEL®

Positioning

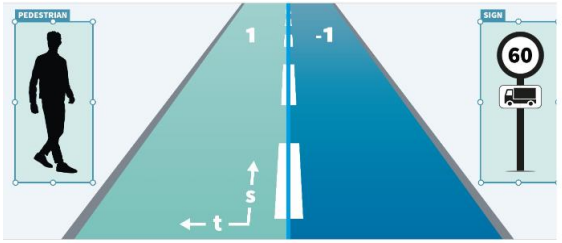


Topics

- Initiated and developed by ASAM
- Allows the import of ontologies and taxonomies
- Labeling in single frames or across series of frames
- Quickly adopted by railroad industry

Scope

- Object labeling and scenario tagging



Connects with

- OpenXOntology

Application areas

- Multi-sensor data labeling
- Scenario tagging

Version
1.0.0

Format
JSON

License
free

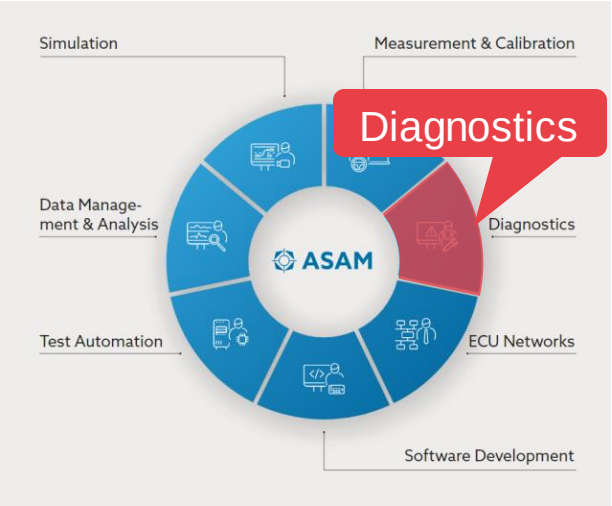
First release
2021

ASAM

Fact sheet

ASAM SOVD (Service-Oriented Vehicle Diagnostics)

Positioning

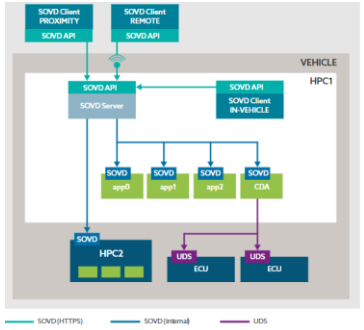


Topics

- Initiated and developed by ASAM
- Uniform access to diagnostics-based content on vehicle HPCs and ECUs
- Adapters for UDS (Unified Diagnostic Service, ISO 14229)
- Remote, proximity and in-vehicle communication
- Transition to ISO
- Implementation / adapters by AUTOSAR

Scope

- HTTP/REST-based diagnostics API



Connects with

- UDS (ISO 14229)

Application areas

- Diagnostic
- Software updates
- Logging
- Data and parameter exchange

Version 1.0.0

Format yaml API

License paid

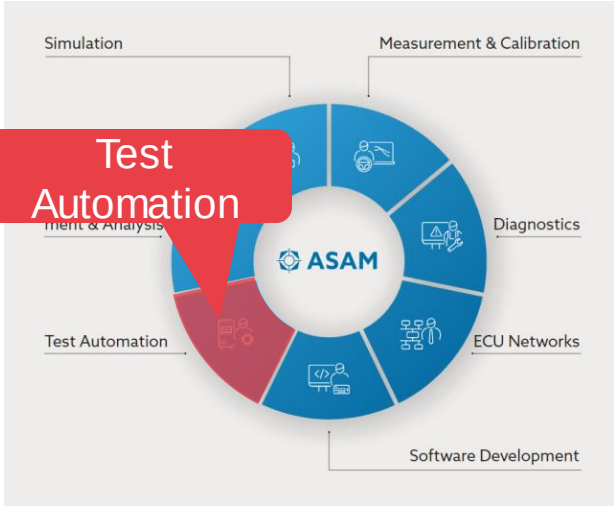
First release 2022

ASAM

Fact sheet

ASAM XIL (Generic Simulator Interface)

Positioning



Topics

- Derived from „ASAM HIL“
- Decoupling of test cases from test systems
- Fast transfer of test cases between different test systems
- Cross-tested for verified compliance of implementatoins
- Technology references in C# and Python

Scope

- API between test automation tools and test benches

Connects with

- OpenTestSpecification

Application areas

- Test automation with „X-in-the-loop“ systems

Version
2.2.0

Format
XML
C#
Python

License
paid

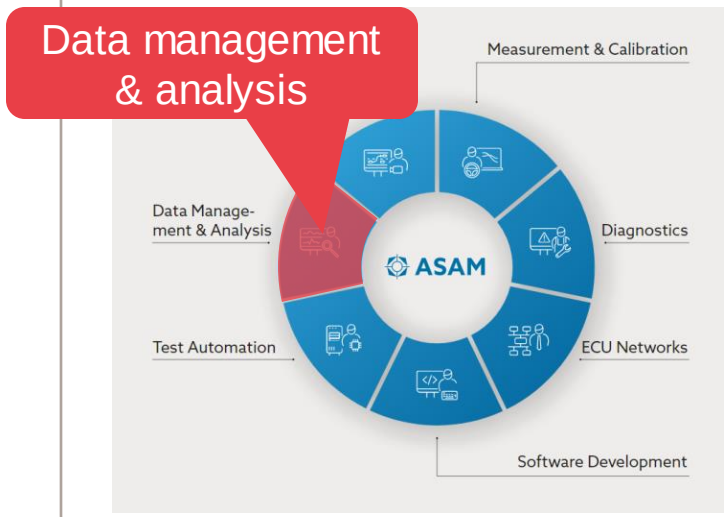
First release
2009

ASAM

Fact sheet

ASAM ODS (Open Data Services)

Positioning

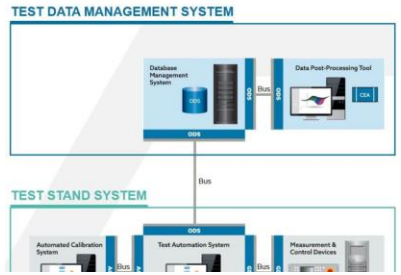


Topics

- One of the first ASAM standards (originating in the 1990s)
- Physical database model (ASAM ODS base model)
- Standardized access layer (ODS API)
- Data exchange format (ATFx file format)
- Cross-tested for verified compliance of implementatoins

Scope

- Basis for data generation, storage and analysis



Connects with

- ASAM MDF
- ASAM OpenLABEL

Application areas

- Test data management for:
  - measurement data
  - fleet test and simulation data
  - big-data applications

Version
6.2.0

Format
API database atfx

License
paid

First release
2000

ASAM

ASAM Regional Meeting North America 2023

Welcome

Armin Rupalla
Board of Directors, ASAM e.V.

September 19th, 2023
Santa Clara, CA

ASAM Association for Standardization of Automation and Measuring Systems

Thank you for your attention.

Enjoy the sessions!

Armin Rupalla
Board of Directors
ASAM e.V.

email: armin.rupalla@asam.net

ASAM Regulations

Updating the framework along the workflow