# **ASAM** Regional Meeting North America

**Dr. Klaus Estenfeld** Managing Director, ASAM e.V. October 26, 2017 Novi, MI





Association for Standardization of Automation and Measuring Systems

# Agenda



# Agenda

Novi, MI - October 26, 2017 – 1:30 p.m. – 6:00 p.m.

#### **Welcome and Introduction**

#### **Session 1: ASAM related Topics**

- ASAM - Latest News

- The New ASAM Communication Platform – A Short Introduction

#### 2:30 p.m. - 3:00 p.m. Break

#### **Session 2: Technology**

- E/E Testing and the Natural Evolution Toward Standards

- ASAM Big Data ODS Project

4:00 p.m. – 4:30 p.m. Break

#### **Session 3: Strategies for the Future**

- The Future of Telematics in Trucking
- The Future of ASAM in the Americas (incl. Q&A session)

(Marc Blatter, Chairman of the ASAM BoD)

(Dr. Klaus Estenfeld – 30 mins.) (Dr. Klaus Estenfeld – 30 mins.)

(Mark Jensen, Vector – 30 mins.) (Dr. Kai Pinnow, ETAS – 30 mins.)

(Ken R Federle, Cummins – 30 mins.) (Richard W Vreeland, ASAM BoD – 30 mins.)



# ASAM – Latest News Status and Plans



## Contents

Activities and News since the Last Regional Meeting North America (October 26, 2016)

1	Organizational Development
2	Standardization Activities
3	A New Domain for Automated Driving
4	Legal Requirements - Solutions
5	Services for ASAM Members Worldwide The new ASAM Website



# **Organizational Development**



#### **ASAM Compliance Statement**

For almost 20 years, ASAM e.V. (Association for Standardization of Automation and Measuring Systems) is actively promoting standardization within the Automotive Industry. Together with its more than 200 members worldwide, the association develops standards that define interfaces and data models for tools used for the development and testing of electronic control units (ECUs) and for the validation of the entire vehicle.

ASAM standards are recommendations, they do not have an impact on regulatory framework.

From the beginning, ASAM has requested and encouraged an open exchange among all stakeholders: manufacturers, suppliers, tool vendors and research institutes. Following this ASAM policy, technical experts from ASAM member companies worldwide commonly develop new standards in project groups. The developed standards are accessible for all interested companies and serve as basis for the development of tools and ECUs within the respective companies worldwide. Tools and products developed based on ASAM standards allow easy integration into existing value chains and seamless data exchange.

ASAM project groups do not define products or take any business decisions preventing competition.

Marc Blatter Chairman of the Board of Directors Dr. Klaus Estenfeld Managing Director <u>https://www.asam.net/home/about-asam/compliance.html</u>



## **Board of Directors**

Voluntary Representatives from International OEMs, Tier-1 Suppliers and Tool Vendors

- Marc Blatter (Chairman) Daimler AG
- Dr. Ralf Nörenberg lacksquareHighQSoft GmbH
- Prof. Dr. Marcus Rieker HORIBA Europe GmbH
- Armin Rupalla lacksquareRA Consulting GmbH
- **Richard Vreeland** Cummins Inc.









# **ASAM Membership**

More Than 200 Member Companies Develop and Apply ASAM Standards





#### **Global Distribution of OEM and Tier-1 Supplier Members**





# **North American ASAM Members**

Currently 21 Members – And more to Come

• OEMs <u>GM</u> POLARIS • Tier-1 Suppliers POWERTER DETROIT **Tool Vendors / Service Providers** ATI DASSAULT CONTROLTEC GEOTAB SUSTEMES **PTC**° NATIONAL INSTRUMENTS ROUSH Jame*t* Malik avlor VisualThreat **Academics** 



Status October 2017



whitep

# **USA – Targeting New Domains**

US Members are Active as BoD Member and in the Standardization Process





# **Standardization Activities**



#### **Current Domains of Standardization**





## **Standard Releases and Projects in 2017**



#### **ASAM Concept Projects**

- Big-Data Technologies for ODS
- Conceptual Study on MC-3 Automation Access
- HEX File Management Concept

#### **First Projects from Japan**

- ASAM MCD-2 MC 1.7.1
- HEX File Management Concept



# **Standardization Activities in 2017**

Some Highlights

- New Standard: ASAM MCD-1 POD
  - Standardization of a technically challenging area: the POD software interface.
  - Benefit: End-users have less tool integration efforts and can easily swap PODs from multiple vendors.
- New Standard: ASAM MCD-1 XCP Debugging Extension
  - Associated standard for XCP.
  - Benefit: Allows low-cost debugging via XCP. No debug-interface adapter needed.
- Major Release: ASAM ODS 6.0
  - Specification of a new web-based API:
    - using modern Internet technologies
    - inexpensive in implementation
    - easy to use
- First Japan Driven Activities
  - First joint JP-EUR project to update an existing ASAM standard: ASAM MCD-2 MC v1.7.1.
  - First concept project to prepare development of a new standard: HEX File Management.



#### **Telematics**





# **Standard Releases and Projects 2018**



#### 2018: A Year to Prepare Major Technological Changes

- MC-3 Automation Access:
  - Consolidate three ASAM standards into one.
  - Integrate further proprietary standards.
- HEX File Management
  - Potential new standard in the area of ECU Software Development
  - First ASAM standard from Japan

- ODS Big Data Technologies
  - Prepare ODS for use in automotive Big-Data applications
  - Propose use of modern Big-Data technologies (Hadoop, Spark, etc.)
  - Validate performance with a demonstrator



# **ISO** Liaison

Formal Liaison Accepted by ISO

#### Reasons for Liaison with ISO

- Multiple standards shared between ASAM and ISO (e.g. ODX, GDI and MCD-3 D).
- Some ASAM standards are based upon ISO standards (e.g. OTX-Extensions, CERP, CPX).
- Many ASAM standards are related to other ISO standards (e.g. XCP, FIBEX, ODX).
- → ASAM must know, if relevant standards are going to be changed, i.e. know NWIP<sup>\*</sup>).
- → ASAM may provide comments on NWIPs and/or informs affected members.

#### Request to ISO

- Request for category A liaison in ISO/TC 22/SC 31 "Data communication for vehicle applications".
- Got approved on Sep. 11, 2017.

#### **Rights and Responsibilities**

- Have access to ISO general documents such as guidelines and templates.
- Have access to the ISO/TC 22/SC 31 file repository.
- Others: tbd.



#### Topics under ISO/TC 22/SC 31:

- Data buses and protocols (including dedicated sensor communication)
- V2X communication (including V2G)
- Diagnostics
- Test protocols
- Interfaces and gateways (including those for nomadic devices)
- Data formats
- Standardized data content



# **A New Domain for Automated Driving**



#### **Open\* Standards**

Automated Driving – Driving Simulators for Testing in Virtual Environments

- **OpenDRIVE**, **OpenSCENARIO**, **OpenCRG** and **Open Simulation Interface** The standards/projects fit into ASAM's technical scope of standards.
- If transferred, they would probably constitute a **new technical domain** within ASAM (e.g. **Simulation**).
- The ASAM representatives that participated at the first meeting with the current standards owners (Vires, Daimler, DLR, BMW, ...) welcome the idea to transfer the projects to ASAM.
- ASAM is currently in deep discussion with the current owners of the standards. Final results of the discussion are expected in the first quarter of 2018



# **OpenDRIVE**

Standardizing the Logical Road Description for Data Exchange between Different Simulators

- File format for the description of road networks (macroscopic view).
- Initiative started in 2005 by Daimler and Vires
- Used for simulators in the area of
  - vehicle dynamics
  - traffic simulation (incl. autonomous driving)
  - sensor simulation
- Description elements (not complete):
  - straight lanes
  - curves, clothoids
  - junctions
  - elevation profiles
  - traffic signs and signals
  - road-side objects
- Not included: entities acting on or interacting with the road network.
- Data may be derived from road scans, map providers, road network design software or other sources.
- Based upon XML and a hierarchical data model.





# **OpenCRG**

Real Road Surfaces become Available to "Classic" Simulation Applications

- CRG: "Curved Regular Grid"
- Open file formats and tools for the detailed description of road surfaces (microscopic view)
- OpenCRG initiative was started in 2008 by Daimler together with AUDI, BMW, Porsche, and Volkswagen
- The file format of OpenCRG is integrated in OpenDRIVE.
- Used for the description of patches of road surfaces in a very detailed manner, so that it can be used for
  - tire simulation
  - vibration simulation
  - driving simulation, etc.
- Source-code included:
  - C API for data handling and evaluation
  - MATLAB API for data manipulation and generation
  - library of sample data





# **OpenSCENARIO**

Bringing Content to the Road

- File format for the description of dynamic content in driving simulation applications.
- Project in very early stage (started in 2014)
- Used for simulators



- Description elements:
  - driving maneuvers (of multiple cars)
  - vehicle model (geometry, weight, engine and brake performance, etc.)
  - driver model (interaction with traffic and infrastructure, longitudinal and lateral control, vehicle control, etc.)
- Based upon XML





# **Open Simulation Interface (OSI)**

Enable Compatibility between Automated Driving Functions and the Variety of Driving Simulation Frameworks

- A generic interface for the environment perception of automated driving functions in virtual scenarios
- Initiated by BMW and Technical University Munich (TUM)
- Contains an object-based environment description using message formats based on Google Protocol Buffers for two types of data:
  - "GroundTruth": gives an exact view on the simulated objects in a global coordinate system.
  - "SensorData": describes the objects in the reference frame of a sensor for environmental perception.



• In preparation: code of a run-time environment based on the Open Simulation Interface, including the conversions between GroundTruth and SensorData messages.



# **Legal Requirements - Solutions**



#### **Issue Resolution Process**

Continuous Maintenance of ASAM Standards must be Guaranteed

#### • Problem 1:

Current ASAM processes did not ensure that ASAM can meet the legal obligations to fix a product defect. (Bug-fixing requires a project, proposed and carried out by members on voluntary basis.)

#### • Problem 2:

Users of ASAM standards - particularly from abroad - expect professional treatment of bugs in standards.

#### • Proposed Solution:

- ASAM establishes an "Issue Resolution Process", which is
  - Continuous
  - Supervised or directly carried-out by the ASAM Office
  - With minimum dependencies on members



## **Issue Resolution Process**

Defined Roles with Defined Responsibilities

#### **Standard Manager**

- Handle support requests, CRs and LOKI (List Of Known Issues).
- Create proposals to resolve the issue.
- Organize and carry out Standard Expert Group meetings.
- Create revisions of the standard.
- Obtain technical and public releases of the revised standards.
- Either ASAM Office or paid service provider

#### **Standard Expert Group**

- Review and confirm reported issues.
- Advise the Standard Manager on how to fix reported issues with the standard.
- Review implemented fixes in the revised standard.
- Vote on the technical release of the revised standard.
- Former members of the standardization project group





# **Licensing Terms**

Govern the Grant of Rights to Use ASAM Products - Valid Worldwide

- ASAM e.V. distributes standards, source code and tools (products).
- The use of these products is subject to the ASAM Licensing Terms (see <u>http://www.asam.net/license.html</u>).
- ASAM products, including all components thereof, constitute intellectual property belonging to ASAM e.V. and are protected by copyright law.
- The licensing terms govern the grant of rights to use ASAM products.
- Any enterprise is free to acquire the licenses to use ASAM products as purchaser or by becoming an ASAM member.



# Services for ASAM Members Worldwide Information, Ideation, Conferences, ...



# **ASAM Solutions Guide 2017**

A Comprehensive Reference Book

#### **Table of Content**

- About ASAM
- ASAM Standard Portfolio
- Application Stories
- List of Members & ASAM Related Products
- Member Reference by Standard
- Contact & Imprint





# **New ASAM Website – Concept, Design, and Structure**

Main Goal: Improve User Experience and Value for the Members

<ul> <li>Responsive Design</li> <li>Search-engine optimized</li> <li>Step 1 (Must-Have's)</li> </ul>	,My ASAM' page with more information) Step 2 (Improvements)	Step 3 (Nice-to-Have's)
<ul> <li>Technical Improvements</li> <li>Update to current system version</li> </ul>	<ul> <li>Usability Improvements</li> <li>Make it easy to find the right information</li> <li>More meaningful frontpage</li> <li>Integrate Wiki into ASAM website</li> <li>Revised member portal:</li> </ul>	<ul> <li>Professionalize standardization platform</li> <li>Support ideation process</li> <li>Keep members up to date on work group activities and achievements</li> <li>Online shop</li> </ul>

**Additional Features** 

Collaboration tool(s):



# **New ASAM Website (Launch in November 2017)**

The front page already guides you to the most important information.







ASAM Standards are organized by domains no longer by the categories AE and CAT.





Each standard is clearly arranged and well documented (includes ASAM WIKI).

The download is easy and complemented by a publicly accessible Table of Contents and a LOKI (List of Known Issues).



#### ASAM ODS

ODS (Open Data Services) focuses on the persistent storage and retrieval of testing data. The standard is primarily used to set up a test data management system on top of test systems that produce measured or calculated data from testing activities. Tool components of a complex testing system can store data or retrieve data as needed for proper operation of tests or for test data post-processing and evaluation. A typical scenario for ODS in the automotive industry is the use of a central ODS server, which handles all testing data produced by vehicle test beds. The major strength of ODS as compared to non-standardized data storage solutions is that data access is independent of the IT architecture and that the data model of the database is highly adaptable yet still well-defined for different application scenarios. Despite this flexibility, clients can query the data from the standard.

Base model: The base model is used as a parent for deriving specific application models. The base
model provides a rough classification of the data in application models by adding semantics to them.
This enables client tools from different vendors to correctly interpret the data.

Title	Open Data Services
Domain	Data Management & Analysis
Current Version	V6.0.0
Release Date	01 Jan 2017
pplication Areas	Test data management for: measurement data fleet test data simulation data big-data applications
Specification	• Base data model

data a pointer to that external storage location. The same API methods are used for DB-internal measurement data access as well as to external data access, so that users have completely transparent access to the data. Furthermore, ODS servers are scalable, which allow to extend the data models and add more clients to the overall tool chain without having to setup a new server for every extension.

#### Standard Authors

AVL LIST GmbH, Atos IT Solutions and Services GmbH, Audi AG, BMW AG, Canoo Engineering AG, Cologne University of Applied Science, Daimler AG, ETAS GmbH, Gigatronic GmbH, HEAD acoustics GmbH, HORIBA Automotive Test Systems GmbH, HighQSoft GmbH, IASYS Technologies Pvt. Ltd., KPIT Technologies GmbH, Kristl, Seibt & Co GmbH, MAN Truck & Bus AG, Müller-BBM VibroAkustik Systeme GmbH, National Instruments Corporation, Peak Solution GmbH, Porsche AG, Robert Bosch GmbH, Siemens AG, Volkswagen AG.

# DOWNLOADS

→ Products based on ASAM ODS
 → Application Stories for ASAM ODS

RELATED CONTENT



CONTACT



New Ideas, Project Proposals and running Projects are listed and described in detail. Join the discussion on new topics ('Ideation'), take part in new projects ('Proposals'), or inform yourself about current activities ('Projects').







All members are invited to participate in events and workshops. Check regularly where you can meet other experts in an ASAM setting.





Member companies share their experience with ASAM standards in the Application Stories. Search for the stories that are of interest for you.





Three directories help you to find persons, products or companies that may be helpful for you. Search for experts and help others find and connect with you.



On MyASAM you will find important information on your membership and get a customized view on topics that interest you.

	Welcome to you Ms. Dorothee Ba PERSONAL SETTINGS	Ir Account assermann company profile	Your ASAM Membership Member: ASAM e.V. Member class: G[?]
Proposal	<ul> <li>(Projects, defined by your interests)</li> </ul>		Important Contacts within your company ASAM Main Contact:
Proposals			
Project-Nr.	Title ASAM OTX Extensions →	Version Minor Version Development	
Project-Nr. P2015-05	Title ASAM OTX Extensions → Dg projects (Projects, defined by	Version Minor Version Development your interests)	MEETINGS & EVENTS
Project-Nr. P2015-05	Title ASAM OTX Extensions → ag projects (Projects, defined by Title	Version Minor Version Development your interests) Version	MEETINGS & EVENTS Dec 06 - 07 2017 ASAM Technical Seminal ASAM International Conference International Congress
Project-Nr. P2015-05	Title ASAM OTX Extensions → ng projects (Projects, defined by Title P2017-03 ASAM ODS Maintenance →	Version Minor Version Development your interests) Version Revision Version Development	MEETINGS & EVENTS Dec 06 - 07 2017 ASAM Technical Seminal ASAM International Conference International Congress



#### ideation@asam.net

A New Idea Hub will Bring the ASAM Community Together – Globally Accessible

#### www.asam.net/ideation

#### **Questions:**

- Have you had an idea for a standard, but not the time to attract attention outside your organization?
- Have you read an interesting article that may be of interest to others in the ASAM Community?
- Do you know exactly whom to contact at other organizations who have similar requirements as you to drive a new standardization activity?

#### **Our Answer:**

- 1. Submit your ideas to ideation@asam.net
- 2. The ASAM Office will contact you to clarify details
- 3. The ASAM Office will post the ideas to www.asam.net/ideation
- 4. Global membership is invited to comment
- 5. Enough interest will trigger an Ideation Phase or Proposal Workshop



#### **ASAM International Conference 2017**

Dresden, December 6 - 7, 2017

#### "Autonomous Driving – Big Testing and Big Data as the Next Challenge"

#### Hosted in Cooperation with the Saxon State Ministry of Economic Affairs, Labor and Transport



https://www.asam.net/home/trainings-events/asam-conference-2017.html



#### **ASAM Office**

"At Your Disposal" – At any Time

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# Thank you!

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www.asam.net

