ASAM Open Standards

Nicco Dillmann
Global Technology Manager
ASAM e.V.

Ben Engel
Global Technology Manager
ASAM e.V.
## Foundation & Purpose

<table>
<thead>
<tr>
<th>Foundation</th>
<th>1998 as an initiative of the major German car manufacturers: Audi, BMW, Daimler, Porsche, Volkswagen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>To create an engineering, simulation, testing and automation environment where devices and software applications can be freely interconnected and data can be seamlessly exchanged.</td>
</tr>
</tbody>
</table>
| Purpose    | Platform to develop, enhance and to promote standards for the automotive industry  
|            | Legal representative of 26 standards |
| Legal Form | Registered association under German law  
|            | Non-profit |
| Member Base| More than 270 members  
|            | There of 26 OEMs |
ASAM Standards Portfolio

**Simulation**
- OpenCRG
- OpenDRIVE
- OpenSCENARIO
- OSI

**Measurement & Calibration**
- MCD-1 POD
- MCD-1 CCP / XCP
- MCD-2 MC
- MCD-2 CERP
- MDF
- CDF
- CPX

**Data Management & Analysis**
- CEA
- ODS

**Diagnostics**
- MCD-2 D
- MCD-3 D

**Test Automation**
- ACI
- ASAP 3
- ATX
- GDI
- iLinkRT
- MCD-3 MC
- XIL
- OTX Extensions

**ECU Networks**
- MCD-2 NET

**Software Development**
- CC
- FSX
- ISSUE
- LXF
- MBFS
- MDX

*) standards not yet released
The ASAM Open Standards are exchange formats for Simulations. Describing different parts of a simulated scenario. Each standard can be used stand alone or in combination with other standards.
ASAM Simulation Domain Overview

- Two active projects for each of **OpenDRIVE** & **OpenSCENARIO**:
  - **Transfer**: move the content of existing documentation to ASAM style as a base for all further ongoing developments; Includes consolidation & creation of user & style guides; No development activity!
  - Current Status: Both projects on track to meet project deadline of **31.12.2019**
  - Project results (new standard versions) to be released in Q1 2020 under open source license terms

- **Concept**: address current and upcoming requirements on the standards as obtained from the full development process of autonomous vehicles and the full complexity of real-world scenarios, including complex inner-city traffic.
  - Current Status: Conceptual development activity in sub-working groups for individual features
  - Projects scheduled to end: 31.12.2019 OpenSCENARIO / 31.08.2020 OpenDRIVE
  - Concept papers and any accompanying documentation will be available to all ASAM members

- **OpenCRG**: Transfer (as above) and further development

- **OpenSimulationInterface**: Transfer to ASAM underway – open-source under MPL2.0

- **CoordinationGroup Simulation**:
  - communicate between ASAM simulation projects
  - Establish cooperation relationships and align with other parties
  - Perform whitespot analysis in the simulation domain
Ideation Topic
Data and Scenario Labeling
Life of the recorded data

AD vehicles produce data while driving (real/simulated), capturing scenarios every second.

1. Object Labeling
   - Data pre-processing and labeling. Detecting captured scenarios. Analyse vehicle behavior according to defined KPI's.

2. Data / Scenario Storage
   - Store the captured data in large data centers and make the data sets available for post processing activities.

3. Scenario Labeling
   - Search processed data for detected scenarios, using keywords.
   - Post-processing of the stored data, detecting new scenarios, labeling scenarios variants, creating data sets for ML/DL/AI.

Own scenario format

Static road network description

ASAM OpenDRIVER

ASAM OpenSCENARIO®
Check for interested parties and refine idea with gathered input

Timeline

CG:Sim @ASAM
18th September
First Idea Presentation

Ideation: Scenario Storage and Labeling Kickoff
December 2nd

Get TSC Approval
t.b.d

Proposal Workshop
t.b.d

Write Proposal

Concept Project

ASAM International Conference

Check for interested parties and refine idea with gathered input

ASAM Regional Meeting North America
24th October

Proposal Workshop
t.b.d

Release of
OpenDRIVE 1.6
OpenSCENARIO 1.0

OpenSCENARIO Concept
OpenSCENARIO Concept project ending in Dec. 2019

OpenDRIVE Concept
OpenDRIVE Concept project ending in August 2020

OpenDRIVE 1.7|2.0 Standard Development Project

OpenSCENARIO 1.1|2.0 Standard Development Project
# ORGANIZATIONAL

<table>
<thead>
<tr>
<th>Day and Time</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday, Dec. 10, 2019</td>
<td>9:00 - 17:00</td>
<td></td>
</tr>
<tr>
<td>Wednesday, Dec. 11, 2019</td>
<td>9:00 - 16:00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Venue</th>
<th>International Congress Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ostra-Ufer 2, 01067 Dresden, Germany</td>
</tr>
<tr>
<td></td>
<td>Phone: +49 351 216-0</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.dresden-congresscenter.de">www.dresden-congresscenter.de</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hotel Recommendation</th>
<th>Maritim Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ostra-Ufer 2, 01067 Dresden, Germany</td>
</tr>
<tr>
<td></td>
<td>Phone: +49 351 216-0</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.maritim.de">www.maritim.de</a> (Code: ASAM)</td>
</tr>
</tbody>
</table>

| Dinner Reception     | Tuesday, Dec. 10, 2019 |

Thank you for your attention.

Nicco Dillmann
Global Technology Manager
ASAM e.V.
Email: nicco.dillmann@asam.net
Phone: +49 160 9921 8048
Adress: Altlaufstraße 40, 85635 Hoehenkirchen

Ben Engel
Global Technology Manager
ASAM e.V.
Email: Benjamin.engel@asam.net
Phone: +49 1516 1645 936
Adress: Altlaufstraße 40, 85635 Hoehenkirchen