Welcome Note

Dr. Thomas Scharnhorst, AUTOSAR Spokesperson
10th AUTOSAR Open Conference
8th Nov 2017, Mountain View, California
10th AUTOSAR Open Conference
3rd time in the United States
Automotive Megatrends Require New Approaches

**Connectivity (IoT)**
- Infotainment
- V2X
- Cloud services
- OTA update & diagnostics

**Automated Driving**
- Different sensor types
- Complex algorithms
- On/off-board information fusion

**Electrification**
- Start-stop, sailing, ...
- Hybrid → Battery Electric Vehicle
- Vehicle to grid optimization

Software Platforms
A Fundamental Change of E/E Architecture Takes Place

**Backend Computing**
- deep learning
- swarm intelligence

➤ **System and Mobility Strategies**

**On Board High Performance Computers**
- 3...5 application servers
- continuous update and upgrade

➤ **Automated Driving, Connectivity, ...**

**On Board Embedded Systems**
- 50...120 function specific ECUs
- static configuration

➤ **Basic Functions and Fall Back Computing**

**Classic AUTOSAR**
- access/update over the air
- closely linked to backend (transparent function mapping)
- service oriented communication
- mastered by OEM
- up to ASIL B (so far)

**Adaptive AUTOSAR**
- signal based communication (CAN, LIN, FlexRay, partly ETH)
- up to ASIL D
Motivation: “What’s the challenge?”

1. Increase of software based **functionality**
   - We have to do much more

2. E/E **complexity** is increasing
   - We have to master it

3. **Time to market** must become shorter
   - We need to get it done faster
AUTOSAR Vision

AUTOSAR aims to improve complexity management of integrated E/E architectures through increased reuse and exchangeability of SW modules between OEMs and suppliers.

**Exchangeability**

between suppliers’ solutions

**Exchangeability**

between manufacturers’ applications

**Exchangeability**

between vehicle platforms

*Supplier A*
- Chassis
- Safety
- Body/Comfort

*Supplier B*
- Chassis
- Safety
- Telematics

*Supplier C*
- Body/Comfort
- Powertrain
- Telematics
Achievement

(AUT)omotive Open System ARchitecture

is a worldwide development partnership of car manufacturers, suppliers and other companies from the electronics, semiconductor and software industry.
AUTOSAR – Core Partners and Partners

9 Core Partners

DAIMLER

TOYOTA

VOLKSWAGEN AG

50 Premium Partners

General OEM

Generic Tier 1

Standard Software

Tools and Services

Semi-conductors

33 Development Partners

113 Associate Partners

20 Attendees

Welcome Note | November 17 | 10
AUTOSAR is a Global Development Partnership

Partners 2017:

- Europe: 99 Partners
- Asia: 80 Partners
- Africa: 1 Partner
- America: 25 Partners
AUTOSAR in the United States

Welcome Note

Autosar Partners
- GM
- Intel
- Analog Devices
- Bose
- CNH Industrial
- Gentex
- John Deere
- Delphi
- Visteon
- Microchip
- Ixia
- Navistar
- Cypress
- Nexteer
- Oshkosh
- Mentor Graphics
- Danalaw
- RTI
- Texas Instruments
- Green Hills
Estimation on AUTOSAR market penetration

Source: Vector's evaluation based on number of projects

Europe
Asia
North America

Source: Supplier interviews
Vehicle software architectures are getting combined

<table>
<thead>
<tr>
<th>Real time Requirements</th>
<th>High, in the range of micro-sec</th>
<th>Mid, in the range of milli-sec</th>
<th>Low, in the range of sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Criticality</td>
<td>High, up to ASIL-D</td>
<td>High, at least ASIL-B</td>
<td>Low, QM</td>
</tr>
<tr>
<td>Computing power</td>
<td>Low, ~ 1000 DMIPs</td>
<td>High, &gt; 20.000 DMIPs</td>
<td>High, ~ 10.000 DMIPs</td>
</tr>
</tbody>
</table>
Vehicle software architectures are getting combined

<table>
<thead>
<tr>
<th>Real time Requirements</th>
<th>High, in the range of micro-sec</th>
<th>Mid, in the range of milli-sec</th>
<th>Low, in the range of sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Criticality</td>
<td>High, up to ASIL-D</td>
<td>High, at least ASIL-B</td>
<td>Low, QM</td>
</tr>
<tr>
<td>Computing power</td>
<td>Low, ~ 1000 DMIPs</td>
<td>High, &gt; 20,000 DMIPs</td>
<td>High, ~ 10,000 DMIPs</td>
</tr>
</tbody>
</table>
The AUTOSAR Core Partners are fully committed to the standardization of the AUTOSAR Adaptive Platform

- Number-crunching algorithms and high interconnectivity are the demands of future technologies. The Adaptive Platform is exactly what we need.
- AUTOSAR is one of the key enablers for autonomous driving cars.
- AUTOSAR is our standard of choice for realizing new technologies such as autonomous driving and interconnectivity.
Enjoy the 10th AUTOSAR Open Conference!

- AUTOSAR Organization
- Advanced Driver Assistant Systems
- Technology and Methodology
- Classic and Adaptive Platforms
- Open Discussion with AUTOSAR Team

Please turn in your questions at the information desk until 3:25 pm