AUTOSAR & COVESIA Synergies
- a strategic Bosch perspective

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Agenda

- Introduction in mobility eco-systems (Achim)
- How to combine AUTOSAR + COVESA (Achim)
- What happened since 10/2022 (Achim)
- A concept for the AUTOSAR-bridge (Achim)
- An in-vehicle implementation of VSS (Jean-Luc)
- Next Steps (Achim)
Introduction

E/E Evolution (E/E classics)

Domain - fusion
Vehicle - centralized

Feature effect chains

Mobility eco-system
- world wide grid
- multi fleet (TIER1, other)
- multi digital twins (fleet)
- single digital twin (OEM)
- offboard connectivity
- onboard connectivity
- vehicle computer
- embedded

neighbors

Road Infrastructure ECO
Energy ECO

Device - Connect-
Cloud-Layer

Onboard
Offboard

When vehicle becomes a part of the internet and is connected to road- & energy-infrastructure
- a new big eco-system is created
How to manage complexity?

The increasing complexity is managed / controlled via a new API-stack.

API-stack V 0.1
- cloud2digitalTwin API
- vehicle2cloud API
- Signal2Service API

Mobility Eco-system
- world wide grid
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- onboard connectivity
- vehicle computer
- embedded
- world wide reality
How to combine AUTOSAR + COVESA
How to combine AUTOSAR + COVESAs

View back to AMM 2022 in Dearborn

3 synergy areas between AUTOSAR and COVESAs identified

1. cloud-app + in-vehicle app

2. passenger car + 2-wheelers + commercial vehicles

3. QM-api + realtime/safety api
How to combine AUTOSAR + COVESEA

View back to AMM 2022 in Dearborn

1. cloud-app + in-vehicle app
   - Embedded syntax
   - WG Cloud (e.g. Concept 703)
   - Open tooling tbd.

2. passenger car + 2-wheelers + commercial vehicles
   - Classic + Adaptive
   - SAE J1939
   - Protocols (SOME-IP, DDS)
   - arXML, dbc-files
   - AUTOSAR open

3. QM-api + realtime/safety api
   - X-OEM semantic tree
   - W3C links on VSS
   - Open Tool-kit

Progress in many areas
How to combine AUTOSAR + COVESOA
What happened since last AMM

- Side-by-Side booth AUTOSAR+COVESOA on CES2023
  Concept for a joint working group:
  Technical charter under construction with AUTOSAR “working group Cloud”
  Legal charter: “AUTOSAR Open Framework” decided and under definition

Organizational alignment with AUTOSAR ongoing
How to combine AUTOSAR + COVESA
What happened since last AMM

Alignment with FMS-Standard initiated
Commercial Vehicle partner interested in common data model
→ see own track

Scope of VSS extended on trucks and open source fleet operations
How to combine AUTOSAR + COVESA
What happened since last AMM

FMS (LogiCom)
- Well established industry standard
- High OEM acceptance in EU (truck/bus only)
- Based on SAE 1939 (read-only from CAN)
- Long experience (>20 years)
- High precision (e.g. cycle time, resolution,...)
- Driver related info (→ cf. privacy)
- Secure write access via FMS-gateway open

VSS (COVESA)
- Based on Genivi consortium -> service oriented
- Active, fast growing community
- Extensive vehicle data-model (>800 data)
- Increasing market interest (e.g. AUTOSAR, VDA,...)
- Detailed model of electrical powertrains
- Linked to US/California regulation¹)
- Secured access protocol defined with W3C (VISS2)

Possible approx. >30% overlap between FMS-V04 and VSS-V3.0 (e.g. EV, charging, tooling)

¹) Vendor Device Certification | California Air Resources Board
How to combine AUTOSAR + COVESSA

What happened since last AMM

New AUTOSAR + COVESSA bridge

- arXML, dbc-files
- AUTOSAR open
- 3. QM-api + realtime/safety api
- Private data label
- Open source community

How to link COVESSA semantic to AUTOSAR-syntax technologies
A concept for an AUTOSAR / COVESA bridge
A concept for an AUTOSAR / COVESAs bridge
A gateway shall link AUTOSAR to COVESA

Many activities in the market to set standards for connected vehicles.

But, a vehicle-api might be realized by a SW-gateway based on AUTOSAR and COVESA
AUTOSAR, aligned with COVESA, needs to find technical and methodological solutions to connect the AUTOSAR ecosystem and the SdV world.
An in-vehicle implementation of the AUTOSAR – VSS bridge

Embedded smart wiper control via smart phone
Example Implementation of AUTOSAR-VSS Bridge
AUTOSAR offers syntax + COVESA offers semantic

Smart Wiper app based on VSS3.0

- Supports deeply embedded actuator access
- Enables flexible app upgrade over lifetime
- Remote control of mechatronics (from smart phone or cloud)

➢ Book the zone-wiping-app: **Wiper is cleaning camera area**
“Do not be disturbed by the wiper during camera cleaning and increase the robustness of camera assisted functions”
Example Implementation of AUTOSAR-VSS Bridge

AUTOSAR offers syntax + COVESA offers semantic

Smart Wiper app based on VSS3.0
Smart Wiper app based on VSS

Safetyguard API-extension in real life

→ video
Example Implementation of AUTOSAR-VSS Bridge

AUTOSAR + COVESA demonstrator

Safety guard protects wiper and driver from damages, when the hood is opened.
Wiping is stopped, when hood is opening.
Next Steps
Next steps
Closer cooperation COVESLA & AUTOSAR under construction

- COVESLA-VSS might harmonize the semantic in a cross-OEM in-vehicle-API
- First implementation of an in-vehicle API on “smart wiper” → might be extended to further features on μC and μP
- More details published on “IAA-mobility” Sept 2023 in Munich
Thank you

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