AUT@SAR

AUTOSAR Introduction

Part 2 – Current Features in a Nutshell

STELEANTIS TOYOTA VOLKSWAGEN GROUP









Agenda

Part 1

- ► The AUTOSAR Partnership
- The AUTOSAR Standardization

Part 2

- Architecture and Features
 - AUTOSAR in Vehicle Network
 - AUTOSAR Foundation
 - AUTOSAR Classic Platform
 - AUTOSAR Adaptive Platform
- Smart Solutions Based on AUTOSAR
- Processes and Quality



AUTOSAR in a Vehicle Network



Common Bus Interface Specification



AUTOSAR Foundation Common Features

Marin Make

0

The Foundation **assures compatibility** of the different AUTOSAR standards and therefore **contains** all **common artifacts** such as ...

Protocols (SOME/IP, DDS, ...) Templater and Elvelrint

Main Requirements Chorrent

Debugging Specification (DLT)

AUTOSAR Foundation The Methodology, derived out of the Meta Model, ...



- ... provides means to describe the AUTOSAR architecture with all its interfaces
- ... defines **exchange formats** and description **templates** (e.g. manifest) to enable
 - a seamless integration of the complete vehicle E/E architecture,
 - the automatized configuration of the μC- and μP-software stacks and
 - the seamless integration of application software
- ... supports means to **ensure safety** and **security** of the system
- ... provides templates to document the standard

AUTOSAR Classic Platform Layered Software Architecture (1/2)



The layered architecture of the classic platform basically supports

- Hardware abstraction
- Scheduling of runnables and tasks (OS)
- Communication between applications on the same hardware and over the network
- Diagnosis and diagnostic services
- Safety- and
- Security Services

AUTOSAR Classic Platform Layered Software Architecture (2/2)





AUTOSAR Classic Platform Layered Software Architecture (2/2)





AUTOSAR Adaptive Platform Architecture - Logical view





SERVICE

SERVICE

API

AUTOSAR Standards Roadmap





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- Architecture and Features
- Smart Solutions Based on AUTOSAR
 - Software Architecture AUTOSAR Defined Interfaces
 - Distribution ECUs
 - AUTOSAR Platform Application
- Processes and Quality



Software Architecture – AUTOSAR Defined Interfaces Use Case 'Front Light Management': Exchange Type of Front Light



Software Architecture – AUTOSAR Defined Interfaces Use Case 'Front Light Management': Exchange Type of Front Light



Distribution ECUs



Distribution on ECUs – 'Front-Light Management'



AUTOSAR Platform Application Continuous improvement cycle for ADAS systems





AUTOSAR Platform Application

User Applications













> ACC



User Applications





	Vehicle Manager		НМІ	Distance Radar	ACC			
	A	-						
Comr	ara::con nunicatio	n on Mgnt.	ara::rest RESTful	ara::time Time Synchronization		ara::state service State Management ara::s2s service Signal to Service Mapping	ara::diag service Diagnostics ara::nm service Network Management	ara::adi service Automated Driving Interfaces
SOME/IP	DDS	IPC (local)	ara::per Persistency	ara::phm Platform Health Mgnt.				
	ara::core Core Typ	es	ara::exec Execution Mgnt.	ara::iam Identity Access Mgnt.	ara::log Logging & Tracing			
	POSIX PSE51 / C++ STL Operating System				ara::crypto Cryptography	ara::ucm service Update and Configuration Management		

AUTOSAR Runtime for Adaptive Applications (ARA)

(Virtual) Machine / Container / Hardware









(Virtual) Machine / Container / Hardware









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 - AUTOSAR Adaptive Platform Development Approach



ALITOSAR Adaptive Platform Development Approach Specification Implementation Demonstration

Identify needs & use-cases:

- 1) Concepts
- 2) Features
- 3) Requirements



Quality:

- TF-ARC approval
- Cross team review
- Lifecycle : preliminary → draft → valid

Gain speed:

- 1) Spec validation
- 2) Reduce room for spec interpretation
- 3) Training / dissemination of AP



Attracting environment for coders:

- Appealing technology (C++, Yocto, Git, ...)
- Modern use case (ADAS EBA)
- Handy documentation (Wiki)
- Peer programming sessions

Gain trust:

- 1) Advertises the progress
- 2) Highlights some specific features



Show AUTOSAR interoperability

- of classic and adaptive platforms
- but also with others

Best tradeoff between commercial cooperation & compatibility between different vendors



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Thank you for your attention

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