Current status and Future of AUTOSAR

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Overview

- Achievements
- AUTOSAR Products
- Future of AUTOSAR
Achievements – new concepts in release 4.2.1

For the AUTOSAR Basic Software and Methodology Release 4.2.1 new concepts were developed and integrated:

- **Communication**
  - Enhanced Ethernet Support
    - Switch Configuration
    - Sender Receiver Serialization
  - CAN FD

- **Safety & Security**
  - E2E Extension
  - ASIL QM Protection
  - Secure On Board Communication

- **Basic Software**
  - NV Data Handling RTE
  - EcuM Fixed MC

- **Methodology**
  - Safety Extensions
  - Decentralized Configuration
Achievements – first release of AUTOSAR Standard Acceptance Tests

AUTOSAR extends its scope with standard acceptance tests.

- Release of AUTOSAR Acceptance Tests Rel. 1.0.0
  → further development and maintenance will follow

- Tests help OEMs to accept suppliers’ platforms regarding their interoperability with applications or with vehicle networks.

- Standardization enables reduction of duplicate test activities by users and suppliers.

- Reduction of development and maintenance costs on both sides.
Overview

Achievements

AUTOSAR Products

Future of AUTOSAR
Over the years AUTOSAR continued to expand.

The worldwide growth of AUTOSAR evokes new challenges for the standard, as for the organization and its partners.

AUTOSAR’s answer to this growing complexity: AUTOSAR products.
AUTOSAR Products

**Goals**
- Increase flexibility of releases.
- Keep standard manageable while extending it.
- Facilitate application of the standard.

**AUTOSAR products**
- AUTOSAR Classic Platform (today)
- AUTOSAR Acceptance Tests (today)
- AUTOSAR Adaptive Platform (planned)
- ...
Timeline for AUTOSAR Products

**Classic Platform**
- R3.1 will remain in LOKI
- R3.2 moves to LOKI-Phase
- R4.2.2 July 2015

**Acceptance Tests**
- Next release planned for October 2015

**Adaptive Platform**
- First schedule available Q1/2015
Overview

Achievements

AUTOSAR Products

Future of AUTOSAR
Future of AUTOSAR – objectives and challenges

- Maintain stability and compatibility of existing standard.
- Main directions of the Future of AUTOSAR:
  - Reflect new use cases of today’s and future market needs.
  - Adapt to upcoming market needs.
  - Support new technologies.

Anticipate the future – identification of technological trends, key features and next challenges for AUTOSAR

Stabilize the standard – maintain the standard, reduce complexity and increase usability, improve job sharing
Starting point – selected main drivers

Main drivers for new automotive software systems have been determined.

- Highly automated driving
- Car-2-X applications
- Open access to vehicle
- Stronger interaction
Impact on architecture

Extend AUTOSAR Classic Platform by support of adaptive deployment and interaction with non AUTOSAR systems.
Architecture of the AUTOSAR Adaptive Platform

AUTOSAR Adaptive Foundation

(Application Software Component)

Backend Proxy

Application Software Component

Application Software Component

AUTOSAR Adaptive Services

SW Configuration

Platform Resources

Platform Modes

…

Operating System

Communication

HW Acceleration

…

(Virtual) Machine / HW

Standardized AUTOSAR Adaptive Lib

Standardized AUTOSAR Adaptive Service

Application Level

Standardized AUTOSAR Adaptive API

AUTOSAR Adaptive Platform

Platform Functionality

Service Oriented Communication
Service orientated communication

Overall communication paradigm has been defined and documented.

- SW components executed on the adaptive platform will use service-oriented communication.
- Communication paths can be established at design- and at runtime.
- The AUTOSAR Adaptive platform will therefore provide middleware functionality.
Specifications will be validated in parallel with the standardization.

- Operating system definition based on POSIX.
- Middleware technologies for the implementation of service oriented communication, e.g. SOME/IP.
- Definition of execution model(s) to support the different use cases of access freedom, e.g. full access, sandboxing.
- Use of package format and managers for application deployment.
## Work Package structure from 2015 on

### Taskforce TF-RALSA
- **Reqs to Adaptive Platform**
  - WP-A-LIB: Libraries
  - WP-A-PRODERR: Production Errors

### Taskforce TF-APF
- **Adaptive Platform Foundation**
- WP-M
  - Methodology and Templates
    - WP-M-METH: Methodology
  - WP-M-SYST: System Template
    - ECU Configuration
  - WP-M-TIMEX: Timing Extensions

### Taskforce TF-EM
- **on the execution model in Adaptive Platform**
  - WP-I
    - Application Interfaces
      - WP-I-BODY: Body and Comfort
      - WP-I-ENGINE: Powertrain Engine
      - WP-I-TRSM: Powertrain Transmission
      - WP-I-CHASSIS: Chassis Control
      - WP-I-OCSAFE: Occupant and Pedestrian Safety

### Taskforce TF-MAP
- **on Methodology for Adaptive Platform**
- WP-I
  - Security of Adaptive Platform will be essential topic for WP-X-SEC*

### Taskforce TF-DAP
- **for Diagnostics on Adaptive Platform**
- WP-A
  - VFB and RTE
  - COM Stack
  - Functional Safety
  - Diagnostics
  - MCAL

### Project Leader Team

### WP-T
- **Acceptance Test**
  - WP-R-JP: Japan
  - WP-X-SEC: Security
  - WP-X-VAL: Validation

### Cross-product concerns
- Security of Adaptive Platform will be essential topic for WP-X-SEC*

### Legend:
- **Lead Work Package**
- **Work Package**
- **Subgroups**
- **Subgroups**
Summary

Achievements
- 4.2.1 ready for series production.
- Acceptance Tests Rel. 1.0.0 released.

AUTOSAR Products
- Planned: AUTOSAR Adaptive Platform.

Future of AUTOSAR
- Improvement and stabilization of existing standard.
- Anticipate the future: identification of technological trends, key features and next challenges for AUTOSAR.
- Feasibility studies will start in January 2015.
Thank you for your attention!