

## Related Standardization Activities in the Context of HPC-Diagnostics

ASAM as Plattform for Standardisation

## Diagnostic Standardization Committees in Place

### ISO

#### ► UDS and Communication

- UDS - ISO 14229
- CAN-TP ISO 15765
- DoIP - ISO 13400
- ePTI - ISO 20730

### SAE

#### ► OBD

- SAE J1979
- SAE J2012

### AUTOSAR

#### ► Software Architecture

- AUTOSAR Foundation
- AUTOSAR Classic Platform
- AUTOSAR Adaptive Platform



# Agenda

- ▶ **International Organization for Standardization (ISO)**

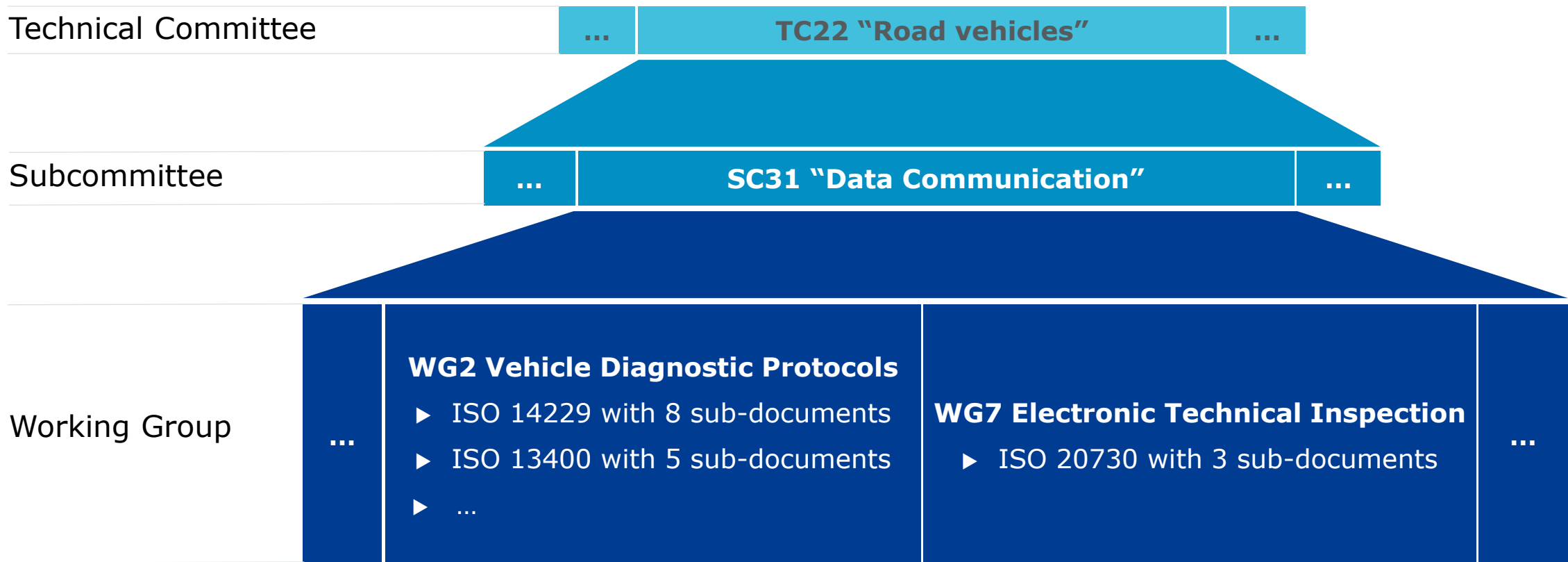
SAE

AUTOSAR

Summary

## Organisation Overview






ISO ([www.iso.org](http://www.iso.org)) provides worldwide standard in various domains



New version of ISO 14229 in 2019

Behind the scenes

Preliminary Release Schedule for ISO 14229 Edition 3

2019	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FDIS Submission								
FDIS Voting								
Voting Results								
Commenting CRs								
IS Publication								

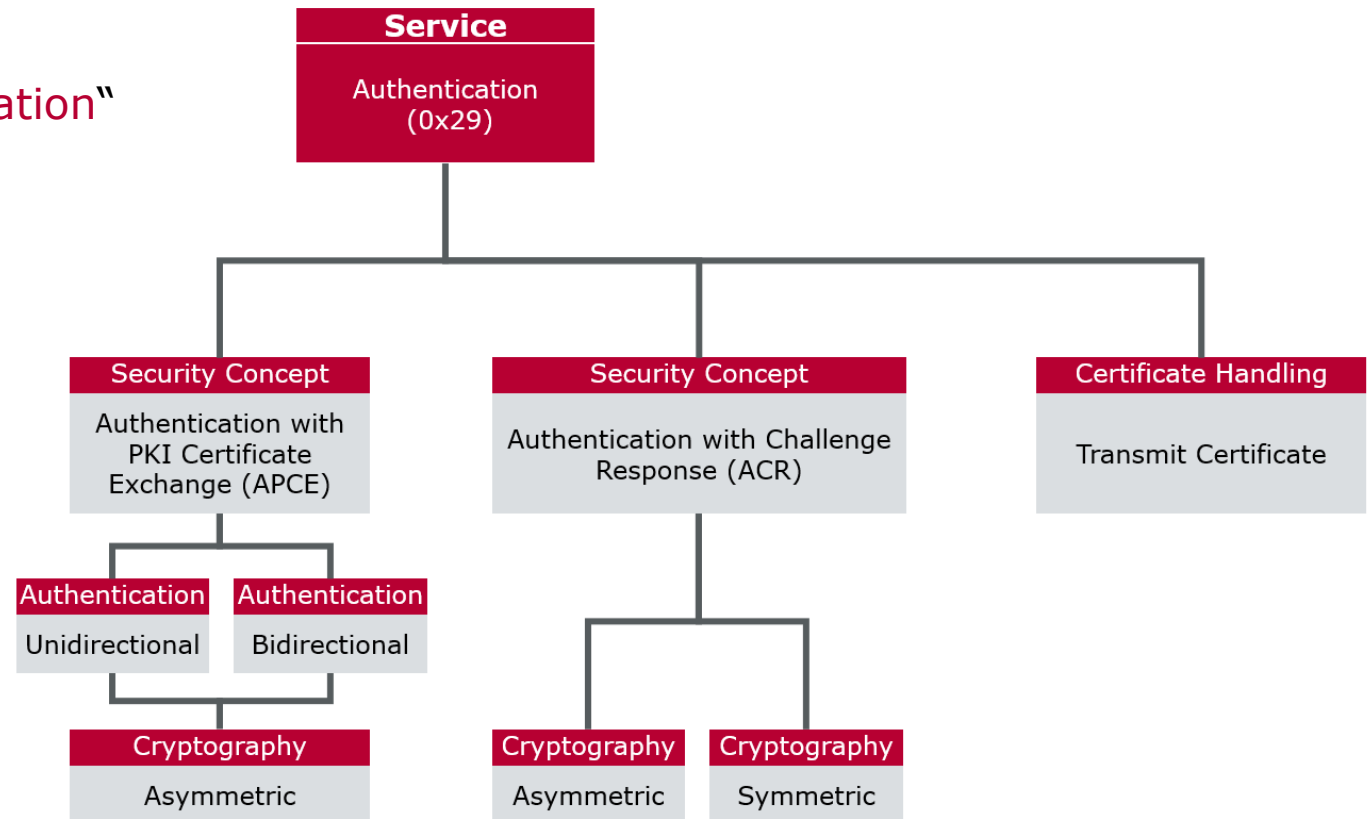
**FDIS** – Final Draft International Standard  
**IS** – International Standard

## Behind the scenes

### Major Changes in Edition 3 of ISO 14229-1

- ▶ New Diagnostic Service „0x29 Authentication“
  - ▶ Increases document by 10%

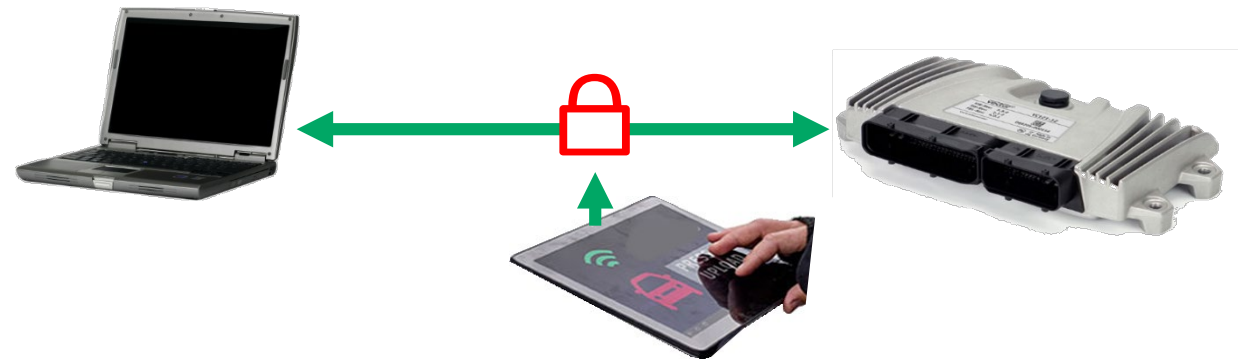
- ▶ Reworked Response On Event
  - ▶ New subfunctions
  - ▶ Clarified behavior



## Behind the scenes

### Major Changes in Edition 2 of ISO 13400

- ▶ DoIP secured by TLS
  - ▶ Protection of Man-In-The-Middle-Attacks
- ▶ In-vehicle DoIP
  - ▶ Standardised Diagnostics over Ethernet



# Agenda

International Organization for Standardization (ISO)

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Summary



## Diagnostic Standards

Among others SAE ([www.sae.org](http://www.sae.org)) emphasizes on developing standards for transport industry, such as automotive or aerospace.

### OBD Standards

#### SAE J1979

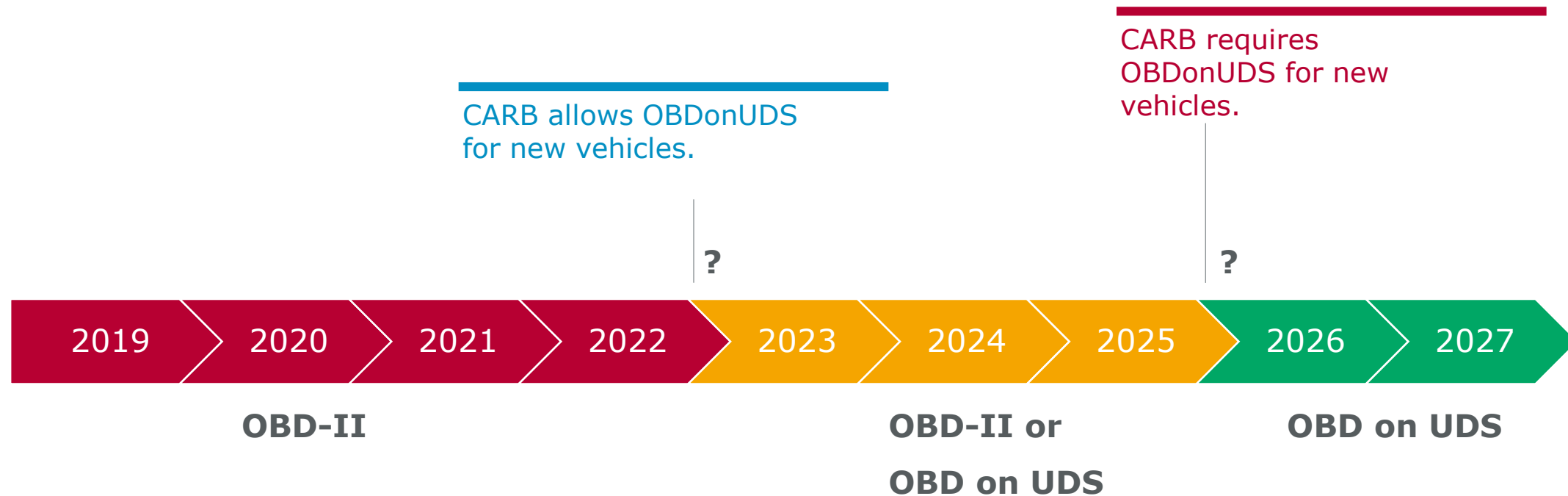
- ▶ Definition of emissions-related diagnostic services.
- ▶ References SAE J1979-DA which contains all standardized PIDs, Test IDs, Monitor IDs and InfoType IDs.

#### SAE J2012

- ▶ Definition of emissions-related diagnostic trouble codes.
- ▶ References SAE J2012-DA which contains all standardized DTCs and FTBs.
- ▶ Running out of 16 bit DTC numbers in near future
- ▶ Will switch to 3 Byte DTCs with introduction of SAE J1979-2

## Upcoming SAE J1979-2

- ▶ Classic OBD-II to be replaced by UDS services
- ▶ New subfunctions for fault memory access
- ▶ 10 FreezeFrames
- ▶ IUMPR per DTC
- ▶ ...



# Agenda

International Organization for Standardization (ISO)

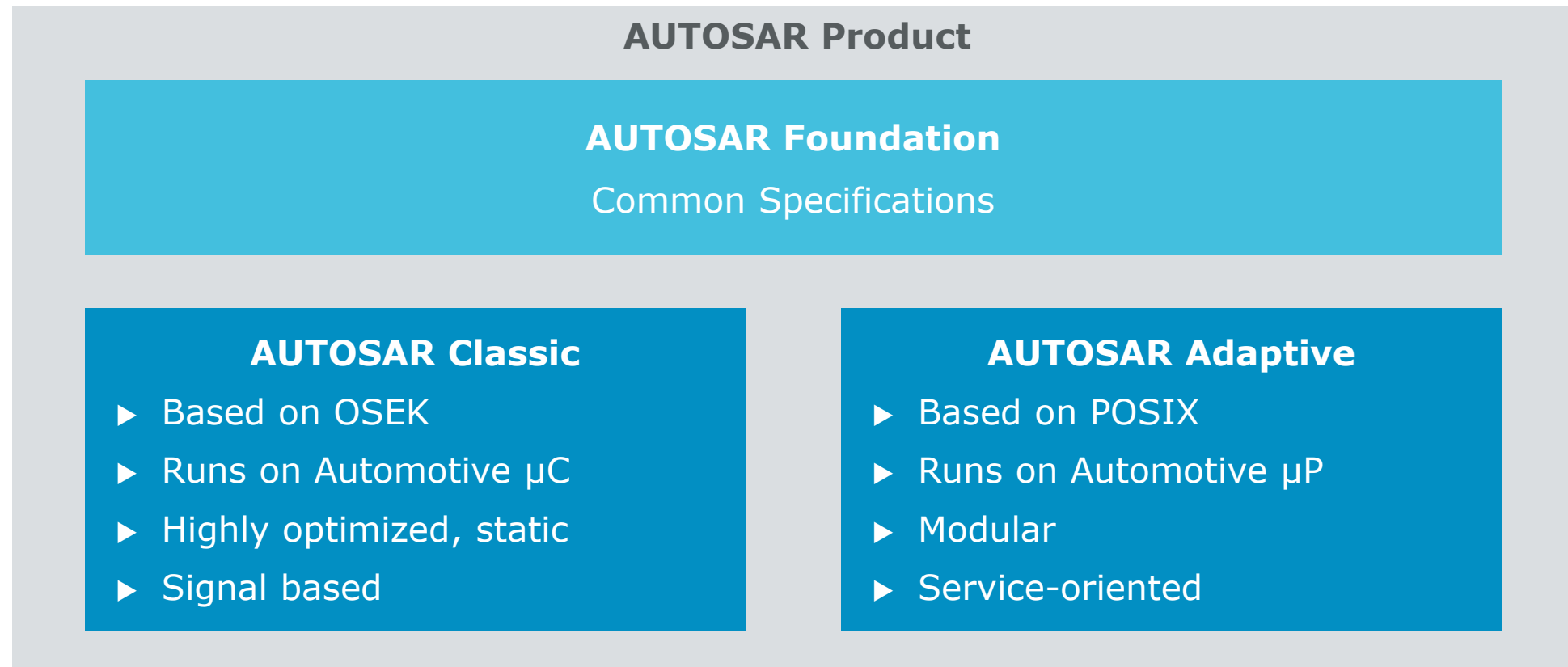
SAE

► **AUTOSAR**

Summary

## AUTOSAR Product Structure

AUTOSAR ([www.autosar.org](http://www.autosar.org)) aims to standardize ECU software architecture



## Supported Diagnostic Standards



### AUTOSAR Classic

ISO 14229

ISO 13400

ISO 27145

ISO 15031

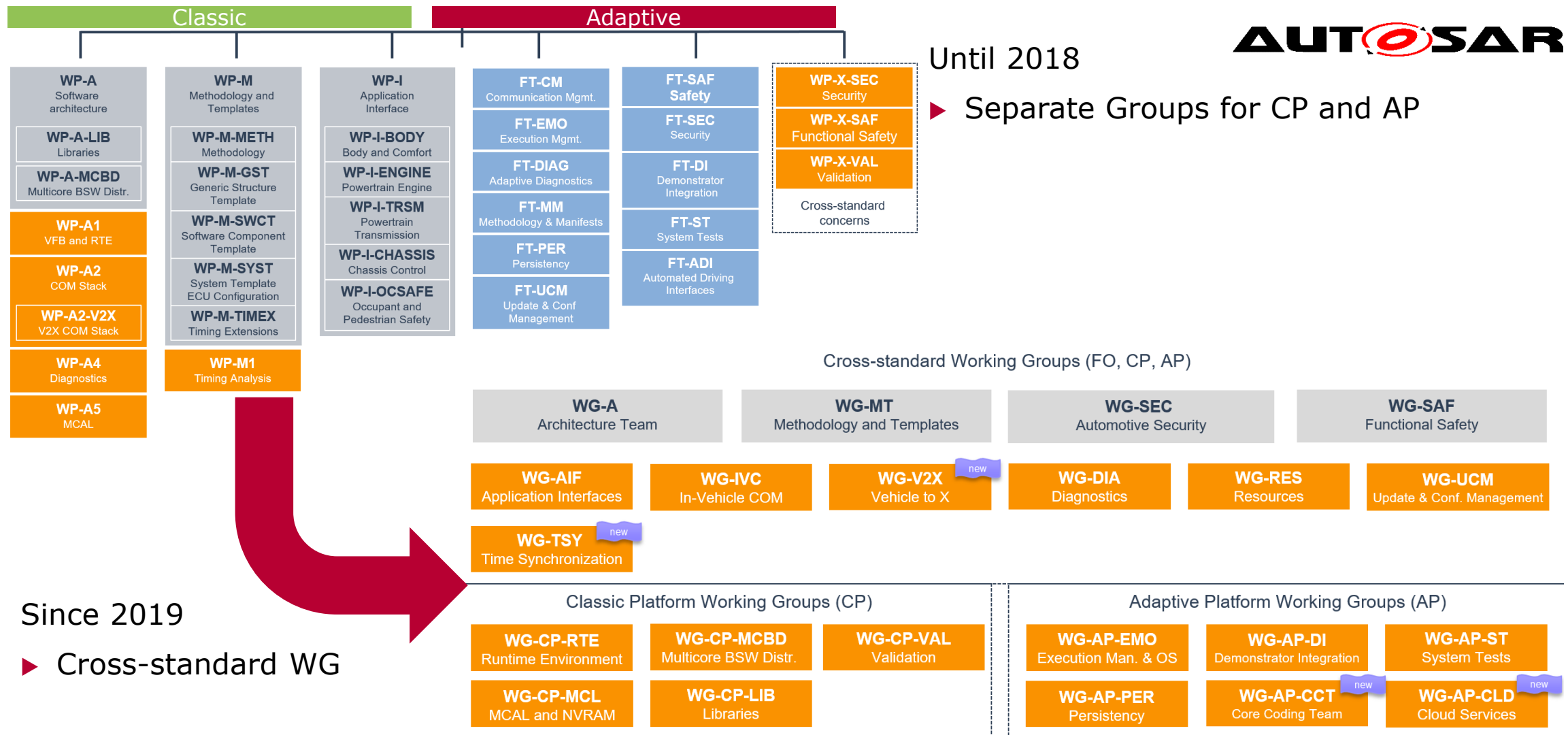
ISO 15765

### AUTOSAR Adaptive

ISO 14229

ISO 13400

# Working Groups Structure

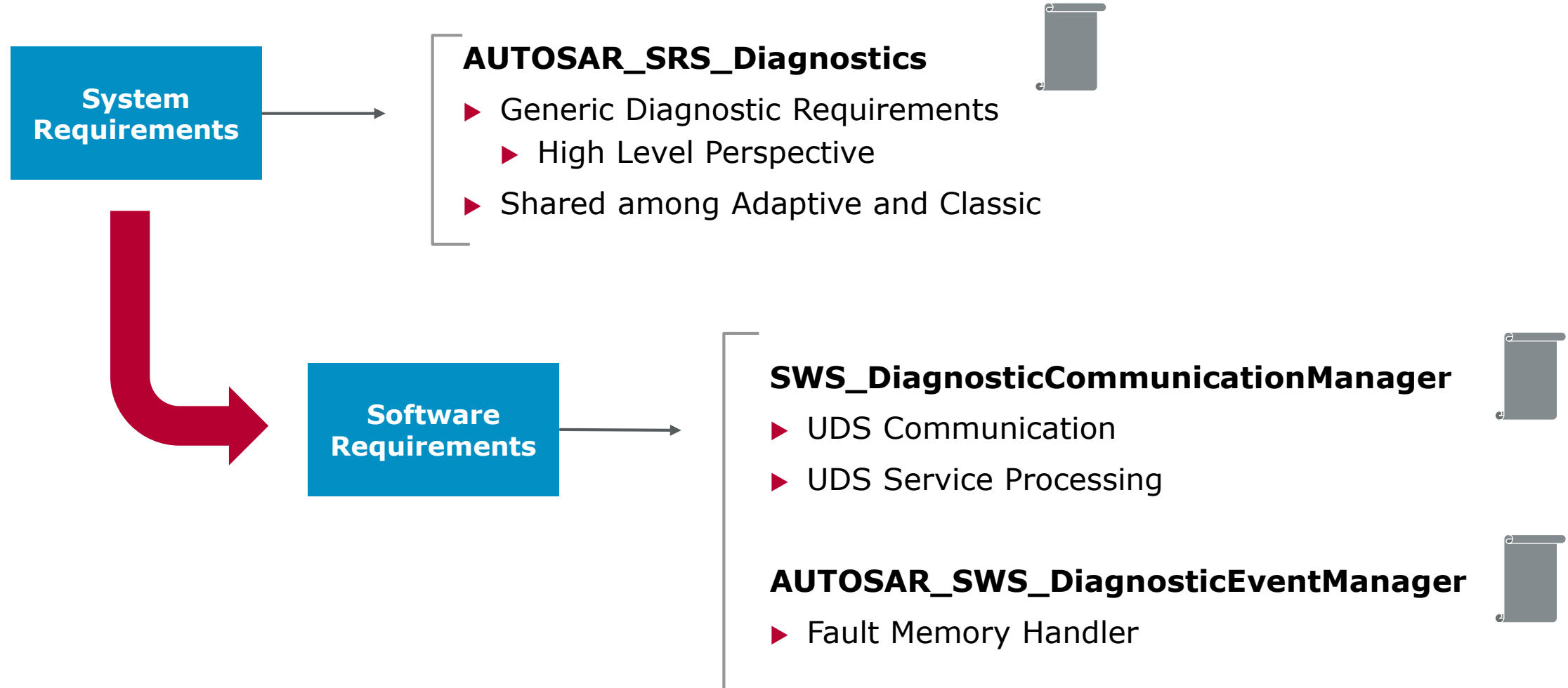


Quelle:

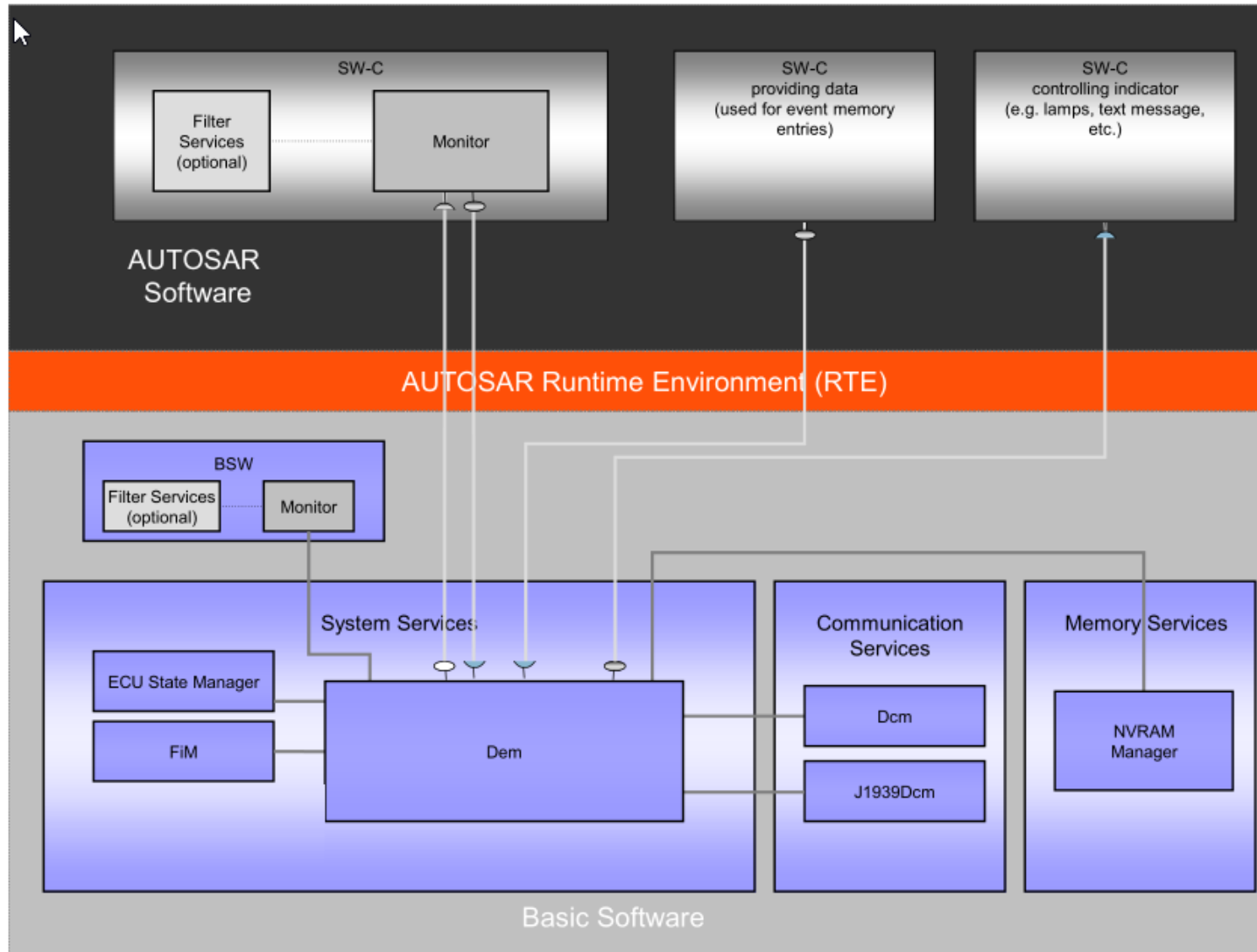
[https://svn.autosar.org/repos/work/09\\_WorkingGroups/All\\_WG/20\\_Meetings/20190515\\_All-WG-Meeting/05\\_Presentations/20190515\\_PL\\_All\\_WG-Meeting.pptx](https://svn.autosar.org/repos/work/09_WorkingGroups/All_WG/20_Meetings/20190515_All-WG-Meeting/05_Presentations/20190515_PL_All_WG-Meeting.pptx)

## Deliverables Classic Platform

AUTOSAR



## Diagnostic Architecture in Classic Platform

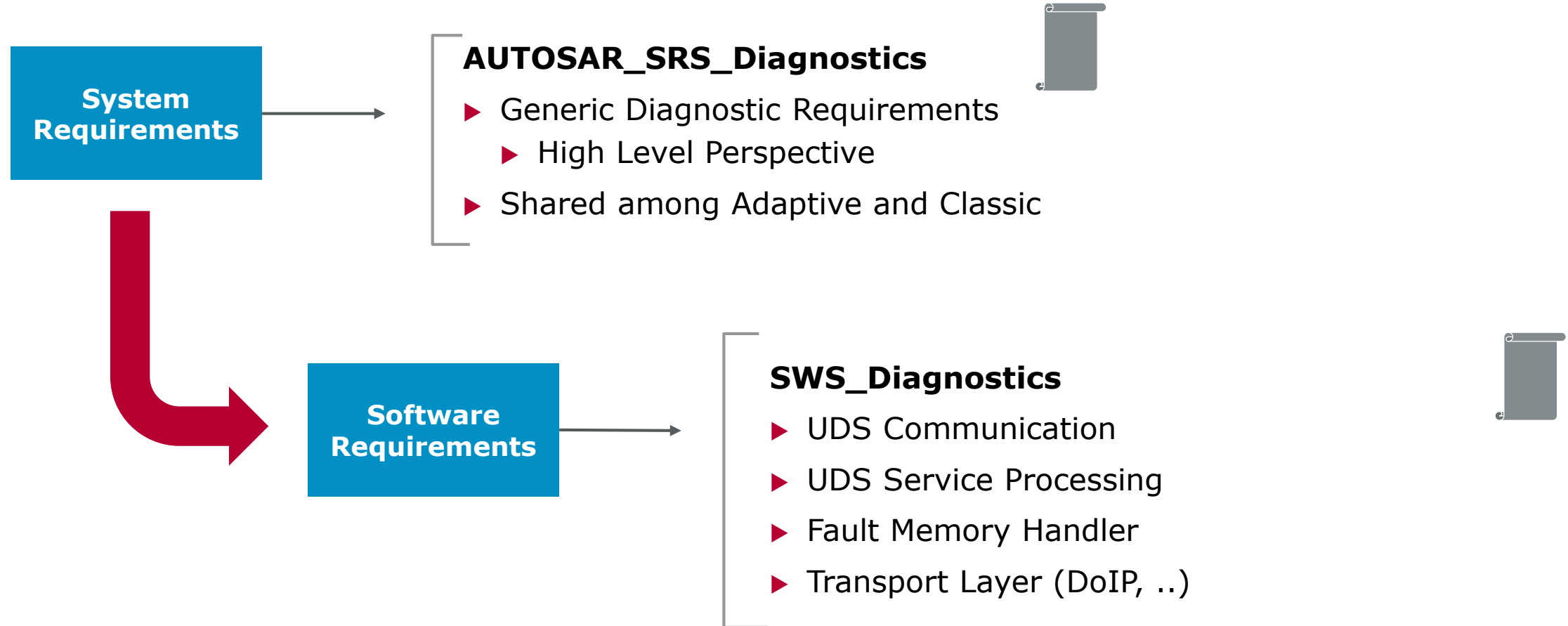
**AUTOSAR**

Quelle: AUTOSAR SWS\_DiagnosticEventManager.pdf

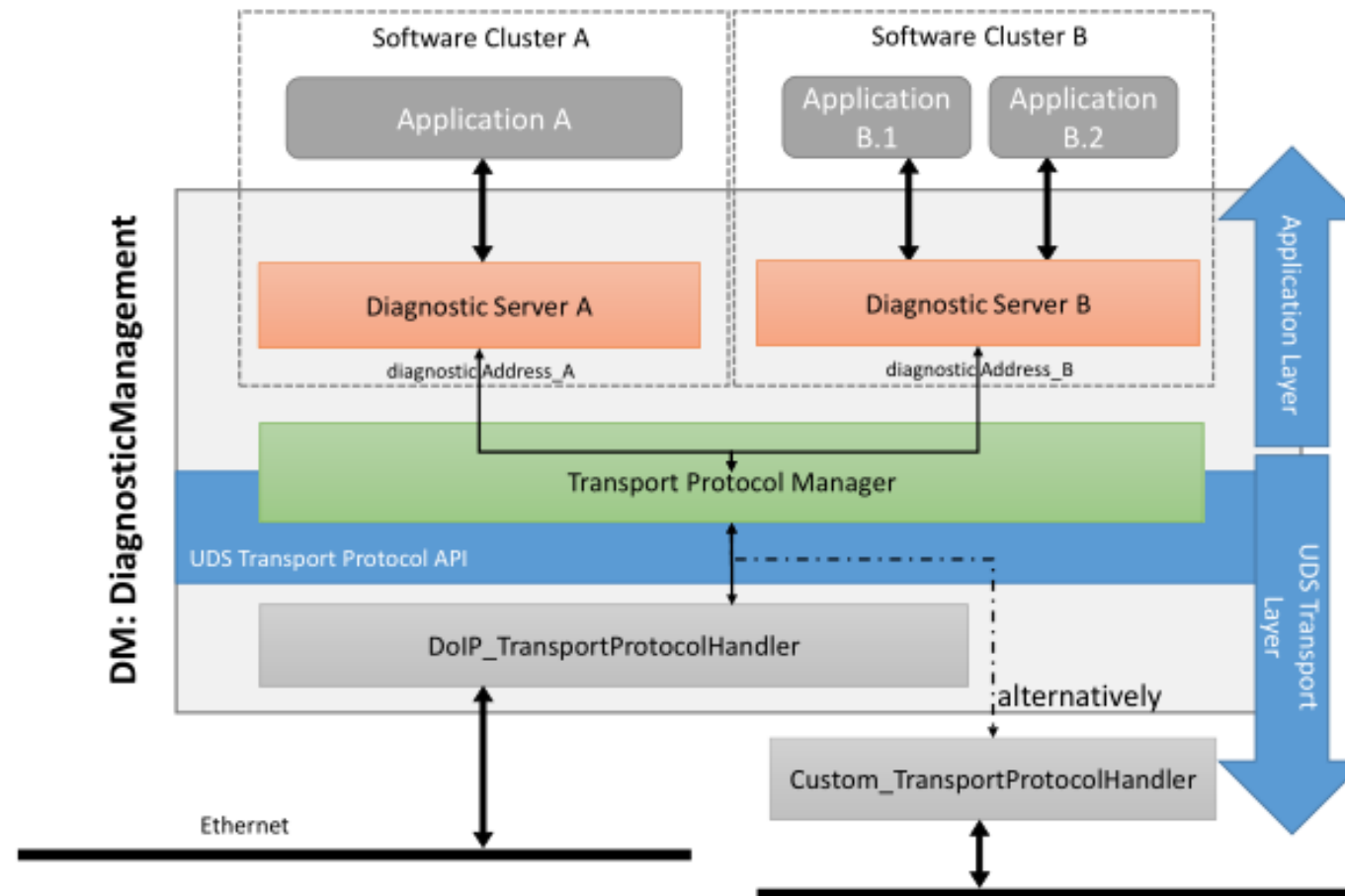


## Deliverables Adaptive Plattform

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## Diagnostic Architecture in Adaptive Platform



- Currently only DoIP (ISO 13400) is supported as build-in transport protocol

## UDS in Adaptive Platform

AUTOSAR Adaptive uses **UDS** as Diagnostic Protocol

### Why UDS?

- ▶ Nobody has demanded something else yet.
- ▶ Keep existing diagnostic processes and workflows.

### Don't reinvent the wheel

- ▶ Keep existing tools.
- ▶ Keep diagnostics stable in development, production and aftersales.

## UDS in Adaptive Platform

### Challenges

- ▶ Support modularization.
- ▶ Handle more frequent software updates in logistic process

### Current UDS Statement

- ➔ Good idea to start with UDS
- ➔ Reach stable product in finite time
- ➔ Introduction of AUTOSAR Adaptive and another protocol would have been too tough

## UDS in Adaptive Platform

**UDS will be used in the future...**

### **OBD Diagnostics**

- ▶ OBD Diagnostics realized by "OBD on UDS"
- ▶ all OBD relevant ECUs will require UDS



### **ePTI (Electronic Periodic Technical Inspection)**

- ▶ ISO 20730 (currently Draft)
- ▶ Claims to be „Safety OBD“
- ▶ ePTI is not compulsory

**→ UDS set in these domains for the years to come**

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► **Summary**

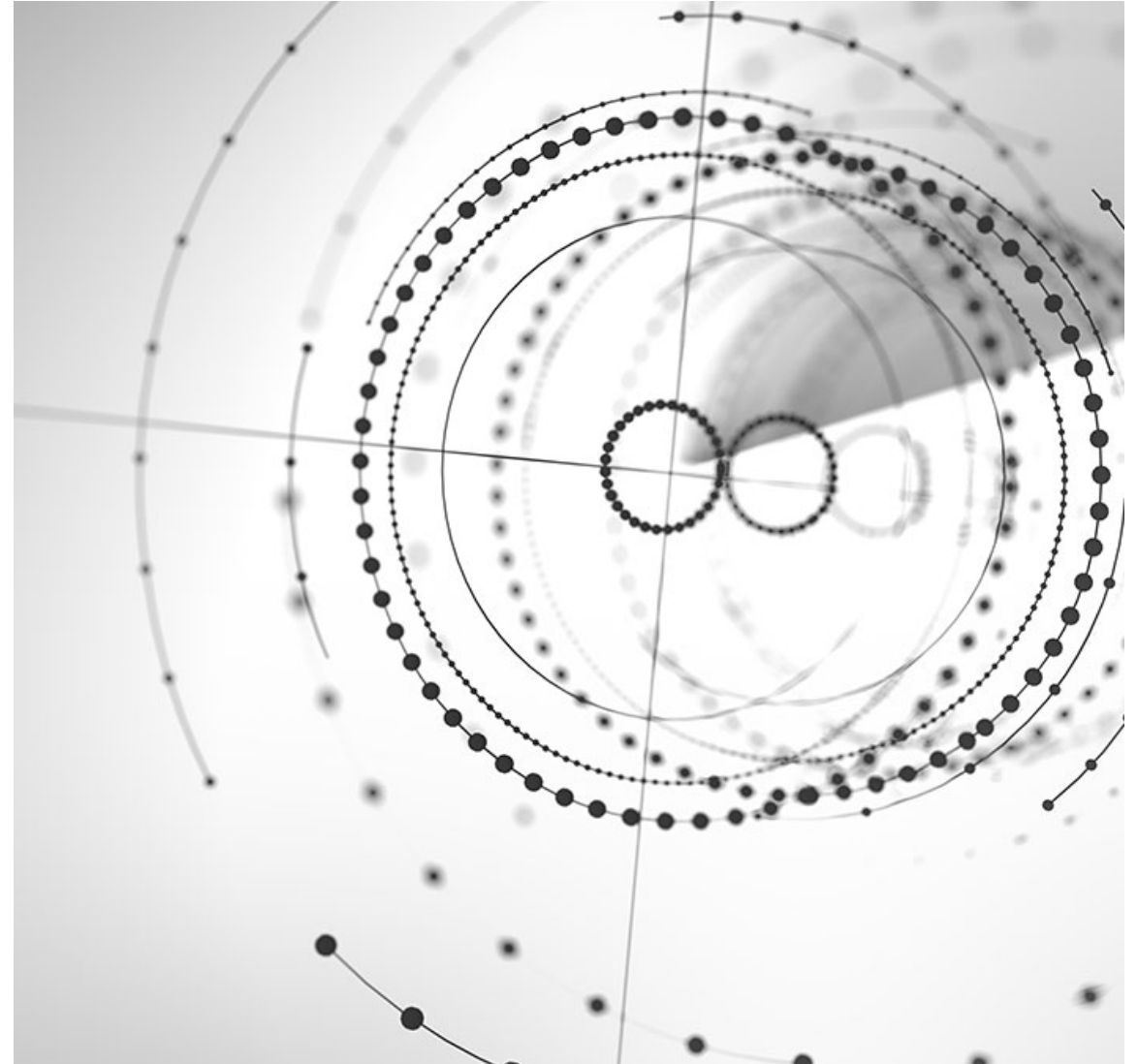
With ISO, SAE and AUTOSAR various committees are doing diagnostic standardization

- ▶ ISO
- ▶ SAE
- ▶ AUTOSAR

Standardization on different levels

- ▶ Protocol
- ▶ Data
- ▶ Interpretation
- ▶ Software

➔ ASAM well suited for HPC Diagnostic Standardization



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