



Classic Platform and Foundation

Status and Outlook

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Lisbon, Portugal

BMW
GROUP



DAIMLER

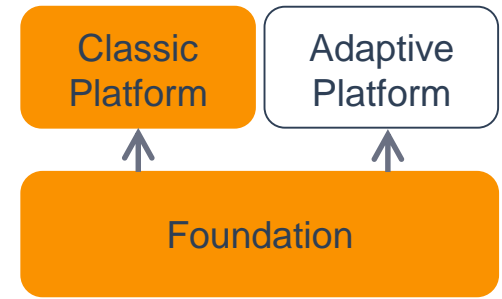


TOYOTA

VOLKSWAGEN
AKTIENGESELLSCHAFT

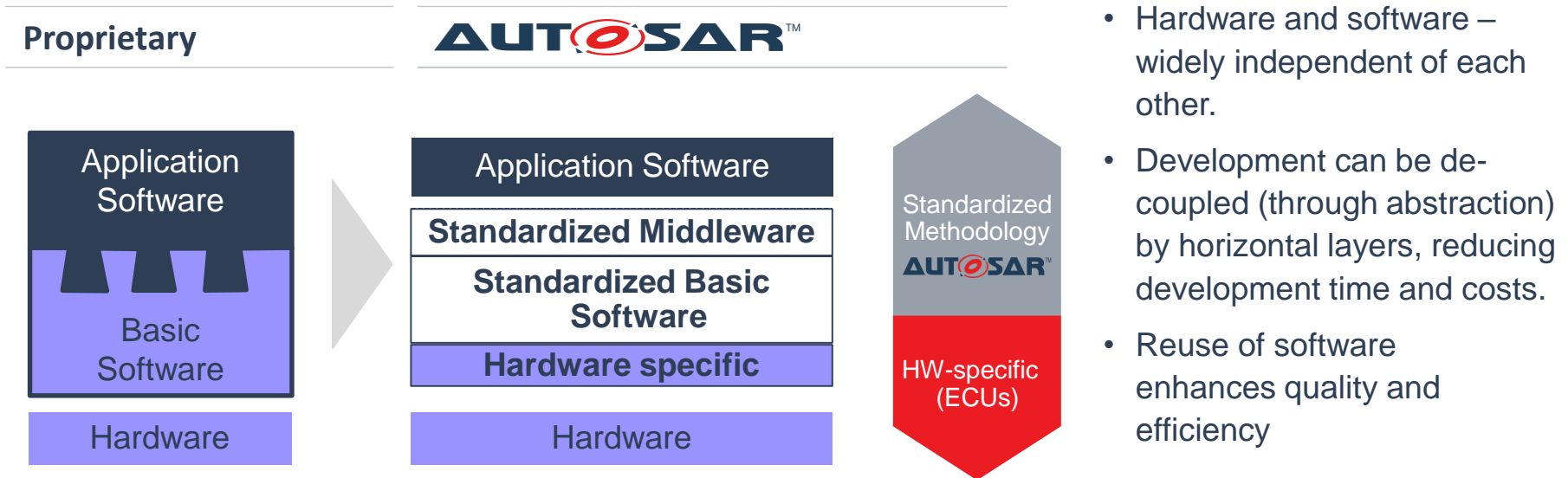
Agenda

- > Motivation
- > Overview Classic and Foundation Platform
- > Released, planned features and Roadmap
- > AUTOSAR Working Group organization
- > Outlook
- > Feature Catalog



AUTOSAR – Our Objective

AUTOSAR aims to standardize the software architecture of **Electronic Control Units (ECUs)**. AUTOSAR paves the way for innovative electronic systems that further improve performance, safety and security.

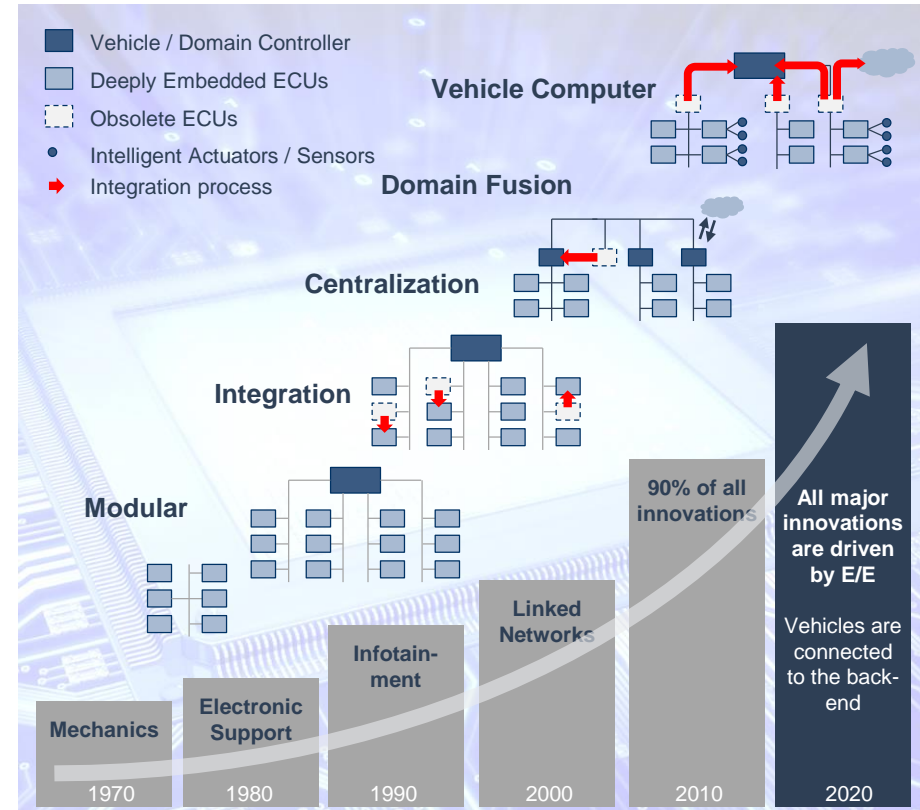


Role of the Classic Platform

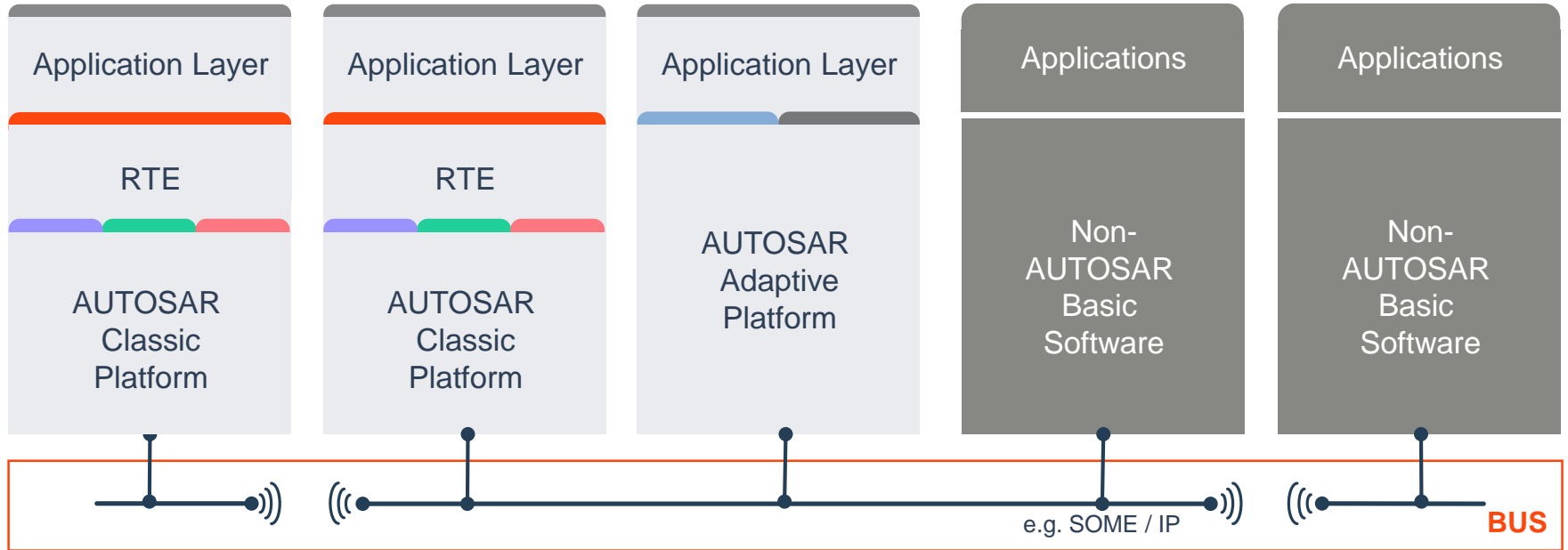
- The **AUTOSAR Classic Platform** is used **dominantly in deeply embedded ECUs**
- ECUs running the **Classic Platform** assure bus compatibility which can include intelligent **actuators** and **sensors**
- **E/E-Architectures may change** to more centralized architectures and functions may be integrated into powerful vehicle and domain controller ECUs

But nevertheless ...

... the **Classic Platform** is the **bread and butter business** of AUTOSAR.



AUTOSAR in a Vehicle Network

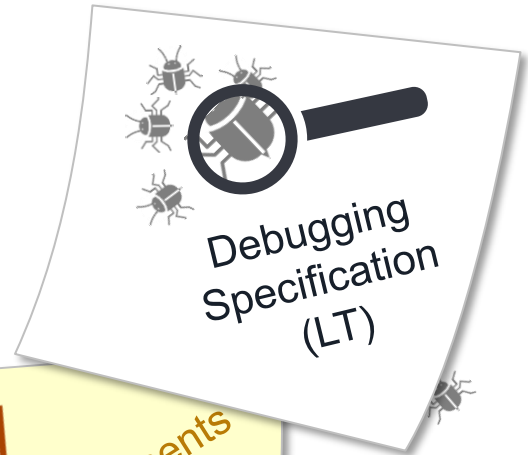
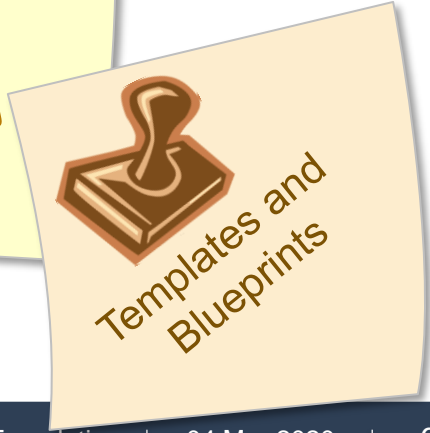
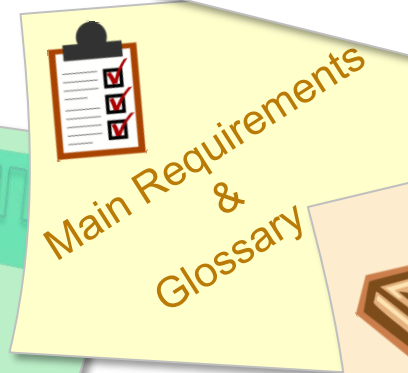
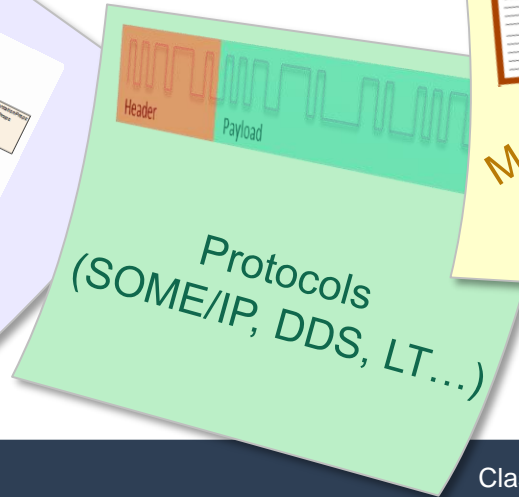
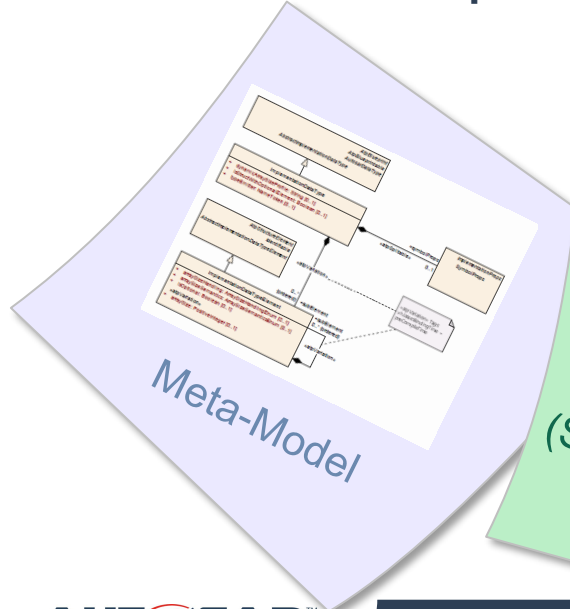


Common Bus Interface Specification

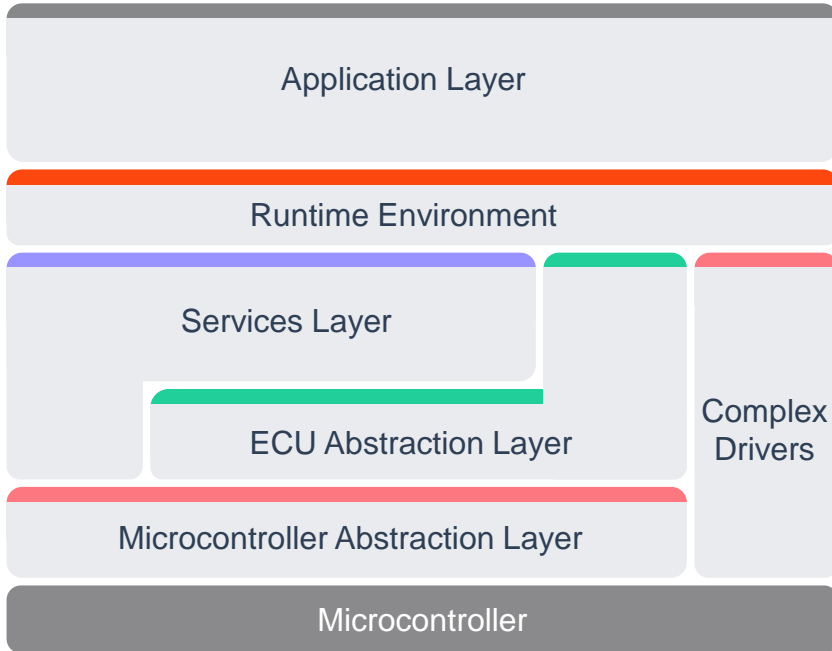
AUTOSAR Foundation

Common Features

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



AUTOSAR Classic Platform Layered Software Architecture







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

Released Features (1/2)




AUTOSAR Classic / Foundation Platform R19-11

Feature	Customer Benefit	Ref.
DoIPExtension	Introduce a generic solution for multiple interfaces on which DoIP can be handled independently irrespective of Internal/External tester	
IPsec Protocol	It increases communication security without the need to modify any application	
Signal Service Translation	Make Adaptive Machines interact with Classic ECUs	
Abstract Platform System Description (VFB++)	Vehicle Functional Communications Abstraction Layer	

R19-11 introduced 4 new features supporting AP-CP interoperability

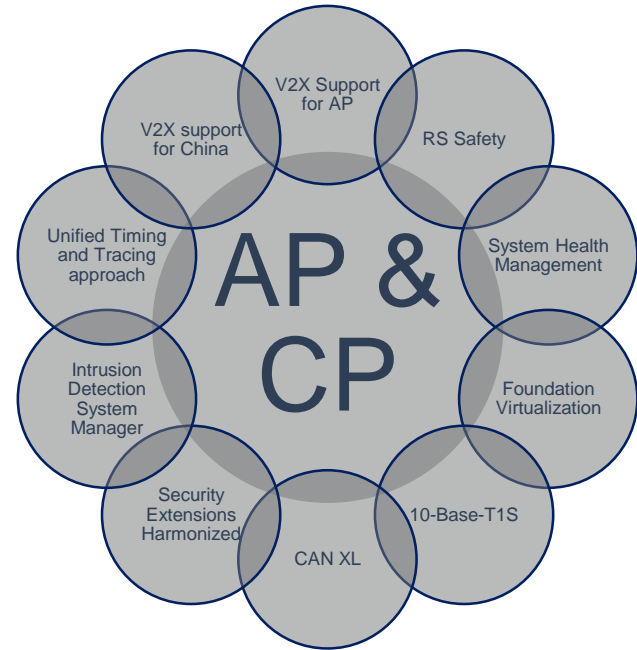
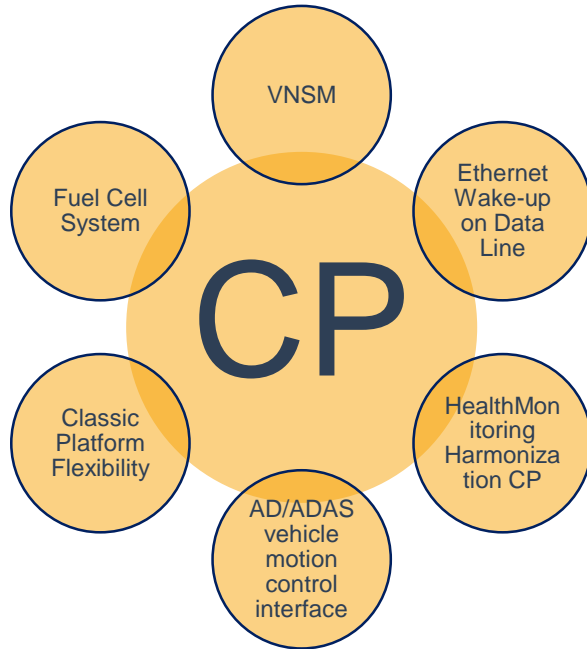
Released Features (2/2)

AUTOSAR Classic / Foundation Platform R19-11

Feature	Customer Benefit	Ref.
BSW Multicore Distribution	Enable load balancing for projects with extensive communication effort (e.g. domain controllers)	
Non-Volatile Data Handling Enhancements	Resource optimized NvRAM Interface and introduction of a diagnostic interface for Parameter SW-C!	
FirmwareoverTheAir	The use of an OEM independent description of remote SW updates over the air	

With the release of in total 7 new features the Classic Platform is still evolving!

Planned Features (1/3)



As of today, 16 features are already planned for future releases of Classic and Foundation Platform

Planned Features (2/3)

New features focus mainly on the following areas:

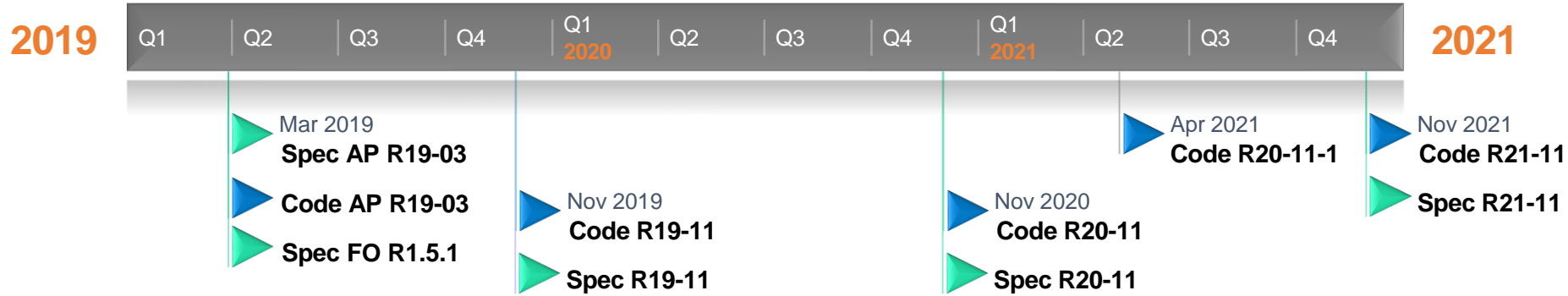
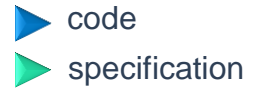
- ✓ Improving interoperability between CP and AP
 - Unified Timing and Tracing approach, Health Monitoring Harmonization
- ✓ Evolving security approach
 - Security Extensions Harmonized, Intrusion Detection System Manager
- ✓ Evolving safety approach
 - RS Safety, System Health Management
- ✓ Reduce power consumption and increase lifetime of the HW
 - Ethernet Wake Up on Data-Line, Vehicle Network State-Manager (VNSM)

Planned Features (3/3)

New features focus mainly on the following areas

- ✓ Support new network technologies
 - 10Base-T1S, CAN XL
- ✓ Enhance Development & integration flexibility
 - Classic Platform Flexibility
- ✓ Application Interfaces
 - AD/ADAS vehicle motion control interface, Fuel Cell System

AUTOSAR Roadmap



- Annual synchronized AUTOSAR Release in November Rxx-11
 - Release of FO, CP and AP follows the same name schema “Rxx-11”
 - Pre-release of Demonstrator code together with specification - ARXML files not according to latest schema version
- Demonstrator code release Rxx-11-1 in spring based on specification from Rxx-11
 - ARXML files based on latest schema version Rxx-11
 - Will contain important bug fixes and can reflect late specification changes

Working Group organization

Project Leader Team

Cross-standard Working Groups (FO, CP, AP)

WG-A
Architecture Team

WG-MT
Methodology and Templates

WG-SEC
Automotive Security

WG-SAF
Functional Safety

WG-IVC
In-Vehicle COM

WG-AIF
Application Interfaces

WG-V2X
Vehicle to X

WG-DIA
Diagnostics

WG-RES
Resources

WG-UCM
Update & Conf. Management

Classic Platform Working Groups (CP)

WG-CP-RTE
Runtime Environment

WG-CP-MCBD
Multicore BSW Distr.

WG-CP-LIB
Libraries

WG-CP-MCL
MCAL and NVRAM

Adaptive Platform Working Groups (AP)

WG-AP-EMO
Execution Man. & OS

WG-AP-DI
Demonstrator Integration

WG-AP-ST
System Tests

WG-AP-PER
Persistency

WG-AP-CCT
Central Coding Team

WG-AP-CLD
Cloud Services

Legend: **Lead Working Group**

Working Group

Outlook

If you are in the automotive industry, AUTOSAR invites you to become an AUTOSAR Partner and have the chance to contribute and strengthen the standard by:



Become a member of a working group to network with others and drive your specific interests



Concept Development

```
117 void Runtime::Init()  
118 {  
119     static std::once_flag initial;  
120     std::call_once(initialized, i;  
121 }  
122  
123 Runtime& Runtime::GetInstance()  
124 {  
125     static Runtime instance_;  
126     return instance_;  
127 }
```

Contribute on specifications and / or code



Document Ownerships

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