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2023-11-23	R23-11	AUTOSAR Release Management	• Release Life Cycle Status: R23-11 is in Evolution, R23-11 supersedes R22-11

Disclaimer

Contents

References

[1] Standardization Template
AUTOSAR_FO_TPS_StandardizationTemplate

1 Introduction

1.1 Scope of This Document

This document provides an overview of the AUTOSAR standard Classic Platform Release R23-11.

1.2 Terminology and Licenses

1.2.1 Terminology Statement

AUTOSAR has identified a use of previously common terminology that can be considered oppressive or racist, such as master/slave and black/white list, or in other contexts such as gender or age as harmful connotations. AUTOSAR has started a discussion with all the working groups to replace these terms. AUTOSAR is committed to provide all specification documents without these terminology in the coming and future releases. Nevertheless, it may take several releases before the terms are completely replaced, as AUTOSAR has to continue its operations and thousands of pages of existing specifications have to be reviewed and updated in parallel.

1.2.2 Usage of W3C XML Schema

The AUTOSAR XML Schema requires the XML namespace definition file xml.xsd.

There are several occurrences of the "xml.xsd" file within this release. For all occurrences the W3C license applies which can be found on `https://www.w3.org/Consortium/Legal/2015/copyright-software-and-document`.

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1.3 AUTOSAR Standards

1.3.1 Introduction

AUTOSAR addresses a wide range of use cases in automotive software development with its standards. These use cases have different requirements and lead to different technical solutions.

Packaging its deliverables into different "standards"

- eases the access to AUTOSAR solutions for users and
- allows AUTOSAR to scale with market needs.

1.3.2 Definition

An AUTOSAR standard is a consistent set of AUTOSAR deliverables, which are released at the same time. AUTOSAR deliverables can, but are not limited to be of the following kinds:

- textual explanations
- textual specifications
- test specifications
- source code
- other formal or semi-formal textual formats (e.g., ARXML, UML models, XML Schemata)

At the time of release, AUTOSAR ensures that dependencies are fulfilled.

1.3.3 Overview of AUTOSAR's Standards

AUTOSAR delivers the following standards:

Standard	Abbreviation
Adaptive Platform	AP
Classic Platform	CP
Foundation	FO

1.3.3.1 Adaptive Platform

The Adaptive Platform is AUTOSAR's solution for high-performance computing ECUs to build safety-related systems for use cases such as highly automated and autonomous driving.

1.3.3.2 Classic Platform

The Classic Platform is AUTOSAR's solution for embedded systems with hard real-time and safety constraints.

1.3.3.3 Foundation

The purpose of the Foundation standard is to enforce interoperability between the AUTOSAR platforms.

Foundation contains the generic artifacts that are common for AP and CP to ensure compatibility between

- Classic- and Adaptive Platform
- Non-AUTOSAR platforms to AUTOSAR platforms

1.3.4 Naming Scheme for Files and Specification Items

AUTOSAR has extended the naming scheme for files and specification items. The objective is to consistently include the AUTOSAR Standard to which the file or specification item belongs in the name. This addition also provides namespaces for the three AUTOSAR Standards and avoids conflicting names for specifications on the same topic in different AUTOSAR Standards. According to the new naming scheme, the abbreviation of the AUTOSAR Standard (AP, CP or FO) is added as first part of specification item IDs and as second part of file names. For details, please refer to [1].

From R23-11 onwards, the names of all files that are part of the release follow the new naming scheme. The IDs of existing specification items are not changed to avoid issues and migrations for AUTOSAR Partners that use these IDs internally.

1.3.5 Dependencies Between Standards

Each release of Classic and Adaptive Platform relies on a dedicated version of Foundation. The specific dependency is documented in chapter 1.4.5.

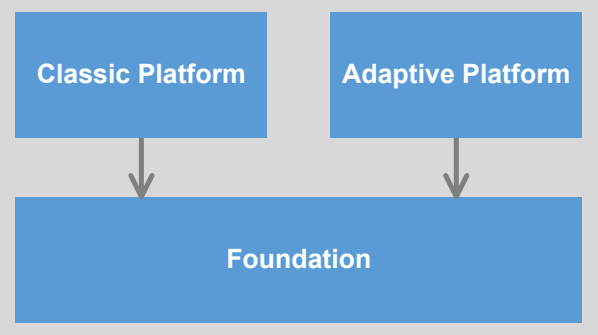

Figure 1.1: Dependencies of AUTOSAR standards

1.3.6 Dependencies to Other Standards

This release of the Classic Platform depends on the standard Foundation in release R23-11, which

- defines protocols implemented by Classic Platform
- contains the project objectives and the common requirements from which the features of the Classic Platform are derived
- contains common specification parts which apply to both, the Adaptive Platform and the Classic Platform.

These dependencies are refined in the trace information of the requirements in the respective specifications.

1.4 Release Numbering and Life Cycle

1.4.1 Release Life Cycle of a Major Release

Each major release goes through four consecutive steps within its life cycle (examples based on the internal release numbering scheme):

1. Development: Between start of life cycle and the initial release (e.g., R4.0.1)

2. Evolution: Following the initial release with zero, one or several minor releases and/or revisions (e.g., R4.0.2, R4.1.1)
3. Maintenance: No new content is added to a major release but only maintenance of the existing content with zero, one or several revisions (e.g., R3.2.2) is provided
4. Issue Notice: No more revisions but zero, one or several issue notices, i.e., updates of the list of known issues until end of life cycle.

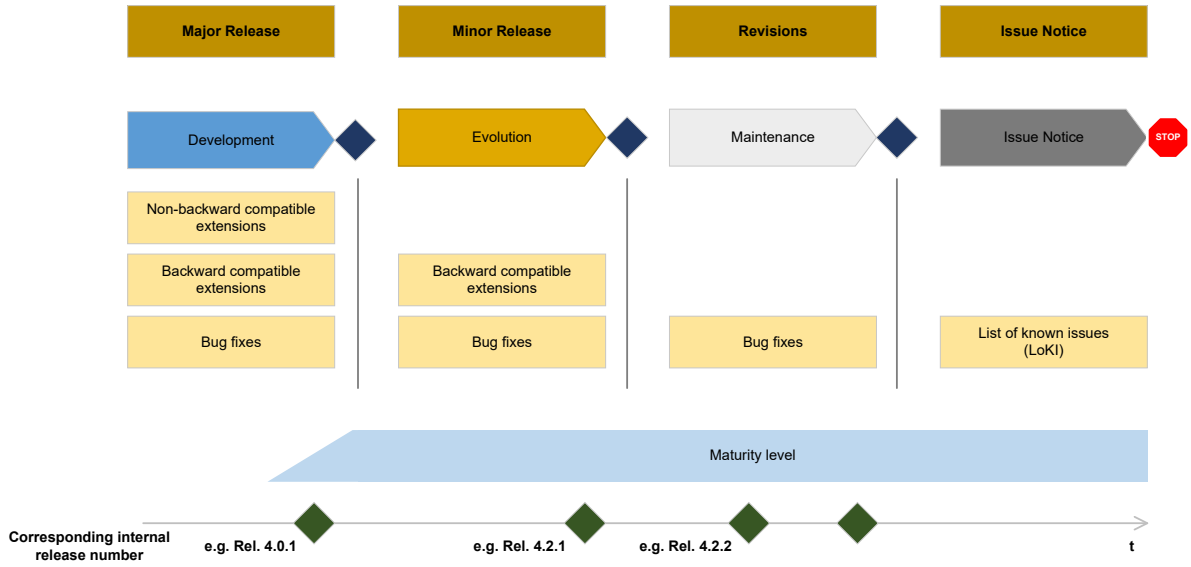

Figure 1.2: Life cycle model of AUTOSAR standards

1.4.2 Life Cycle States of Specification Items and Requirements

The life cycle state of a specification item is found after the specification item ID surrounded by curly brackets. The states are:

- {Valid}: This indicates that the related entity is a valid part of the document. This is the default and also applies if no dedicated life cycle status is annotated for the related entity.
- {Draft}: This indicates that the related entity is newly introduced but still experimental. This information is published but is subject to change without backward compatibility guarantee.
- {Obsolete}: This indicates that the related entity is subject to be removed in one of the following releases without further notice.

The life cycle state of a requirement is found in the attribute "type". The states are the same as the specification item states.

1.4.3 Platform Release Number

AUTOSAR applies a four-digit numbering scheme Ryy-mm to identify releases. The identifiers “yy” and “mm” depict the year and month of the release date, e.g., R20-11 for the November 2020 release.

1.4.4 Internal Release Number

AUTOSAR additionally maintains an internal release number for different purposes (e.g., usage in BSW modules in Classic Platform).
The internal release number is used for all platforms and follows up on the Classic Platform release number. In Adaptive Platform this is newly introduced. In Foundation this leads to a discontinuation of the former numbering pattern (e.g., R1.5.0).
A mapping list between Platform Releases and corresponding internal release numbers can be found in chapter 1.4.5. The internal release number uses a three-digit numbering scheme R<major>.<minor>.<revision> to identify releases. Its primary purpose is to identify a release as

- a major release: Valid and draft specification parts may be changed backward incompatibly.
- a minor release: Valid specification parts may only be changed backward compatibly. Draft specification parts may be changed backward incompatibly.
- a revision: Does not contain extensions but only backward compatible bugfixes.

1.4.5 Overview of AUTOSAR Releases and Corresponding AUTOSAR Schema Versions

Until the Releases CP R4.4.0 and AP R19-03, AUTOSAR released the platforms separately where a Foundation release went along with each platform release. Since compatibility between the platforms is essential to be able to have AP and CP ECUs within one vehicle project, an XML schema needs to be available that works with the different releases. The following table gives an overview about the different schema versions and the corresponding platform releases they can be used for.

The AUTOSAR schema does not have an impact on the Foundation. The Foundation releases are mentioned for the sake of completeness.

Schema Version	Classic Platform release	Adaptive Platform release	Foundation release
AUTOSAR_00042	R4.3.0	R17-03	R1.1.0
AUTOSAR_00043	R4.3.0	R17-10	R1.2.0
AUTOSAR_00044	R4.3.1	R17-10	R1.3.0
AUTOSAR_00045	R4.3.1	R18-03	R1.4.0

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Schema Version	Classic Platform release	Adaptive Platform release	Foundation release
AUTOSAR_00046	R4.4.0	R18-10	R1.5.0
AUTOSAR_00047	R4.4.0	R19-03	R1.5.1

Starting with release R19-11, all platforms are released as one AUTOSAR release and therefore come along with one schema version.

Schema Version	Platform release	Internal release number
AUTOSAR_00048	R19-11	R4.5.0
AUTOSAR_00049	R20-11	R4.6.0
AUTOSAR_00050	R21-11	R4.7.0
AUTOSAR_00051	R22-11	R4.8.0
AUTOSAR_00052	**R23-11**	**R4.9.0**

According to the release life cycle of AUTOSAR the release R23-11 is a minor release.

1.5 Content of Chapters

This document is structured as follows:

- Chapter 1 introduces AUTOSAR's release strategy and its standardization approach.
- Chapter 2 provides a summary of changes since the previous release of the Classic Platform.
- Chapter 3 contains the overview of specifications comprising the AUTOSAR release R23-11. This chapter is structured according to the clusters of AUTOSAR release R23-11.
- Chapter 4 contains remarks about known technical deficiencies.
- Chapter 5 contains the detailed revision history of all released specifications.

2 Summary of Changes in Release R23-11

This chapter contains a summary of the changes that have been implemented since the previous release R22-11.

2.1 Concepts

2.1.1 Introduced Concepts

The following concepts in 2.1.1.1 - 2.1.1.7 have been introduced.

2.1.1.1 Charging Interface

Charging Interface: [CP] Support for ISO-15118-2:2014 standard focusses on wired AC_DC charging which will be controlled using the module ChrgM using a set of messages as defined in the standard ISO15118-2.

2.1.1.2 Secure SOME/IP-ACL

This concept introduces the possibility to limit the SOME/IP communication from only known permitted listed authenticated communication partners to specific service instance, so secured service instance can only be accessed (Offered, Subscribed or Consumed) by defined partners.

2.1.1.3 Firewall in Classic AUTOSAR

The concept introduces a firewall to inspect and filter Ethernet traffic based on predefined firewall rules. The firewall supports stateless packet inspection, stateful packet inspection and deep packet inspection as well as rate-based filtering of network packets. Furthermore, the firewall also supports the Intrusion Detection System by raising Security Events to the IdsM.

2.1.1.4 DDS Support on CP

DDS on CP – concept part 5 – adds the DDS configuration parameters into the system template model. The DDS configuration at SystemTemplate level shall be used to derive the EcuC configuration of the DDS Entities, e.g. DDS DomainParticipants, Publishers, Subscribers, DataWriters, DataReaders.

Besides a DDS EcuC model refactoring has been done in order to have a more readable model, and to add configuration of queues used to interact with PduRouter.

2.1.1.5 Deterministic Communication with TSN

The concept part "Support of PTP physical clock adjustment" focused to support accuracy for syntonization/synchronization of the local clock to master clock, which is required for time sensitive use cases in an Ethernet switched network. Therefore rate ratio calculation, support of multiple PTP hardware clocks and PTP hardware clock adjustment where introduced.

The concept part "Introduce IEEE 1722 related features handling of streams and tunneling legacy communication (CAN and LIN)" focused to support IEEE1722 streams. Therefore a new transport layer has been introduced which provide the possibility to use IEEE1722-2016 standardized transport protocol for time-sensitive applications in a bridged local area network on classic platform in AUTOSAR. The transport layer fully support processing of audio / video streams and distribution of a generated clock rate provided by so called media clock. The transport layer support encapsulation of bus frames (e.g. CAN frames) transported via AVTP stream across the network (a.k.a. tunneling of legacy communication). Please note: Lower layer needs to be extended to fully support transportation of encapsulation of bus frames via an AVTP stream. The Ethernet communication stack has been extended to support efficient data handling (e.g. hardware supported data transfer (e.g. DMA), direct data provision, configurable egress/ingress data processing), which are relevant for time-sensitive use cases.

2.1.1.6 Time Validation

The Time Validation for the AUTOSAR Classic Platform is to perform all. the checks that can be done locally within the ECU in order to verity that the local instance of the synchronized time is safe.

Basic Functions:

- The Time Validation Component monitors the synchronization process, itself.
- The Time Validation Component monitors the progress of the (local instance of) GlobalTime.
- The Time Validation Component makes the integrity status information of the timebase available to other Software Components.
- The Time Validation Component ensures continuous time progression of the validated time base after detected errors by providing a local fallback extrapolation.

2.1.1.7 Service Discovery Control for Application Software

The concept introduces a standardized application interface for controling Service Discovery. It provides an interface between BswM and Application SwC and a generation of configurations for the existing rules and actionlists capabilities in BswM to control the Service Discovery behavior.

2.1.2 Impact of Concepts

The introduced concepts had impact on several specifications. The following table provides a detailed overview.

Please note that some of the specifications are marked by special text formatting:

- Specifications in **bold** font are completely new specifications originating from the particular concept.
- Specifications in *italic* font are affected indirectly as they provide artefacts for the actually impacted specifications.

Concept Name	Specification Long Name	Standard	Concept Lifecycle
Charging Interface	Layered Software Architecture	Classic Platform	draft
	Specification of Ethernet State Manager		
	Specification of Socket Adaptor		
	Specification of TCP/IP Stack		
	List of Basic Software Modules		
	Specification of Charging Manager		
	Requirements on Charging Manager		
Service Discovery Control for Application Software	Requirements on Mode Management	Classic Platform	draft
	Specification of Basic Software Mode Manager		
	Guide to Mode Management		
Time Validation	Specification of Synchronized Time-Base Manager	Classic Platform	draft
	Requirements on Time Synchronization		
Secure SOME/IP-ACL	Main Requirements	Foundation	draft
	Standardized M1 Models used for the Definition of AUTOSAR		
	System Template	Classic Platform	

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Concept Name	Specification Long Name	Standard	Concept Lifecycle
	Specification of Socket Adaptor		
	Requirements on Ethernet Support in AUTOSAR		
	Specification of Service Discovery		
DDS Support on CP	Specification of Data Distribution Service for Classic Platform	Classic Platform	draft
	System Template		
Deterministic Communication with TSN	Specification of Communication Stack Types	Classic Platform	draft
	Specification of Ethernet Interface		
	Requirements on Ethernet Support in AUTOSAR		
	Specification of Synchronized Time-Base Manager		
	Specification of Ethernet Driver		
	Specification of Time Synchronization over Ethernet		
	Requirements on Gateway		
	System Template		
	Specification of ECU Configuration		
	Requirements on System Template		
	Specification of Ethernet Switch Driver		
	Specification for CAN XL Driver		
	List of Basic Software Modules		
	Specification of IEEE1722 Transport Protocol Module		
	Specification of Linklayer Sdu Routing Module		
	Time Synchronization Protocol Specification	Foundation	
	Requirements on Time Synchronization		
	Main Requirements		
	Glossary		
	Explanation of Time Sensitive Network features		
	Requirements on IEEE1722		
Firewall in Classic AUTOSAR	Layered Software Architecture	Classic Platform	draft
	System Template		

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Concept Name	Specification Long Name	Standard	Concept Lifecycle
	List of Basic Software Modules		
	Specification of Basic Software Mode Manager		
	Specification of Ethernet Interface		
	Specification of Ethernet Switch Driver		
	Specification of Firewall for Classic Platform		
	Standardized M1 Models used for the Definition of AUTOSAR	Foundation	
	Requirements on Firewall		

Table 2.1: Impact of concepts

2.1.3 Validated Concepts

The following concepts have been validated:

- Classic Platform Flexibility, only the R20-11 feature set of Classic Platform Flexibility has been validated

2.2 Specifications

2.2.1 New Specifications

The following new specifications have been introduced via concepts:

- Specification of Firewall for Classic Platform (UID 1084, SWS)
- Specification of IEEE1722 Transport Protocol Module (UID 1093, SWS)
- Specification of Linklayer Sdu Routing Module (UID 1094, SWS)
- Specification of Charging Manager (UID 1095, SWS)
- Requirements on Charging Manager (UID 1096, RS)

In addition to the above listed new specifications, the following documents have been added with R23-11:

- none

2.2.2 Migrated Specifications

With this release, the following specifications have been moved from AUTOSAR Classic Platform to the AUTOSAR Foundation standard:

- none

2.2.3 Obsolete Specifications

The following specifications have been set to status "obsolete" in this release:

- none

2.2.4 Removed Specifications

The following specifications have been set to status "removed" in this release and hence are not released anymore:

- Requirements on Free Running Timer (UID 211, SRS)
- Explanation of Interrupt Handling within AUTOSAR (UID 307, EXP)

2.2.5 Reworked Specifications

The following documents have been changed fundamentally in R23-11:

- none

2.2.6 Moved Specification Parts

The following specification parts have been moved to other documents in R23-11.

- none

2.3 Release Documentation

There are no major changes in the Release Documentation.

3 Specification Overview

The published specifications are divided into the clusters:

- Release Documentation
- Communication
- Memory
- System Services
- MCAL
- IO
- Libraries
- Diagnostics
- Safety
- BSW General
- General
- Methodology and Templates
- Mode Management
- RTE
- Application Interfaces
- Crypto
- Global Time
- SWArch
- Security

The assignment of the specifications to these clusters is shown below.

Long Name	File Name	Life cycle changes
Release Documentation		
Classic Platform Release Overview	AUTOSAR_CP_TR_ReleaseOverview	
AUTOSAR Classic Platform Specification Hashes	AUTOSAR_CP_TR_Specification Hashes	
Communication		
General Specification of Transformers	AUTOSAR_CP_ASWS_ TransformerGeneral	
Requirements on BSW Modules for SAE J1939	AUTOSAR_CP_SRS_SAEJ1939	
Requirements on Bus Mirroring	AUTOSAR_CP_SRS_BusMirroring	

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Long Name	File Name	Life cycle changes
Requirements on CAN	AUTOSAR_CP_SRS_CAN	
Requirements on Charging Manager	AUTOSAR_CP_RS_ChargingManager	Initial release
Requirements on Chinese Vehicle-2-X Communication	AUTOSAR_CP_SRS_ ChineseV2XCommunication	
Requirements on Communication	AUTOSAR_CP_SRS_COM	
Requirements on Ethernet Support in AUTOSAR	AUTOSAR_CP_SRS_Ethernet	
Requirements on FlexRay	AUTOSAR_CP_SRS_FlexRay	
Requirements on Gateway	AUTOSAR_CP_SRS_Gateway	
Requirements on I-PDU Multiplexer	AUTOSAR_CP_SRS_IPDUMultiplexer	
Requirements on LIN	AUTOSAR_CP_SRS_LIN	
Requirements on Module XCP	AUTOSAR_CP_SRS_XCP	
Requirements on Secure Onboard Communication	AUTOSAR_CP_SRS_ SecureOnboardCommunication	
Requirements on SPI Handler/Driver	AUTOSAR_CP_SRS_ SPIHandlerDriver	
Requirements on Transformer	AUTOSAR_CP_SRS_Transformer	
Requirements on TTCAN	AUTOSAR_CP_SRS_TTCAN	
Requirements on Vehicle-2-X Communication	AUTOSAR_CP_SRS_ V2XCommunication	
Specification for CAN XL Driver	AUTOSAR_CP_SWS_CANXLDriver	
Specification of a Request Manager for SAE J1939	AUTOSAR_CP_SWS_ SAEJ1939RequestManager	
Specification of a Transport Layer for SAE J1939	AUTOSAR_CP_SWS_ SAEJ1939TransportLayer	
Specification of Bus Mirroring	AUTOSAR_CP_SWS_BusMirroring	
Specification of CAN Driver	AUTOSAR_CP_SWS_CANDriver	
Specification of CAN Interface	AUTOSAR_CP_SWS_CANInterface	
Specification of CAN Network Management	AUTOSAR_CP_SWS_ CANNetworkManagement	
Specification of CAN State Manager	AUTOSAR_CP_SWS_ CANStateManager	
Specification of CAN Transceiver Driver	AUTOSAR_CP_SWS_ CANTransceiverDriver	
Specification of CAN Transport Layer	AUTOSAR_CP_SWS_ CANTransportLayer	
Specification of CAN XL Transceiver Driver	AUTOSAR_CP_SWS_ CANXLTransceiverDriver	
Specification of Cellular Vehicle-2-X Driver	AUTOSAR_CP_SWS_ CellularV2XDriver	
Specification of Charging Manager	AUTOSAR_CP_SWS_ ChargingManager	Initial release
Specification of Chinese Vehicle-2-X Management	AUTOSAR_CP_SWS_ ChineseV2XManagement	
Specification of Chinese Vehicle-2-X Message	AUTOSAR_CP_SWS_ ChineseV2XMessage	
Specification of Chinese Vehicle-2-X Network	AUTOSAR_CP_SWS_ ChineseV2XNetwork	
Specification of Chinese Vehicle-2-X Security	AUTOSAR_CP_SWS_ ChineseV2XSecurity	
Specification of COM Based Transformer	AUTOSAR_CP_SWS_ COMBasedTransformer	

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Long Name	File Name	Life cycle changes
Specification of Communication	AUTOSAR_CP_SWS_COM	
Specification of Data Distribution Service for Classic Platform	AUTOSAR_CP_SWS_ DataDistributionService	
Specification of Diagnostic Log and Trace	AUTOSAR_CP_SWS_ DiagnosticLogAndTrace	
Specification of Diagnostic over IP	AUTOSAR_CP_SWS_ DiagnosticOverIP	
Specification of Ethernet Driver	AUTOSAR_CP_SWS_EthernetDriver	
Specification of Ethernet Interface	AUTOSAR_CP_SWS_ EthernetInterface	
Specification of Ethernet State Manager	AUTOSAR_CP_SWS_ EthernetStateManager	
Specification of Ethernet Switch Driver	AUTOSAR_CP_SWS_ EthernetSwitchDriver	
Specification of Ethernet Transceiver Driver	AUTOSAR_CP_SWS_ EthernetTransceiverDriver	
Specification of FlexRay AUTOSAR Transport Layer	AUTOSAR_CP_SWS_ FlexRayARTransportLayer	
Specification of FlexRay Driver	AUTOSAR_CP_SWS_FlexRayDriver	
Specification of FlexRay Interface	AUTOSAR_CP_SWS_ FlexRayInterface	
Specification of FlexRay ISO Transport Layer	AUTOSAR_CP_SWS_ FlexRayISOTransportLayer	
Specification of FlexRay Network Management	AUTOSAR_CP_SWS_ FlexRayNetworkManagement	
Specification of FlexRay State Manager	AUTOSAR_CP_SWS_ FlexRayStateManager	
Specification of FlexRay Transceiver Driver	AUTOSAR_CP_SWS_ FlexRayTransceiverDriver	
Specification of IEEE1722 Transport Protocol Module	AUTOSAR_CP_SWS_ IEEE1722TransportLayer	Initial release
Specification of I-PDU Multiplexer	AUTOSAR_CP_SWS_IPDUMultiplexer	
Specification of Large Data COM	AUTOSAR_CP_SWS_LargeDataCOM	
Specification of LIN Driver	AUTOSAR_CP_SWS_LINDriver	
Specification of LIN Interface	AUTOSAR_CP_SWS_LINInterface	
Specification of LIN State Manager	AUTOSAR_CP_SWS_ LINStateManager	
Specification of LIN Transceiver Driver	AUTOSAR_CP_SWS_ LINTransceiverDriver	
Specification of Linklayer Sdu Routing Module	AUTOSAR_CP_SWS_LSduRouter	Initial release
Specification of MACsec Key Agreement	AUTOSAR_CP_SWS_ MACsecKeyAgreement	
Specification of Module E2E Transformer	AUTOSAR_CP_SWS_E2ETransformer	
Specification of Module XCP	AUTOSAR_CP_SWS_XCP	
Specification of Network Management for SAE J1939	AUTOSAR_CP_SWS_ SAEJ1939NetworkManagement	
Specification of Network Management Interface	AUTOSAR_CP_SWS_ NetworkManagementInterface	
Specification of PDU Router	AUTOSAR_CP_SWS_PDURouter	

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Long Name	File Name	Life cycle changes
Specification of Secure Onboard Communication	AUTOSAR_CP_SWS_SecureOnboardCommunication	
Specification of Service Discovery	AUTOSAR_CP_SWS_ServiceDiscovery	
Specification of Socket Adaptor	AUTOSAR_CP_SWS_SocketAdaptor	
Specification of SOME/IP Transformer	AUTOSAR_CP_SWS_SOMEIPTransformer	
Specification of SPI Handler/Driver	AUTOSAR_CP_SWS_SPIHandlerDriver	
Specification of TCP/IP Stack	AUTOSAR_CP_SWS_TcpIp	
Specification of TTCAN Driver	AUTOSAR_CP_SWS_TTCANDriver	
Specification of TTCAN Interface	AUTOSAR_CP_SWS_TTCANInterface	
Specification of UDP Network Management	AUTOSAR_CP_SWS_UDPNetworkManagement	
Specification of Vehicle-2-X Basic Transport	AUTOSAR_CP_SWS_V2XBasicTransport	
Specification of Vehicle-2-X Data Manager	AUTOSAR_CP_SWS_V2XDataManager	
Specification of Vehicle-2-X Facilities	AUTOSAR_CP_SWS_V2XFacilities	
Specification of Vehicle-2-X Geo Networking	AUTOSAR_CP_SWS_V2XGeoNetworking	
Specification of Vehicle-2-X Management	AUTOSAR_CP_SWS_V2XManagement	
Specification of Wireless Ethernet Driver	AUTOSAR_CP_SWS_WirelessEthernetDriver	
Specification of Wireless Ethernet Transceiver Driver	AUTOSAR_CP_SWS_WirelessEthernetTransceiverDriver	
Specification on SOME/IP Transport Protocol	AUTOSAR_CP_SWS_SOMEIPTransportProtocol	
Memory		
Explanation of Firmware Over-The-Air	AUTOSAR_CP_EXP_FirmwareOverTheAir	
NV Data Handling Guideline	AUTOSAR_CP_EXP_NVDataHandling	
Requirements on EEPROM Driver	AUTOSAR_CP_SRS_EEPROMDriver	
Requirements on Firmware Over-The-Air	AUTOSAR_CP_RS_FirmwareOverTheAir	
Requirements on Flash Driver	AUTOSAR_CP_SRS_FlashDriver	
Requirements on Flash Test	AUTOSAR_CP_SRS_FlashTest	
Requirements on Memory Hardware Abstraction Layer	AUTOSAR_CP_SRS_MemoryHWAbstractionLayer	
Requirements on Memory Services	AUTOSAR_CP_SRS_MemoryServices	
Requirements on RAM Test	AUTOSAR_CP_SRS_RAMTest	
Specification of EEPROM Abstraction	AUTOSAR_CP_SWS_EEPROMAbstraction	
Specification of EEPROM Driver	AUTOSAR_CP_SWS_EEPROMDriver	
Specification of Flash Driver	AUTOSAR_CP_SWS_FlashDriver	
Specification of Flash EEPROM Emulation	AUTOSAR_CP_SWS_FlashEEPROMEmulation	
Specification of Flash Test	AUTOSAR_CP_SWS_FlashTest	
Specification of Memory Abstraction Interface	AUTOSAR_CP_SWS_MemoryAbstractionInterface	

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Long Name	File Name	Life cycle changes
Specification of Memory Access	AUTOSAR_CP_SWS_MemoryAccess	
Specification of Memory Driver	AUTOSAR_CP_SWS_MemoryDriver	
Specification of Memory Mapping	AUTOSAR_CP_SWS_MemoryMapping	
Specification of NVRAM Manager	AUTOSAR_CP_SWS_NVRAMManager	
Specification of RAM Test	AUTOSAR_CP_SWS_RAMTest	
System Services		
Explanation of Software Cluster Design And Integration Guideline for Classic Platform	AUTOSAR_CP_EXP_SwClusterDesignAndIntegrationGuideline	
Requirements on Function Inhibition Manager	AUTOSAR_CP_SRS_FunctionInhibitionManager	
Requirements on Hardware Test Manager on start up and shutdown	AUTOSAR_CP_SRS_HWTestManager	
Requirements on Operating System	AUTOSAR_CP_SRS_OS	
Requirements on Software Cluster Connection module	AUTOSAR_CP_SRS_SoftwareClusterConnection	
Requirements on Time Service	AUTOSAR_CP_SRS_TimeService	
Specification and Integration of Hardware Test Management at start up and shutdown	AUTOSAR_CP_TR_HWTestManagementIntegrationGuide	
Specification of Communication Manager	AUTOSAR_CP_SWS_COMManager	
Specification of Default Error Tracer	AUTOSAR_CP_SWS_DefaultErrorTracer	
Specification of Function Inhibition Manager	AUTOSAR_CP_SWS_FunctionInhibitionManager	
Specification of Hardware Test Manager on start up and shutdown	AUTOSAR_CP_SWS_HWTestManager	
Specification of Operating System	AUTOSAR_CP_SWS_OS	
Specification of Software Cluster Connection module	AUTOSAR_CP_SWS_SoftwareClusterConnection	
Specification of Time Service	AUTOSAR_CP_SWS_TimeService	
MCAL		
General Requirements on SPAL	AUTOSAR_CP_SRS_SPALGeneral	
Requirements on Core Test	AUTOSAR_CP_SRS_CoreTest	
Requirements on GPT Driver	AUTOSAR_CP_SRS_GPTDriver	
Requirements on MCU Driver	AUTOSAR_CP_SRS_MCUDriver	
Specification of Core Test	AUTOSAR_CP_SWS_CoreTest	
Specification of GPT Driver	AUTOSAR_CP_SWS_GPTDriver	
Specification of MCU Driver	AUTOSAR_CP_SWS_MCUDriver	
IO		
Requirements on ADC Driver	AUTOSAR_CP_SRS_ADCDriver	
Requirements on DIO Driver	AUTOSAR_CP_SRS_DIODriver	
Requirements on I/O Hardware Abstraction	AUTOSAR_CP_SRS_IOHWAbstraction	
Requirements on ICU Driver	AUTOSAR_CP_SRS_ICUDriver	
Requirements on OCU Driver	AUTOSAR_CP_SRS_OCUDriver	
Requirements on Port Driver	AUTOSAR_CP_SRS_PortDriver	

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Long Name	File Name	Life cycle changes
Requirements on PWM Driver	AUTOSAR_CP_SRS_PWMDriver	
Specification of ADC Driver	AUTOSAR_CP_SWS_ADCDriver	
Specification of DIO Driver	AUTOSAR_CP_SWS_DIODriver	
Specification of I/O Hardware Abstraction	AUTOSAR_CP_SWS_ IOHardwareAbstraction	
Specification of ICU Driver	AUTOSAR_CP_SWS_ICUDriver	
Specification of OCU Driver	AUTOSAR_CP_SWS_OCUDriver	
Specification of Port Driver	AUTOSAR_CP_SWS_PortDriver	
Specification of PWM Driver	AUTOSAR_CP_SWS_PWMDriver	
Libraries		
Macro Encapsulation of Interpolation Calls	AUTOSAR_CP_EXP_MacroEncapsu-lationofInterpolationCalls	
Requirements on Libraries	AUTOSAR_CP_SRS_Libraries	
Specification of Basic Software Multicore Library	AUTOSAR_CP_SWS_ BSWMulticoreLibrary	
Specification of Bit Handling Routines	AUTOSAR_CP_SWS_BFXLibrary	
Specification of CRC Routines	AUTOSAR_CP_SWS_CRCLibrary	
Specification of Extended Fixed Point Routines	AUTOSAR_CP_SWS_EFXLibrary	
Specification of Fixed Point Interpolation Routines	AUTOSAR_CP_SWS_IFXLibrary	
Specification of Fixed Point Math Routines	AUTOSAR_CP_SWS_MFXLibrary	
Specification of Floating Point Interpolation Routines	AUTOSAR_CP_SWS_IFLLibrary	
Specification of Floating Point Math Routines	AUTOSAR_CP_SWS_MFLLibrary	
Specification of SW-C End-to-End Communication Protection Library	AUTOSAR_CP_SWS_E2ELibrary	
Diagnostics		
Specification of a Diagnostic Communication Manager for SAE J1939	AUTOSAR_CP_SWS_ SAEJ1939Diagnostic CommunicationManager	
Specification of Diagnostic Communication Manager	AUTOSAR_CP_SWS_ DiagnosticCommunicationManager	
Specification of Diagnostic Event Manager	AUTOSAR_CP_SWS_ DiagnosticEventManager	
Safety		
Overview of Functional Safety Measures in AUTOSAR	AUTOSAR_CP_EXP_ FunctionalSafetyMeasures	
Requirements on Watchdog Driver	AUTOSAR_CP_SRS_WatchdogDriver	
Safety Use Case Example	AUTOSAR_CP_EXP_SafetyUseCase	
Specification of Watchdog Driver	AUTOSAR_CP_SWS_WatchdogDriver	
Specification of Watchdog Interface	AUTOSAR_CP_SWS_ WatchdogInterface	
Specification of Watchdog Manager	AUTOSAR_CP_SWS_ WatchdogManager	
BSW General		
Basic Software UML Model	AUTOSAR_CP_MOD_BSWUMLModel	
Complex Driver design and integration guideline	AUTOSAR_CP_EXP_ CDDDesignAndIntegrationGuideline	

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Long Name	File Name	Life cycle changes
Description of the AUTOSAR standard errors	AUTOSAR_CP_EXP_ErrorDescription	
Explanation of Error Handling on Application Level	AUTOSAR_CP_EXP_ApplicationLevelErrorHandling	
General Requirements on Basic Software Modules	AUTOSAR_CP_SRS_BSWGeneral	
General Specification of Basic Software Modules	AUTOSAR_CP_SWS_BSWGeneral	
Guide to BSW Distribution	AUTOSAR_CP_EXP_BSWDistributionGuide	
List of Basic Software Modules	AUTOSAR_CP_TR_BSWModuleList	
Modeling Guidelines of Basic Software EA UML Model	AUTOSAR_CP_TR_BSWUMLModelModelingGuide	
Specification of Communication Stack Types	AUTOSAR_CP_SWS_CommunicationStackTypes	
Specification of Platform Types for Classic Platform	AUTOSAR_CP_SWS_PlatformTypes	
Specification of Standard Types	AUTOSAR_CP_SWS_StandardTypes	
General		
Layered Software Architecture	AUTOSAR_CP_EXP_LayeredSoftwareArchitecture	
Requirements on AUTOSAR Features	AUTOSAR_CP_RS_Features	obsolete
Specification of Bulk NvData Manager	AUTOSAR_CP_SWS_BulkNvDataManager	
Virtual Functional Bus	AUTOSAR_CP_EXP_VFB	
Methodology and Templates		
Basic Software Module Description Template	AUTOSAR_CP_TPS_BSWModuleDescriptionTemplate	
Diagnostic Extract Template	AUTOSAR_CP_TPS_DiagnosticExtractTemplate	
Integration of Franca IDL Software Component Descriptions	AUTOSAR_CP_TR_FrancaIntegration	
Methodology for Classic Platform	AUTOSAR_CP_TR_Methodology	
Modeling Show Cases Examples	AUTOSAR_CP_EXP_ModelingShowCases	
Modeling Show Cases Report	AUTOSAR_CP_TR_ModelingShowCases	
Requirements on Basic Software Module Description Template	AUTOSAR_CP_RS_BSWModuleDescriptionTemplate	
Requirements on Diagnostic Extract Template	AUTOSAR_CP_RS_DiagnosticExtractTemplate	
Requirements on ECU Configuration	AUTOSAR_CP_RS_ECUConfiguration	
Requirements on ECU Resource Template	AUTOSAR_CP_RS_ECUResourceTemplate	
Requirements on Software Component Template	AUTOSAR_CP_RS_SoftwareComponentTemplate	
Requirements on System Template	AUTOSAR_CP_RS_SystemTemplate	
Software Component Template	AUTOSAR_CP_TPS_SoftwareComponentTemplate	
Specification of ECU Configuration	AUTOSAR_CP_TPS_ECUConfiguration	

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Long Name	File Name	Life cycle changes
Specification of ECU Configuration Parameters (XML)	AUTOSAR_CP_MOD_ ECUConfigurationParameters	
Specification of ECU Resource Template	AUTOSAR_CP_TPS_ ECUResourceTemplate	
Specification of Timing Extensions for Classic Platform	AUTOSAR_CP_TPS_ TimingExtensions	
Supplementary material of general blueprints for AUTOSAR	AUTOSAR_CP_TR_ GeneralBlueprintsSupplement	
System Template	AUTOSAR_CP_TPS_SystemTemplate	
Mode Management		
Guide to Mode Management	AUTOSAR_CP_EXP_ ModeManagementGuide	
Requirements on Mode Management	AUTOSAR_CP_SRS_ ModeManagement	
Specification of Basic Software Mode Manager	AUTOSAR_CP_SWS_ BSWModeManager	
Specification of ECU State Manager	AUTOSAR_CP_SWS_ ECUStateManager	
RTE		
Requirements on Runtime Environment	AUTOSAR_CP_SRS_RTE	
Specification of RTE Software	AUTOSAR_CP_SWS_RTE	
Application Interfaces		
Application Design Patterns Catalogue	AUTOSAR_CP_TR_ AIDesignPatternsCatalogue	
Application Interface Examples	AUTOSAR_CP_MOD_ AISpecificationExamples	
Application Interfaces User Guide	AUTOSAR_CP_EXP_AIUserGuide	
Explanation of Application Interface of AD/ADAS vehicle motion control	AUTOSAR_CP_EXP_ AIADASAndVMC	
Explanation of Application Interfaces of Occupant and Pedestrian Safety Systems Domain	AUTOSAR_CP_EXP_ AIOccupantAndPedestrianSafety	
Explanation of Application Interfaces of the Body and Comfort Domain	AUTOSAR_CP_EXP_ AIBodyAndComfort	
Explanation of Application Interfaces of the Chassis Domain	AUTOSAR_CP_EXP_AIChassis	
Explanation of Application Interfaces of the HMI, Multimedia and Telematics Domain	AUTOSAR_CP_EXP_ AIHMIMultimediaAndTelematics	
Explanation of Application Interfaces of the Powertrain Engine Domain	AUTOSAR_CP_EXP_AIPowertrain	
Requirements on SW-C and System Modeling	AUTOSAR_CP_RS_SWCModeling	
SW-C and System Modeling Guide	AUTOSAR_CP_TR_ SWCModelingGuide	
Unique Names for Documentation, Measurement and Calibration: Modeling and Naming Aspects including Automatic Generation	AUTOSAR_CP_TR_ AIMeasurementCalibrationDiagnostics	
XML Specification of Application Interfaces	AUTOSAR_CP_MOD_AISpecification	
Crypto		

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Long Name	File Name	Life cycle changes
Requirements on Crypto Stack	AUTOSAR_CP_SRS_CryptoStack	
Specification of Crypto Driver	AUTOSAR_CP_SWS_CryptoDriver	
Specification of Crypto Interface	AUTOSAR_CP_SWS_CryptoInterface	
Specification of Crypto Service Manager	AUTOSAR_CP_SWS_CryptoServiceManager	
Specification of Key Manager	AUTOSAR_CP_SWS_KeyManager	
Utilization of Crypto Services	AUTOSAR_CP_EXP_UtilizationOfCryptoServices	
Global Time		
Specification of Synchronized Time-Base Manager	AUTOSAR_CP_SWS_SynchronizedTimeBaseManager	
Specification of Time Synchronization over CAN	AUTOSAR_CP_SWS_TimeSyncOverCAN	
Specification of Time Synchronization over Ethernet	AUTOSAR_CP_SWS_TimeSyncOverEthernet	
Specification of Time Synchronization over FlexRay	AUTOSAR_CP_SWS_TimeSyncOverFlexRay	
SWArch		
Explanatory Document for usage of AUTOSAR RunTimeInterface	AUTOSAR_CP_EXP_ARTI	
Requirements on Debugging, Tracing and Profiling support of AUTOSAR Components	AUTOSAR_CP_RS_DebugTraceProfile	
Specification of AUTOSAR Run-Time Interface	AUTOSAR_CP_SWS_ARTI	
Security		
Specification of Firewall for Classic Platform	AUTOSAR_CP_SWS_Firewall	Initial release
Specification of Intrusion Detection System Manager	AUTOSAR_CP_SWS_IntrusionDetectionSystemManager	

Table 3.1: Specification overview

4 Remarks to Known Technical Deficiencies

The technical deficiencies per specification are – if applicable – mentioned inside the respective specification in a chapter “Known Limitations” located after the table of contents.

The following technical deficiencies are to be mentioned, where clicking on the section reference will bring you to the respective document:

Document UID	Long Name	Document Type	Section Reference
873	Specification of Bus Mirroring	SWS	4.1
795	Specification of Vehicle-2-X Facilities	SWS	4.2
612	Specification of Network Management for SAE J1939	SWS	4.3
611	Specification of a Request Manager for SAE J1939	SWS	4.4
610	Specification of a Diagnostic Communication Manager for SAE J1939	SWS	4.5
425	Specification of a Transport Layer for SAE J1939	SWS	4.6
414	Specification of UDP Network Management	SWS	4.7
80	Specification of Watchdog Manager	SWS	4.8
74	Specification of FlexRay Transceiver Driver	SWS	4.9
73	Specification of LIN Interface	SWS	4.10
42	Requirements on LIN	SRS	4.11
37	Specification of PWM Driver	SWS	4.12
182	Specification of I-PDU Multiplexer	SWS	4.13
11	Specification of CAN Driver	SWS	4.14
255	Specification of LIN State Manager	SWS	4.15
1093	Specification of IEEE1722 Transport Protocol Module	SWS	4.16
1094	Specification of Linklayer Sdu Routing Module	SWS	4.17

Table 4.1: Overview of known technical deficiencies

4.1 Specification of Bus Mirroring (UID 873 SWS)

- The Bus Mirroring module cannot be used to influence the traffic on one of the buses configured as a source bus. To ensure this and to avoid loop-back of messages leading to bus overload, the generation tool shall ensure that no bus is connected to the Bus Mirroring module both as source and destination bus (see [SWS_Mirror_00001]).
- The Bus Mirroring module is controlled by a diagnostic control application through the dedicated (service) API listed in chapter 8. The control functionality is made accessible to a diagnostic tester by special diagnostic services, which are handled by the DCM and implemented by the diagnostic control application. The DCM provides the necessary security to exclude inadvertent activation of the Bus Mirroring. The Bus Mirroring module does not provide another control interface, and it does not receive control messages on the destination bus.

- In general, the Bus Mirroring module does not support source buses that have a larger frame size or more additional information than the destination bus can carry, e.g. CAN XL to CAN-FD, CAN-FD to CAN, CAN to LIN, FlexRay to CAN, Ethernet to CAN, or Ethernet to FlexRay. The Bus Mirroring module does not fragment mirrored frames.
- The Bus Mirroring module will only mirror traffic that is actually received or transmitted by the bus interface modules. For CAN this means that besides the transmitted frames only those data frames that pass the hardware filter will be mirrored, and that remote frames and error frames will not be mirrored. For LIN, slave-to-slave communication will not be mirrored by a LIN master. And for FlexRay, only transmitted frames and those received frames for which reception buffers are assigned (possibly as a FIFO) will be mirrored.
- Another limitation of the mirroring from a FlexRay source bus concerns the reported time stamps and cycles. The Timestamp reported for a FlexRay frame contains the time when the corresponding job list entry was executed. The actual transmission time has to be calculated from the slot ID contained in the reported FrameID. The cycle contained in the reported FrameID is accurate only for received frames and frames transmitted in the static segment. For frames transmitted in the dynamic segment, the reported cycle can be inaccurate because it can happen that a frame cannot be transmitted in the expected cycle, it is then deferred to the next suitable cycle.
- A re-serialization of received serialized frames shall not be done by the Bus Mirroring module, because that would require too much resources. Instead, the serialized PDUs shall be routed directly to the destination bus.
- The Bus Mirroring module will also not support the forwarding from Ethernet to Ethernet. This use case is already covered by the Port Mirroring feature of the AUTOSAR Ethernet Switch Driver.

4.2 Specification of Vehicle-2-X Facilities (UID 795 SWS)

There are currently 80 errors. These errors appeared after the “no new AR” deadline.

These problems exist since R21-11 when we introduced the V2X Data Manager (DM) component in the V2X architecture and were not noticed thanks to the tooling because the document was a Word document.

Thirteen errors could be fixed because they corresponds to features and service API that are not any more performed by the Facilities layer but the V2X DM:

- V2xFac_IviS_MainFunction
- V2xFac_RltS_MainFunction
- V2xFac_TlmS_MainFunction

- V2xFac_Port_V2xFac_V2xApplRxIndication_CAM
- V2xFac_Port_V2xFac_V2xApplRxIndication_DENM
- V2xFac_Port_V2xFac_V2xApplRxIndication_IVIM
- V2xFac_Port_V2xFac_V2xApplRxIndication_MAPEM
- V2xFac_Port_V2xFac_V2xApplRxIndication_SPATEM
- V2xFac_SenderReceiverInterface_V2xApplRxIndicationCam
- V2xFac_SenderReceiverInterface_V2xApplRxIndicationDenm
- V2xFac_SenderReceiverInterface_V2xApplRxIndicationIvim
- V2xFac_SenderReceiverInterface_V2xApplRxIndicationMapem
- V2xFac_SenderReceiverInterface_V2xApplRxIndicationSpatem

These can be removed safely. AR for R24-11 created: AR-122239
The 67 other errors correspond to data types. This is linked to an overengineered API with the VDP that was forgotten. This must be reworked. Following the recommandation from Friedebert, I added a comment in the document to precise that the API must be reworked and I created an AR for R24-11 AR-122237.

4.3 Specification of Network Management for SAE J1939 (UID 612 SWS)

The J1939 Network Management module does not support all features defined in SAE J1939-81, especially:

- Changing the address of a node after reception of CommandedAddress or after an address loss.
- Changing the NAME of a node using the Name Management protocol.
- Detection of address violations by messages other than AddressClaimed.

4.4 Specification of a Request Manager for SAE J1939 (UID 611 SWS)

The J1939 Request Manager only implements Request, Request2, and Acknowledgement PGs. It does not provide support for the Transfer PG.

4.5 Specification of a Diagnostic Communication Manager for SAE J1939 (UID 610 SWS)

- The J1939 Diagnostic Communication Manager implements only the subset of “Diagnostic Messages” defined in Table 7.1.
- The DM13 does not support “Suspend Signal” and “Suspend Duration”.
- NACK is not provided for received DMx messages that are not supported or not configured. This restriction mainly affects handling of DM07 and DM13.

4.6 Specification of a Transport Layer for SAE J1939 (UID 425 SWS)

- The AUTOSAR architecture contains several communication system specific transport layers (J1939Tp, CanTp, FrTp, etc.). All of these modules need to have identical APIs, with the exception of API functions for which the PduR has separate configuration abilities.
- The J1939Tp module does not implement the TriggerTransmit API, because it is only needed for time triggered bus architectures.

4.7 Specification of UDP Network Management (UID 414 SWS)

- One instance of UdpNm is associated with only one NM-Cluster in one network. One NM-Cluster can have only one instance of UdpNm in one node.
- One instance of UdpNm is associated with only one network within the same ECU.
- UdpNm is only applicable for TCP/IP based systems.

Figure 4.1 presents an AUTOSAR NM stack within an example ECU belonging to two UDP NM-clusters.

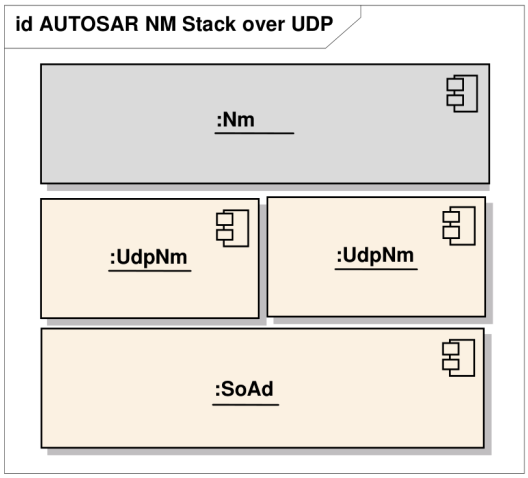

Figure 4.1: AUTOSAR NM stack within an example ECU belonging to two UDP NM-clusters

4.8 Specification of Watchdog Manager (UID 80 SWS)

- There're limitations for the Watchdog Manager module (WdgM). For details, see chap. 4 of CP SWS WdgM.
- Uptraces: AUTOSAR Foundation documents related to Health Monitoring (which are to be applicable to both AP PHM and CP WdgM) are not referred yet. Planned to make full updates (incl. uptraces to inappropriate documents such as CP SRS MemHwAb).
- Behavior of MainFunciton-based Supervision Algorithms (Alive, Timeout part of Deadline) right after Mode Switch (incl. right after calling WdgM_Init) and resulting updates of the states (Local Supervision Status and Global Supervision Status) requires further clarification.
- Statemachine of Global Supervision Status: Transition numbers in parenthesis such as "(5)" have been broken since R21-11 by some trouble during updating the BSW UML model. Not fixed at R23-11, as the model wasn't updated and the figure is automatically generated one.

4.9 Specification of FlexRay Transceiver Driver (UID 74 SWS)

- The FlexRay Transceiver must provide functionality and an interface, mapped to the operation mode model assumed for the AUTOSAR FlexRay Transceiver Driver. See 7.1 AUTOSAR FlexRay Transceiver Operation Modes.

  [SWS_FrTrcv_00231] dThe FlexRay Transceiver Driver shall use the APIs of underlying DIO drivers synchronously.c(SRS_Fr_05138)

[SWS_FrTrcv_00433] dThe FlexRay Transceiver Driver should use the APIs of underlying SPI drivers synchronously if possible and asynchronously where required.c()
[SWS_FrTrcv_00441] dThe FlexRay transceiver requires a LEVEL 2, Enhanced (Synchronous/Asynchronous) SPI Handler/Driverc()
[SWS_FrTrcv_00238] dThe FlexRay Transceiver Driver shall handle the transceiverspecific timing requirements internally.c(SRS_Fr_05152)
The communication between the C and the transceiver is performed via ports or SPI or both. If ports are used, applying values in a predefined sequence and with a given timing to the ports are used to communicate and change the hardware operation modes. These sequences and timings must be handled within the FlexRay Transceiver

4.10 Specification of LIN Interface (UID 73 SWS)

- There're limitations for the LIN Interface module (LinIf incl. LinTp submodule). For details, see chap. 4 of CP SWS LinIf.
- For LIN Slave (introduced at R4.4.0)
  - LIN stack control path (by LinIf, LinSM and ComM): Needs rework for due to inconsistent requirements between relevant modules.
  - SRF header transmission at LIN master: Currently no retry mechanisms, after no response from LIN slaves.
- As SWS_Lin_00021 is contradicting with ISO/TR 17987-5:2016, clause 4.5.6.2 ld_send_message, therefore LIN stack behavior (incl. LinIf) is also not compliant with ISO, in contrast to SRS_Lin_01577 and SRS_Lin_01578.

4.11 Requirements on LIN (UID 42 SRS)

- As SWS_Lin_00021 is contradicting with ISO/TR 17987-5:2016, clause 4.5.6.2 ld_send_message, therefore LIN stack behavior (incl. LinIf) is also not compliant with ISO, in contrast to SRS_Lin_01577 and SRS_Lin_01578.

4.12 Specification of PWM Driver (UID 37 SWS)

- [SWS_Pwm_00001] The Pwm SWS does not cover PWM emulation on general purpose I/O. (SRS_Pwm_12386)
- Power State Control APIs are implementable only if the MCAL driver owns the complete underlying HW peripheral i.e. the HW peripheral is not accessed by other MCAL modules.

4.13 Specification of I-PDU Multiplexer (UID 182 SWS)

- For transmission of multiplexed I-PDUs, minimum delay time observation cannot be taken into account. For more details, see [3] and Chapter 7.2.4.1.
- For transmission of container PDUs with static layout, minimum delay time cannot be ensured if two or more contained PDUs have each MDT configuration.

4.14 Specification of CAN Driver (UID 11 SWS)

- A CAN controller always corresponds to one physical channel. It is allowed to connect physical channels on bus side. Regardless the CanIf module will treat the concerned CAN controllers separately.
- A few CAN hardware units support the possibility to combine several CAN controllers by using the CAN RAM, to extend the number of message objects for one CAN controller. These combined CAN controller are handled as one controller by the Can module.
- The Can module does not support CAN remote frames.
- [SWS_Can_00237] The Can module shall not transmit messages triggered by remote transmission requests. (SRS_Can_01147)
- [SWS_Can_00236] The Can module shall initialize the CAN HW to ignore any remote transmission requests. (SRS_Can_01147)

4.15 Specification of LIN State Manager (UID 255 SWS)

- There is at most one instance of the LinSM in each ECU. If the underlying LIN Driver [5] supports multiple networks, the LinSM may be LIN master or LIN slave on more than one cluster.
- All references to (switching of) schedule tables do only apply to LIN master node; there are no schedule tables for LIN slave node.

4.16 Specification of IEEE1722 Transport Protocol Module (UID 1093 SWS)

- The IEEE1722Tp module support a subset of the AVTP stream data subtypes specified by IEEE1722:
  - audio and video streaming: AAF, RVF, 61883_IIDC
  - distribution of a generated clock rate provided by a media clock: CRF

  - transport of encapsulated bus frames (ACF_CAN, ACF_CAN_BRIEF and ACF_-LIN) via an ACF-stream, where the time-synchronous TSCF or the non-time-synchronous NTSCF AVTP stream data subtype is used in the ACF-header.

- The IEEE1722Tp module is responsible to forward 1722Tp streams from the lower layers to stream data consumers, and from stream data producer to the lower layers. The time synchronous handling of the transported data with respect to the given AVTP presentation time is in responsibility of the according stream data consumer. Thus, the IEEE1722Tp module cannot ensure time synchronous handling with the accuracy of the AVTP presentation time in units of nanoseconds. An ACF-stream with ACF-header set to TSCF (time-synchronous control format)carries an AVTP presentation time. The AVTP presentation time is given in units of nanoseconds. The IEEE1722Tp module can only perform a forwarding of bus frames with a resolution accuracy of the main function period (e.g. 5 ms). Please note, synchronicity of forwarded bus frames across multiple bus cluster highly depends on the surrounding infrastructur and software implementation, e.g. internal data processing, accuracy of the synchronized global time, busload.

4.17 Specification of Linklayer Sdu Routing Module (UID 1094 SWS)

- The L-SDU Router module does not:
  - have mechanisms for signal extraction or conversion,
  - have mechanisms for data integrity checking (like checksums),
  - change or modify the L-SDU,
  - make any L-SDU payload dependent routing decisions,
- 4.1.1 of UID 1094 SWS
  Limitations on supported functionality
  In R23-11 the L-SDU Router is considered to act a pass-trough module between the IEEE1722Tp and the EthIf
  - Gateway functionality is excluded from the L-SDU router
  - The L-SDU router interacts only with IEEE1722Tp and the EthIf

5 Release History

5.1 Release R23-11

The following deliverables had major changes.

Name	Specification history entry
Application Design Patterns Catalogue	• Editorial changes
Application Interfaces User Guide	• No content changes
Basic Software Module Description Template	• Added BswInterruptEvent class • Editorial changes
Classic Platform Release Overview	• Release Life Cycle Status: R23-11 is in Evolution, R23-11 supersedes R22-11
Complex Driver design and integration guideline	• No content changes
Description of the AUTOSAR standard errors	• Updated the names of the referred CP SWS documents.
Diagnostic Extract Template	• Improved diagnostic authentication • minor corrections / clarifications / editorial changes
Explanation of Application Interface of AD/ADAS vehicle motion control	• No content changes
Explanation of Application Interfaces of Occupant and Pedestrian Safety Systems Domain	• No content changes
Explanation of Application Interfaces of the Body and Comfort Domain	• No content changes
Explanation of Application Interfaces of the Chassis Domain	• No content changes
Explanation of Application Interfaces of the HMI, Multimedia and Telematics Domain	• No content changes
Explanation of Application Interfaces of the Powertrain Engine Domain	• No content changes
Explanation of Error Handling on Application Level	• Replaced symbols RESTART and • NO_RESTART by • OS_OSAPPLICATION_RESTART and • OS_OSAPPLICATION_NO_RESTART.
Explanation of Firmware Over-The-Air	• No content changes
Explanation of Software Cluster Design And Integration Guideline for Classic Platform	• No content changes
Explanatory Document for usage of AUTOSAR RunTimeInterface	• Updated ARTI macro example code • Updated ARXML examples • Minor corrections and updates
General Requirements on Basic Software Modules	• Removed (ARTI related) requirement ([SRS_BSW_00495])
General Requirements on SPAL	• Editorial changes
General Specification of Basic Software Modules	• Update permissions for GetApplicationID • Add chapter "Debugging, Tracing, and Profiling Support of BasicSoftwareComponents" • Minor corrections / clarifications / editorial changes
General Specification of Transformers	• Editorial changes
Guide to BSW Distribution	• Cleanup of outdated parameter references
Guide to Mode Management	• Service Discovery Control for Application Software • Provide Interface to Ecu Mode Handling via BswM

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Name	Specification history entry
Integration of Franca IDL Software Component Descriptions	• Editorial changes
Layered Software Architecture	• Added information about charging management (ChrgM) and firewall • Editorial changes
List of Basic Software Modules	• Added ChrgM • Added Firewal • Added HWTestManager
Macro Encapsulation of Interpolation Calls	• No content changes
Methodology for Classic Platform	• Be specific when using the term cluster (e.g. BSW cluster) • Clarify activity Create ECU System Description
Modeling Guidelines of Basic Software EA UML Model	• introduced stereotype «symbol» for symbol definitions • support for API functions with multiple Service IDs • described modeling of links from API functions to possible return values • described modeling of bsw.sequenceOffset
Modeling Show Cases Report	• No content changes
NV Data Handling Guideline	• No content changes
Overview of Functional Safety Measures in AUTOSAR	• Fixed AUTOSAR specification references • Changes in image and tables layout
Requirements on ADC Driver	• No content changes
Requirements on Basic Software Module Description Template	• No content changes
Requirements on BSW Modules for SAE J1939	• Changed document name to include "CP" • Support for dynamic address allocation
Requirements on Bus Mirroring	• Changed document name to include "CP"
Requirements on CAN	• No content changes
Requirements on Charging Manager	• Initial release
Requirements on Chinese Vehicle-2-X Communication	• No content changes
Requirements on Communication	• Editorial changes
Requirements on Core Test	• No content changes
Requirements on Crypto Stack	• No content changes
Requirements on Debugging, Tracing and Profiling support of AUTOSAR Components	• No content changes
Requirements on Diagnostic Extract Template	• No content changes
Requirements on DIO Driver	• Editorial changes
Requirements on ECU Configuration	• No content changes
Requirements on ECU Resource Template	• No content changes
Requirements on EEPROM Driver	• Editorial changes
Requirements on Ethernet Support in AUTOSAR	• Introduction of Secure SOME/IP-ACL • Introduction of Deterministic Communication with TSN: Parts 1, 4 and 6 (DRAFT)
Requirements on Firmware Over-The-Air	• No content changes
Requirements on Flash Driver	• Editorial changes • Replaced references to BS BRF with RS BRF
Requirements on Flash Test	• References to "AUTOSAR SWS RAMTest.pdf" removed from the document

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Name	Specification history entry
Requirements on FlexRay	• No content changes
Requirements on Function Inhibition Manager	• No content changes • Editorial Changes
Requirements on Gateway	• Added support for Linklayer Sdu Routing Module • Editorial changes
Requirements on GPT Driver	• No content changes
Requirements on Hardware Test Manager on start up and shutdown	• No content changes
Requirements on I/O Hardware Abstraction	• No content changes
Requirements on ICU Driver	• No content changes
Requirements on I-PDU Multiplexer	• No content changes
Requirements on Libraries	• No content changes
Requirements on LIN	• No content changes
Requirements on MCU Driver	• No content changes
Requirements on Memory Hardware Abstraction Layer	• Editorial changes
Requirements on Memory Services	• Editorial changes
Requirements on Mode Management	• Added chapter Service Discovery Control for SWCs • Editorial Changes
Requirements on Module XCP	• No content changes
Requirements on OCU Driver	• Editorial changes
Requirements on Operating System	• No content changes
Requirements on Port Driver	• Editorial Changes
Requirements on PWM Driver	• No content changes
Requirements on RAM Test	• No content changes
Requirements on Runtime Environment	• Removed PartitionRestart • Set Requirements related to RTE_Implementation_Plug-ins and ClassicPlatformFlexibility to valid • Added chapter "Change history of AUTOSAR traceable items"
Requirements on Secure Onboard Communication	• No content changes
Requirements on Software Cluster Connection module	• Requirements of R20-11 functionality are set to valid
Requirements on Software Component Template	• No content changes.
Requirements on SPI Handler/Driver	• No content changes
Requirements on SW-C and System Modeling	• No content changes
Requirements on System Template	• Added IEEE1722Tp Stream support requirement • Added Ethernet Switch Filtering and Policing requirement • For details please refer to the ChangeDocumentation
Requirements on Time Service	• Editorial changes
Requirements on Transformer	• Editorial Changes - No content changes
Requirements on TTCAN	• Editorial changes
Requirements on Vehicle-2-X Communication	• No content changes
Requirements on Watchdog Driver	• No content changes
Safety Use Case Example	• No content changes

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Name	Specification history entry
Software Component Template	• Improve data type configuration • minor corrections / clarifications / editorial changes
Specification and Integration of Hardware Test Management at start up and shutdown	• No content changes
Specification for CAN XL Driver	• Introduce CanXL_GetCurrentTimeTuple() as draft and deprecate CanXL_GetCurrentTime() • Editorial changes • Update optional interfaces • Update imported datatypes
Specification of a Diagnostic Communication Manager for SAE J1939	• Fixed non-diagnostic channels and return values of Dem_J1939DcmGetNumberOfFilteredDTC • Added missing service ports and interfaces for DM13 • Added information about automatic handle IDs to configuration • Converted to LATEX and changed document name to include "CP"
Specification of a Request Manager for SAE J1939	• Fixed include file for configurable callouts • Fixed reference to J1939Rm_CheckReceivedComIPdu, fixed name of J1939RmRequest2QueueSize, fixed description of destAddress of J1939Rm_CancelRequestTimeout • Added information about automatic handle IDs to configuration • J1939Rm_AckCode and J1939Rm_ExtIdType changed to uint8
Specification of a Transport Layer for SAE J1939	• Changed document name to include "CP" • Added references to ComMChannels to configuration • Added information about automatic handle IDs to configuration
Specification of ADC Driver	• No content changes
Specification of AUTOSAR Run-Time Interface	• Extended stopwatch to allow nesting • Added imported types • Editorial changes
Specification of Basic Software Mode Manager	• Added BswM support for Service Discovery Control for Application Software • Added new action to set firewall state • Editorial Changes
Specification of Basic Software Multicore Library	• Added note for MemoryAllocation • Bugfixes
Specification of Bit Handling Routines	• Fixed CheckDocumentSource errors.
Specification of Bulk NvData Manager	• No content changes
Specification of Bus Mirroring	• Changed document name to include "CP" • Removed direct references to tables from SWS items • Added information about automatic handle IDs to configuration • Mirror_NetworkType changed to uint8

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Name	Specification history entry
Specification of CAN Driver	• Support for selective WakeUp via CAN-Controller • Changed document name to include "CP" • Added information about automatic handle IDs to configuration • Converted to LATEX
Specification of CAN Interface	• Support for selective WakeUp via CAN-Controller • Editorial changes
Specification of CAN Network Management	• Editorial changes • Improvements and harmonization
Specification of CAN State Manager	• Support for selective WakeUp via CAN-Controller • Clarification of "Available via: Configurable" • Added SWS IDs for "mandatory interfaces" & "optional interfaces • Editorial changes
Specification of CAN Transceiver Driver	• Editorial changes
Specification of CAN Transport Layer	• Added Extended Production Errors to indicate timeouts and errors • Removed dependency of the addressing format for shared PDUs/SDUs
Specification of CAN XL Transceiver Driver	• Editorial changes
Specification of Cellular Vehicle-2-X Driver	• No content changes
Specification of Charging Manager	• Initial release
Specification of Chinese Vehicle-2-X Management	• No content changes
Specification of Chinese Vehicle-2-X Message	• Editorial Cleanup
Specification of Chinese Vehicle-2-X Network	• No content changes
Specification of Chinese Vehicle-2-X Security	• No content changes
Specification of COM Based Transformer	• No content changes
Specification of Communication	• Minor corrections / clarifications / editorial changes
Specification of Communication Manager	• Document structure rework • Introduced validation findings of concept "ReworkOfPNCrelatedComMandNM handling (part2)"
Specification of Communication Stack Types	• Added ListElemStructType • Added TimeTupleType, TimeStampType, TimeStampQualType • Changed the size of PNCHandleType
Specification of Core Test	• No content changes
Specification of CRC Routines	• Removed hardware supported CRC calculation • Minor corrections / clarifications / editorial changes
Specification of Crypto Driver	• Editorial Changes • Add support for KeyWrap / KeyUnwrap
Specification of Crypto Interface	• Changed pubValueLengthPtr into publicValueLengthPtr • Removed CRYPTO_E_QUEUE_FULL from SWS_CryIf_91003 • Minor changes •

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Name	Specification history entry
Specification of Crypto Service Manager	• Add AES Key Wrap support • Remove inconsistency in parameter types and const type modifier • Remove key location check in Csm_KeyCopy() • Editorial changes
Specification of Data Distribution Service for Classic Platform	• EcuC model refactoring • Added details on Tx and Rx path and queue management • API renaming and clarification • Improved description of safety requirements and management
Specification of Default Error Tracer	• Editorial Changes
Specification of Diagnostic Communication Manager	• Fixed StartOfReception • Added Authentication TransmitCertificate • Introduced Secure Variant Coding • Reworked the structure of elements in SecurityEvents to enable usage in multiple platforms • minor corrections / clarifications / editorial changes; For details please • refer to the ChangeDocumentation
Specification of Diagnostic Event Manager	• Remove draft API Dem_SetEventFailedWithSyncFreeze Frame / Dem_CallbackEventSync StorageProcessed • Introduce DemResetPendingBitOnOverflow • Introduce IUMPR Denominator for evaporative system purge flow monitor • Adapt range for EDR 0xFE
Specification of Diagnostic Log and Trace	• Added Message Tags specifications • Minor corrections • Editorial changes
Specification of Diagnostic over IP	• incorporated DoIP Multiplexed Testers
Specification of DIO Driver	• Editorial changes
Specification of ECU Configuration	• Added EcucPartitionId and EcucPartitionCoreRef to Ecuc module • Added configuration for Complex Drivers, which interact with the L-Sdu • Router module • Added Pdu Meta-Data used for IEEE1722Tp • Changes in specification items and constraints: for details please see the change history
Specification of ECU Resource Template	• Editorial: wrap tables in specification items • Extend HwPin attributes
Specification of ECU State Manager	• Correct broken references • Minor content changes, clarifications
Specification of EEPROM Abstraction	• Editorial Changes
Specification of EEPROM Driver	• Editorial Changes • Assigned new ID [SWS_Eep_00247] to a duplicate ID under EEP_E_ERASE_FAILED

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Name	Specification history entry
Specification of Ethernet Driver	• Adaptation to the Deterministic Communication with TSN • Editorial changes
Specification of Ethernet Interface	• New chapters for: • Firewall support • Communication • Editorial changes
Specification of Ethernet State Manager	• Add new Paramter EthSMTcpIpUsed to enable/disable interaction with a TcpIp module for the EthSm Network • Removed unnecessary requirements: [SWS_EthSM_00008], [SWS_EthSM_00010],[SWS_EthSM_00013]
Specification of Ethernet Switch Driver	• Concept 710 (Deterministic communication with TSN) incorporated • Interaction with the Firewall module added
Specification of Ethernet Transceiver Driver	• Missing run time error added • withAuto=TRUE for EthTrcvIdx • Editorial changes
Specification of Extended Fixed Point Routines	• A statement has been added to define the T1rec resolution.
Specification of Firewall for Classic Platform	• Initial release
Specification of Fixed Point Interpolation Routines	• Fixed CheckDocumentSource errors.
Specification of Fixed Point Math Routines	• No content changes.
Specification of Flash Driver	• Editorial changes • Removed uptrace from [SWS_Fls_NA_00366] to SRS_BSW_00371 and SRS_BSW_00361
Specification of Flash EEPROM Emulation	• Fixed incorrect description of return value in Fee_InvalidateBlock and Fee_EraseImmediateBlock
Specification of Flash Test	• Editorial changes
Specification of FlexRay AUTOSAR Transport Layer	• No content changes
Specification of FlexRay Driver	• Removed all HandleId configuration parameters
Specification of FlexRay Interface	• No content changes
Specification of FlexRay ISO Transport Layer	• Added Extended Production Errors to indicate timeouts and errors
Specification of FlexRay Network Management	• Removed all HandleId configuration parameters • Minor corrections
Specification of FlexRay State Manager	• Editorial changes • Naming harmonized • Specification IDs for production errors
Specification of FlexRay Transceiver Driver	• editorial cleanup. • withAuto tag set to true for Index and ID configuration parameters. • Editorial update of main function definition table
Specification of Floating Point Interpolation Routines	• No content changes.
Specification of Floating Point Math Routines	• Updated SWS_Mfl_00305.

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Name	Specification history entry
Specification of Function Inhibition Manager	• Removed PartitionRestart • Set Requirements related to RTE_Implementation_Plug-ins and ClassicPlatformFlexibility to valid • Added chapter "Change history of AUTOSAR traceable items"
Specification of GPT Driver	• No content changes
Specification of Hardware Test Manager on start up and shutdown	• No content changes
Specification of I/O Hardware Abstraction	• No content changes
Specification of ICU Driver	• No content changes
Specification of IEEE1722 Transport Protocol Module	• Initial release
Specification of Intrusion Detection System Manager	• Introduction of Qualified Event Buffer • New Security Event no Qualified Event Buffer available • New Type Definition IdsM ExternalSecurityEventIdType
Specification of I-PDU Multiplexer	• Added information about automatic handle IDs to configuration • Changed document name to include "CP"
Specification of Key Manager	• Supported certificate encodings in KeyM • Minor bugfixes • Editorial changes.
Specification of Large Data COM	• Removed all HandleId configuration parameters
Specification of LIN Driver	• LIN_E_TIMEOUT removed as Production Error • Misleading note regarding Lin_CheckWakeup removed • Editorial Changes
Specification of LIN Interface	• Added Extended Production Errors regarding LinTp timeouts and relevant errors • Added a note after [SWS_LinIf_00503] for clarification on implementation of LinIf_CheckWakeup API • Clarification of "Available via: Configurable" in API tables (Header File Cleanup) • Refined configuration structure • Editorial changes (incl. correcting typos in spec. items)
Specification of LIN State Manager	• Updated Chapter 7.1.8 & 8.3.2 • Removed Chapter 7.1.8.1 Wakeup repetitions for slave • Editorial Changes in Chapter 8.5.1 & 8.5.2 • Corrected Figure in Chapter 9.1 • Added new parameter [ECUC_LinSM_00212] in Chapter 10.3.2
Specification of LIN Transceiver Driver	• Editorial changes
Specification of Linklayer Sdu Routing Module	• Initial release
Specification of MACsec Key Agreement	• MKA Security Events incorporated
Specification of MCU Driver	• Cleaned up unresolved references in traceability
Specification of Memory Abstraction Interface	• Updated SWS_MemIf_00047 • Removed Obsolete status of SWS_MemIf_00065 • Editorial changes
Specification of Memory Access	• Fixed inconsistencies

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Name	Specification history entry
Specification of Memory Driver	• Fixed inconsistencies
Specification of Memory Mapping	• Clarify usage of GLOBAL and LOCAL coreScope • Improve document readability
Specification of Module E2E Transformer	• Rework flowcharts, sequence charts and explaining text • Description of E2E state machine results updated
Specification of Module XCP	• Removed all HandleId configuration parameters
Specification of Network Management for SAE J1939	• Changed document name to include "CP" • Added configuration of dynamic addressing • Added information about automatic handle IDs to configuration
Specification of Network Management Interface	• NM harmonization • Editorial changes
Specification of NVRAM Manager	• NvM_SetBlockLockStatus removed • NvM_Externals.h provided conditionally
Specification of OCU Driver	• Editorial changes
Specification of Operating System	• Renaming of restart symbols • Added new API isOsStarted, configuration change in OS-Application/EcuPartition/Core assignment • Memory mapping update • Minor correction / clarification / editorial changes
Specification of PDU Router	• Sequence diagram chapters for TP Gatewaying have been improved • Editorial changes
Specification of Platform Types for Classic Platform	• No content changes.
Specification of Port Driver	• Editorial changes • Removed uptrace from [SWS_Port_NA_00227] to SRS_BSW_00371
Specification of PWM Driver	• No content changes
Specification of RAM Test	• Editorial changes
Specification of RTE Software	• Extended support for Software Clusters • Support for termination and restart of partitions removed • VFB tracing of mode switch request completion • Minor corrections / clarifications/ editorial changes
Specification of Secure Onboard Communication	• Updated naming of Security Events for IdsM • Minor corrections / clarifications / editorial changes
Specification of Service Discovery	• Added Secure SOME/IP-ACL • Minor bugfixes and editorial changes
Specification of Socket Adaptor	• Added SoAdSocketIpAddrAssignmentChgNotifUpperLayerRef. • Added ACL support. • Removed module prefix from security events. • Improved TCP stream handling. • Improved nPdu transmit requirements [SWS_SoAd_00734] and [SWS_SoAd_00747]. • Resolved contradiction in [SWS_SoAd_00683].

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Name	Specification history entry
Specification of Software Cluster Connection module	• Support SW Cluster individual configuration ID check in NVM proxy • Requirements of R20-11 functionality are set to valid • Corrections and editorial changes of existing feature
Specification of SOME/IP Transformer	• Restrict SOME/IP session handling • Added information about use of maximum number of array elements • Removed chapter "Header file structure" • Clarification on byte order for SOME/IP header fields, additional fields in the payload and parameters in the payload
Specification of SPI Handler/Driver	• SWS_Spi_00389 moved to mandatory interfaces • Editorial changes
Specification of Standard Types	• Added Safety Transformer Error Codes in [SWS_Std_00028] • Editorial Changes
Specification of SW-C End-to-End Communication Protection Library	• Corrections of Length type in P44m
Specification of Synchronized Time-Base Manager	• Support for a Disciplined HW Clock added • Time Validation enhanced: Fallback Virtual Local Time, rate validation and time progression monitoring added • Validation findings for "Secured Time Synchronization" incorporated • Type of Time Base no longer depends on the ID but on the newly introduced Type parameter
Specification of TCP/IP Stack	• Minor corrections and clarifications • Editorial changes • Wildcards descriptions improvement • Introduction of IND, TCP window scale option, TCP SACK and TLS updates for Charging Interface
Specification of Time Service	• Editorial changes
Specification of Time Synchronization over CAN	• Clarification of / refinement of sequence counter validation • Clarification of / refinement of Timesync message transmission and debouncing behavior • Incorporation of validation findings for "Secured Time Synchronization"
Specification of Time Synchronization over Ethernet	• Integrated Support of PTP physical clock adjustment
Specification of Time Synchronization over FlexRay	• Clarification of / refinement of sequence counter validation • Clarification of / refinement of Timesync message transmission and debouncing behavior • Incorporation of validation findings for "Secured Time Synchronization"
Specification of Timing Extensions for Classic Platform	• Change primitive type of maxSlots/maxCycles in repetitiveEOC • mprove identification and constraints of root in hierarchicalEOC • Introduce Intra-LET paradigms • Remove EOC.ignoreOrderAllowed

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Name	Specification history entry
Specification of TTCAN Driver	• Editorial changes • Add Definition of datatype Can_TTTURType • Fix Can_TTReceive Service ID
Specification of TTCAN Interface	• Extended Production Errors integrate table into requirement.
Specification of UDP Network Management	• NM harmonization • Editorial changes
Specification of Vehicle-2-X Basic Transport	• Removal of Tx confirmation and transaction ID • Clarification of upper layer interface of <User>_RxIndication() • Renamed V2Btp_GetVersionInfo to V2xBtp_GetVersionInfo
Specification of Vehicle-2-X Data Manager	• List non-applicable requirements from SRS V2x Communication • Editorial changes
Specification of Vehicle-2-X Facilities	• Removal of Tx confirmation and transaction ID • Removal of Verification on Demand
Specification of Vehicle-2-X Geo Networking	• Removal of Tx confirmation and transaction ID
Specification of Vehicle-2-X Management	• Removal of Tx confirmation and transaction ID • Various corrections in service API and V2XFac API mapping
Specification of Watchdog Driver	• No content changes
Specification of Watchdog Interface	• No content changes
Specification of Watchdog Manager	• Editorial changes
Specification of Wireless Ethernet Driver	• Removal of Tx confirmation and transaction ID • WEthCtrlId no anymore manually configured
Specification of Wireless Ethernet Transceiver Driver	• WEthTrcvId, WEthTrcvRadioId and WEthTrcvAntennaId no anymore manually configured
Specification on SOME/IP Transport Protocol	• Several minor bugfixes • Specified behavior of PduR_SomeIpTpTransmit in case of E_NOT_OK
Supplementary material of general blueprints for AUTOSAR	• No content changes
SW-C and System Modeling Guide	• Changed semantics of valid short name
System Template	• Added support for DDS configuration • Added support for Firewall configuration • Added support for ACL checks • Added support for modeling of IEEE1722Tp streams and Ethernet Switch Filtering and Policing
Unique Names for Documentation, Measurement and Calibration: Modeling and Naming Aspects including Automatic Generation	• No content changes
Utilization of Crypto Services	• Editorial changes
Virtual Functional Bus	• Fixed specification items with colliding ID-s

Table 5.1: Overview of specification release histories