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References

- [1] Standardization Template
AUTOSAR_TPS_StandardizationTemplate

1 Introduction

1.1 Scope of this document

This document provides an overview of the AUTOSAR standard Foundation Release R21-11.

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 on 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 is in the course of extending 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 R22-11 onwards, specification items in newly introduced specifications follow the new naming scheme. In R22-11, file names are not yet changed.

From R23-11 onwards, the names of all files that are part of the release will 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](#).

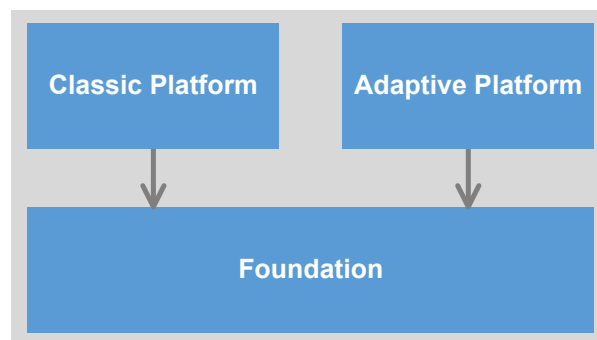


Figure 1.1: Dependencies of AUTOSAR Standards

1.4 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.

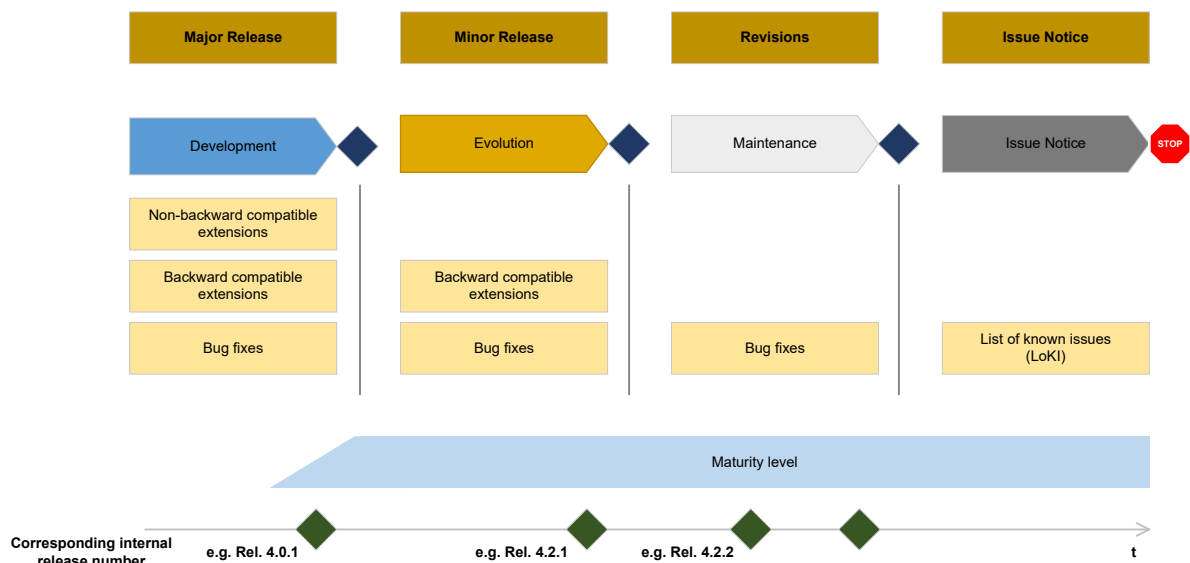


Figure 1.2: Life cycle model of AUTOSAR standards

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
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

According to the release life cycle of AUTOSAR the release R22-11 is a minor release.

1.5 Content of chapters

This document is structured as follows:

- Chapter 1 provides an introduction to AUTOSAR's release strategy and its standardization approach.
- Chapter 2 provides a summary of changes since the previous release of the Foundation.
- Chapter 3 contains the overview of specifications comprising the AUTOSAR Foundation Release R21-11. This chapter is structured according to the clusters being in use in AUTOSAR Foundation Release R21-11.
- Chapter 4 contains remarks about known technical deficiencies.
- Chapter 5 contains the detailed revision history of all released specifications.

2 Summary of changes

This chapter contains a summary of changes which have been implemented since the previous release R21-11.

2.1 Release R22-11

The purpose of the Foundation standard is to enforce interoperability between the AUTOSAR platforms and therefore contains common requirements and technical specifications (e.g. protocols) shared between the AUTOSAR platforms.

With the current release, this goal has been pursued once more.

2.1.1 Concepts

2.1.1.1 Introduced Concepts

The following concepts in [2.1.1.1.1](#) - [2.1.1.1.8](#) have been introduced.

2.1.1.1.1 Unified AUTOSAR Timing and Tracing Approach

The concept elaborates a unified approach for timing analysis, design, validation and verification, including the definition of suitable tracing methods, which can be applied to the Classic and Adaptive platform. This covers to build up a timing reference platform and to extend the timing description to different abstraction levels.

2.1.1.1.2 CAN XL

The CAN XL concept adds the improved capabilities of the next generation of CAN to AUTOSAR, e.g., a data rate up to 20MBit/s, increased frame size of up to 2048 Bytes, the introduction of a virtual separation with a Virtual CAN ID (VCID) similar to a VLAN and the possibility to transmit Ethernet frames over a physical CAN network.

2.1.1.1.3 MACsec

Media Access Controller Security (MACsec) and MACsec Key Agreement (MKA) protocols:

The concept defines and includes in AUTOSAR the Modules needed for using and configuring the security protocol in Layer 2 MACsec and its related Key Agreement Protocol MKA.

Focuses on the authentication method, secret keys agreement protocol (MKA), as well as the methods, rules, and configuration related to the protected communication (extra Header (SecTAG), extra Check Value (ICV), cryptography sets (Cypher Suites), bypass rules (VLAN-ID, EthTyp)).

2.1.1.1.4 V2X in AUTOSAR

The protocol specification "Remote Access Layer" has been introduced to Foundation to allow the separation of a V2x stack from the access layer, so that a radio network layer and the V2x stack can be located in different ECUs.

2.1.1.1.5 Firewall

The concept introduces a firewall to inspect and filter Ethernet traffic based on pre-defined 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 supports also the Intrusion Detection System by raising Security Events to the IdsM.

2.1.1.1.6 Service Oriented Vehicle Diagnostics

SOVD (Service-oriented Vehicle Diagnostics) allows the usage of the "ASAM SOVD" standard in the context of AUTOSAR Adaptive. This covers the use cases for HCP diagnostics as well as the UDS adapter to access ECUs using AUTOSAR Classic.

2.1.1.1.7 DDS Support on CP

The target of this Concept is to introduce a subset of capabilities of the OMG Data Distribution Services protocol (DDS) into the CP Platform. The protocol has been introduced as Bsw module located into the Communication Layer as Upper and Lower layer PduR module. Main features are full QoS handling with Sender/Receiver application interface with a full static configuration (e.g., no Dynamic Discovery is yet supported).

2.1.1.1.8 SOME/IP Harmonization

The concept SOME/IP Harmonization will clean-up the SOME/IP specification for all AUTOSAR Platforms (FO, CP, AP), by removing duplicate content and aligning contradicting specifications related documents. The current concept

part is harmonizing the documents PRS_SOMEIPServiceDiscoveryProtocol and SWS_CommunicationManagement.

2.1.1.2 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
Unified AUTOSAR Timing and Tracing Approach	Recommended Methods and Practices for Timing Analysis and Design within the AUTOSAR Development Process	Foundation	draft
CAN XL	Main Requirements	Foundation	valid
	Glossary		
	Specification of Manifest	Adaptive Platform	
	System Template	Classic Platform	
	Requirements on CAN		
	Specification of CAN Driver		
	Specification of CAN Interface		
	Specification for CANXL driver functionality to provide additional required interfaces		
	Specification for CANXL transceiver driver functionality to provide additional required interfaces		
	Specification of Ethernet Interface		
	Specification of ECU Configuration		
	System Template		
	Requirements on Bus Mirroring		
	Specification of Bus Mirroring		
Requirements on Ethernet Support in AUTOSAR			





Concept Name	Specification Long Name	Standard	Concept Lifecycle
	Specification of CAN Transceiver Driver		
	Specification of TCP/IP Stack		
	Specification of Cellular Vehicle-2-X Driver		
	Specification of Ethernet Driver		
	Specification of Wireless Ethernet Driver		
	List of Basic Software Modules		
	Layered Software Architecture		
MACsec	Requirements on MACsec	Foundation	draft
	Specification of Manifest	Adaptive Platform	
	Explanation of ara::com API		
	Specification of Communication Management		
	System Template	Classic Platform	
	Specification of MACsec Key Agreement		
	Specification of Ethernet Transceiver Driver		
	Specification of Ethernet Switch Driver		
	Specification of Ethernet Interface		
	Layered Software Architecture		
	List of Basic Software Modules		
V2X in AUTOSAR	Vehicle-2-X Remote Access Layer Protocol Specification	Foundation	valid
	Requirements on Vehicle-2-X Communication	Classic Platform	
	Specification on V2X Data Manager		
	Specification of Vehicle-2-X Facilities		
	Software Component Template		
	List of Basic Software Modules		
	Layered Software Architecture		
Firewall	Main Requirements	Foundation	draft
	Requirements on Firewall		
	Glossary		
	Explanation of Adaptive Platform Design	Adaptive Platform	





Concept Name	Specification Long Name	Standard	Concept Lifecycle
	Explanation of Adaptive Platform Software Architecture		
	Specification of Firewall in Adaptive Platform		
	Specification of Manifest		
Service Oriented Vehicle Diagnostics	Requirements on Diagnostics	Foundation	draft
	Explanation of Service Oriented Vehicle Diagnostics	Adaptive Platform	
	Specification of Manifest		
	Requirements on Manifest Specification		
	Specification of Diagnostics		
	Diagnostic Extract Template	Classic Platform	
DDS Support on CP	Requirements on Data Distribution Service	Foundation	draft
	Specification of Data Distribution Service in Classic Platform	Classic Platform	
	Specification of PDU Router		
	Specification of RTE Software		
	Specification of Socket Adaptor		
	List of Basic Software Modules		
	Layered Software Architecture		
SOME/IP Harmonization	SOME/IP Service Discovery Protocol Specification	Foundation	draft
	Specification of Communication Management	Adaptive Platform	

Table 2.1: Impact of Concepts

2.1.1.3 Validated Concepts

The following concepts have been validated:

- none

2.1.2 Specifications

2.1.2.1 New Specifications

- Explanation of Security Overview (UID 1077, EXP)

- Explanation of Adaptive and Classic Platform Software Architectural Decisions (UID 1078, EXP)
- Protocol specification to exchange data between V2x-stack and Remote Antenna (UID 1033, PRS)
- Requirements on Firewall (UID 1062, RS)
- Requirements on MACsec (UID 1065, RS)
- Requirements on Data Distribution Service (UID 1068, RS)

2.1.2.2 Renamed Specifications

- none

2.1.2.3 Migrated Specifications

With this release, the following specification has been moved from Adaptive Platform to the Foundation standard:

- Explanation of Safety Overview (UID 895, EXP)

With this release, the following specification has been moved from Classic Platform to the Foundation standard:

- none

2.1.2.4 Obsolete Specifications

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

- none

2.1.2.5 Removed Specifications

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

- none

2.1.2.6 Reworked Specifications

The following documents have been changed significantly in R22-11

- none

2.1.2.7 Moved Specification parts

The following specification parts have been moved to other documents in R22-11

- none

2.1.3 Release Documentation

There are no major changes in the Release Documentation.

2.2 History information in AUTOSAR

The following diagram shows the location of documentation of changes.

The Change Documentation is also available for Adaptive Platform since release R20-11.

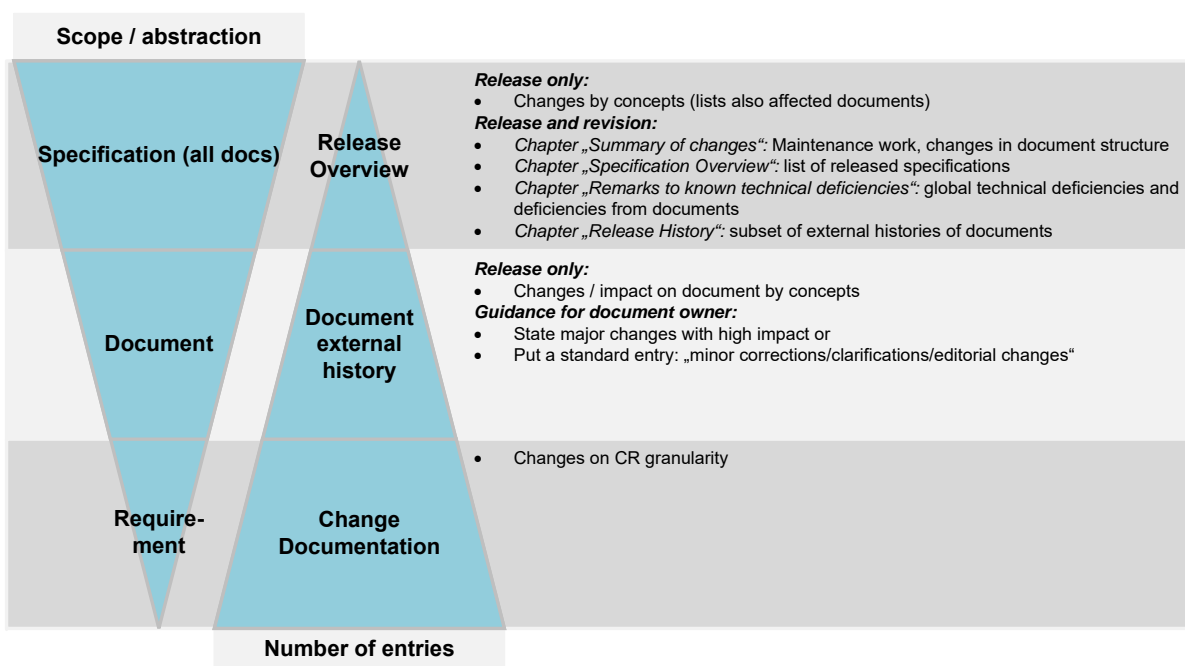


Figure 2.1: History information in AUTOSAR

3 Specification overview

The published specifications are divided into the clusters

- Release Documentation
- Communication Management
- Diagnostics
- General
- Health Monitoring
- Methodology and Templates
- Protocols
- Safety
- Security
- System Services

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

Long Name	File Name	Life cycle changes
Release Documentation		
Foundation Release Overview	AUTOSAR_TR_FoundationReleaseOverview	
AUTOSAR Foundation Specification Hashes	AUTOSAR_TR_FoundationSpecificationHashes	
Communication Management		
Requirements on AUTOSAR Network Management	AUTOSAR_RS_NetworkManagement	
Requirements on Debugging, Tracing and Profiling support of AUTOSAR Components	AUTOSAR_RS_FoundationDebugTraceProfile	
Requirements on E2E	AUTOSAR_RS_E2E	
Requirements on Log and Trace	AUTOSAR_RS_LogAndTrace	
Requirements on MACsec	AUTOSAR_RS_MACsec	Initial release
Diagnostics		
Requirements on Diagnostics	AUTOSAR_RS_Diagnostics	
General		
Explanation of Adaptive and Classic Platform Software Architectural Decisions	AUTOSAR_EXP_SWArchitecturalDecisions	Initial release
Explanation of Diagram Source	AUTOSAR_EXP_DiagramSource	
Explanation of Safety Overview	AUTOSAR_EXP_SafetyOverview	
Explanation of Security Overview	AUTOSAR_EXP_SecurityOverview	Initial release
Glossary	AUTOSAR_TR_Glossary	
Main Requirements	AUTOSAR_RS_Main	
Predefined Names in AUTOSAR	AUTOSAR_TR_PredefinedNames	





Long Name	File Name	Life cycle changes
Project Objectives	AUTOSAR_RS_ProjectObjectives	
Health Monitoring		
Explanation of System Health Monitoring	AUTOSAR_EXP_SystemHealthMonitoring	
Requirements on Health Monitoring	AUTOSAR_RS_HealthMonitoring	
Specification of Health Monitoring	AUTOSAR_ASWS_HealthMonitoring	
Methodology and Templates		
ARXML Serialization Rules	AUTOSAR_TPS_ARXMLSerializationRules	
AUTOSAR Feature Model Exchange Format	AUTOSAR_TPS_FeatureModelExchangeFormat	
AUTOSAR Feature Model Exchange Format Requirements	AUTOSAR_RS_FeatureModelExchangeFormat	
AUTOSAR Miscellaneous Support Files	AUTOSAR_MOD_MiscSupport	
AUTOSAR XML Schema Production Rules	AUTOSAR_TPS_XMLSchemaProductionRules	
Collection of blueprints for AUTOSAR M1 models	AUTOSAR_MOD_GeneralBlueprints	
Collection of constraints on AUTOSAR M1 models	AUTOSAR_TR_AutosarModelConstraints	
Generic Structure Template	AUTOSAR_TPS_GenericStructureTemplate	
Interoperability of Autosar Tools Supplement	AUTOSAR_TR_InteroperabilityOfAutosarToolsSupplement	
Log And Trace Extract Template	AUTOSAR_TPS_LogAndTraceExtract	
Meta Model	AUTOSAR_MMOD_MetaModel	
Meta Model-generated XML Schema	AUTOSAR_MMOD_XMLSchema	
Requirements on Methodology for Classic and Adaptive Platform	AUTOSAR_RS_Methodology	
Requirements on Security Extract Template	AUTOSAR_RS_SecurityExtractTemplate	
Requirements on Standardization Template	AUTOSAR_RS_StandardizationTemplate	
Requirements on Timing Extensions	AUTOSAR_RS_TimingExtensions	
Security Extract Template	AUTOSAR_TPS_SecurityExtractTemplate	
Specification of Abstract Platform	AUTOSAR_TPS_AbstractPlatformSpecification	
Standardization Template	AUTOSAR_TPS_StandardizationTemplate	
Standardized M1 Models used for the Definition of AUTOSAR	AUTOSAR_MOD_GeneralDefinitions	
Supplementary material of the AUTOSAR XML Schema	AUTOSAR_TR_XMLSchemaSupplement	
Protocols		
E2E Protocol Specification	AUTOSAR_PRS_E2EProtocol	
Log and Trace Protocol Specification	AUTOSAR_PRS_LogAndTraceProtocol	
Vehicle-2-X Remote Access Layer Protocol Specification	AUTOSAR_PRS_V2XRemoteAccessLayer	Initial release





Long Name	File Name	Life cycle changes
Requirements on Data Distribution Service	AUTOSAR_RS_DataDistributionService	Initial release
Requirements on IPsec Protocol	AUTOSAR_RS_IPsecProtocol	
Requirements on SOME/IP Protocol	AUTOSAR_RS_SOMEIPProtocol	
Requirements on SOME/IP Service Discovery Protocol	AUTOSAR_RS_SOMEIPServiceDiscoveryProtocol	
Requirements on Time Synchronization	AUTOSAR_RS_TimeSync	
SOME/IP Protocol Specification	AUTOSAR_PRS_SOMEIPProtocol	
SOME/IP Service Discovery Protocol Specification	AUTOSAR_PRS_SOMEIPServiceDiscoveryProtocol	
Specification of Intrusion Detection System Protocol	AUTOSAR_PRS_IntrusionDetectionSystem	
Specification of Secure Onboard Communication Protocol	AUTOSAR_PRS_SecOcProtocol	
Specification of the AUTOSAR Network Management Protocol	AUTOSAR_PRS_NetworkManagementProtocol	
Time Synchronization Protocol Specification	AUTOSAR_PRS_TimeSyncProtocol	
Safety		
Safety Requirements for AUTOSAR Adaptive Platform and AUTOSAR Classic Platform	AUTOSAR_RS_Safety	
Security		
List of known Issues of Secure Hardware Extensions	AUTOSAR_TR_ListOfKnownIssuesSecureHardwareExtensions	
Requirements on Firewall	AUTOSAR_RS_Firewall	Initial release
Requirements on Intrusion Detection System	AUTOSAR_RS_IntrusionDetectionSystem	
Specification of Secure Hardware Extensions	AUTOSAR_TR_SecureHardwareExtensions	
System Services		
Recommended Methods and Practices for Timing Analysis and Design within the AUTOSAR Development Process	AUTOSAR_TR_TimingAnalysis	

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
897	Time Synchronization Protocol Specification	PRS	4.1

4.1 Time Synchronization Protocol Specification (UID 897), PRS

- No support of BMCA protocol, like specified in [1, IEEE 802.1 AS]
- No support of Announce and Signaling messages, like specified in [1, IEEE 802.1AS].
- The reception of a Pdelay_Req is not taken as a pre-condition to start with the transmission of Sync messages.
- The Rate Correction will be performed by the Time synchronization protocol, which does not require the Pdelay mechanism. For some applications, e.g. for Audio/Video, it might be necessary to use Pdelay based Rate Correction performed by Time synchronization protocol itself, which is optional and not considered by this specification.
- Because of (4), the Time synchronization protocol will not maintain the Ethernet HW clock but may use it as a source for the Virtual Local Time.
- While IEEE 802.1AS states, that IEEE 802.1 AS message shall not have a VLAN tag nor a priority tag, the Time synchronization protocol would allow Time Synchronization on VLANs under the condition, that the switch HW supports forwarding of reserved multicast addresses using the range of 01:80:C2:00:00:00 .. 0F
- "CRC secured" in the context of this document refers to CRC integrity protection mechanism and does not imply that CRC is used as a cybersecurity solution.
- No support of securing the messages of Pdelay protocol.

5 Release history

5.1 Release R22-11

The following deliverables had major changes.

Name	Specification history entry
ARXML Serialization Rules	<ul style="list-style-type: none"> Minor clarifications
AUTOSAR Feature Model Exchange Format	<ul style="list-style-type: none"> No content changes
AUTOSAR Feature Model Exchange Format Requirements	<ul style="list-style-type: none"> No content changes
AUTOSAR XML Schema Production Rules	<ul style="list-style-type: none"> clarified usage of the term "properties" clarified when to produce xsd:groups minor corrections / clarifications / editorial changes
E2E Protocol Specification	<ul style="list-style-type: none"> New chapter 6.3 added with generalized flowcharts and SWS items for non method profiles. Protocol specific flowcharts and SWS items for method (P04m and P07m) and non method profiles replaced by generalized flowcharts and items Use consistent function names (e.g. E2EXf_handling_PXXm_server, E2EXf_handling_PXXm_client) Corrections of Min/MaxDataLength in P04m, P07m and P08m Corrections of errors in state machine specification Counter handling for client/server communication updated
Explanation of Adaptive and Classic Platform Software Architectural Decisions	<ul style="list-style-type: none"> Initial release
Explanation of Safety Overview	<ul style="list-style-type: none"> Changed AUTOSAR Standard to Foundation Glossary updated Update chapter 3.2.5.1 rephrase safety goal to safety needs
Explanation of Security Overview	<ul style="list-style-type: none"> Initial release
Explanation of System Health Monitoring	<ul style="list-style-type: none"> No content changes
Foundation Release Overview	<ul style="list-style-type: none"> Release Life Cycle Status: R22-11 is in Evolution, R22-11 supersedes R21-11
Generic Structure Template	<ul style="list-style-type: none"> Rework ReferenceBase Improve Upstream Mapping Tags Variant Dependency of Instance Ref Variant-Rich Model Violates
Glossary	<ul style="list-style-type: none"> Added terms for Can XL, Integrity Check Value, Firewall Improved definitions of Foundation, Software Cluster (Adaptive Platform), Gateway, Use Case
List of known Issues of Secure Hardware Extensions	<ul style="list-style-type: none"> No content changes
Log And Trace Extract Template	<ul style="list-style-type: none"> Added modeling support for PrivacyFlags





Name	Specification history entry
Log and Trace Protocol Specification	<ul style="list-style-type: none"> • Context IDs for the framework reserved • Optional fragmentation (segmentation) header allowed • Support of long Appl-IDs and Context IDs added
Main Requirements	<ul style="list-style-type: none"> • RS_Main_00513 removed • RS_Main_00129 added • OBSOLETE requirements and traces to OBSOLETE requirements removed • CANXL support added • Firewall support added • Added definition of explicit backward compatibility for AUTOSAR extensions
Predefined Names in AUTOSAR	<ul style="list-style-type: none"> • Editorial and minor changes
Project Objectives	<ul style="list-style-type: none"> • No content changes
Recommended Methods and Practices for Timing Analysis and Design within the AUTOSAR Development Process	<ul style="list-style-type: none"> • New introduction of timing on functional level in 4 • Added description of Timing Reference Platform on functional level (TRP) in appendix A • Reworked end-to-end, network and ECU use-cases. • Minor updates and improvements
Requirements on AUTOSAR Network Management	<ul style="list-style-type: none"> • Refined Partial Network Cluster handling • Editorial changes/clarifications
Requirements on Data Distribution Service	<ul style="list-style-type: none"> • Initial release
Requirements on Debugging, Tracing and Profiling support of AUTOSAR Components	<ul style="list-style-type: none"> • Corrected "Dependencies" of some items • Changed ARTI information and ARTI hook items to be more generic
Requirements on Diagnostics	<ul style="list-style-type: none"> • New requirements for CP and AP • Correction of requirement assignment to CP and AP • Additional requirements for SOVD support
Requirements on E2E	<ul style="list-style-type: none"> • Editorial changes
Requirements on Firewall	<ul style="list-style-type: none"> • Initial release
Requirements on Health Monitoring	<ul style="list-style-type: none"> • Merged RS_SAF_21104 with RS_HM_09125 and RS_SAF_21105 with RS_HM_09222 • Added use case for RS_HM_09125 and RS_HM_09235 • Editorial changes
Requirements on Intrusion Detection System	<ul style="list-style-type: none"> • No content changes
Requirements on IPsec Protocol	<ul style="list-style-type: none"> • No content changes
Requirements on Log and Trace	<ul style="list-style-type: none"> • Support of harmonized logging • Reserved Log Context IDs for the framework
Requirements on MACsec	<ul style="list-style-type: none"> • Initial release
Requirements on Methodology for Classic and Adaptive Platform	<ul style="list-style-type: none"> • No content changes
Requirements on Security Extract Template	<ul style="list-style-type: none"> • No content changes
Requirements on SOME/IP Protocol	<ul style="list-style-type: none"> • No content changes
Requirements on SOME/IP Service Discovery Protocol	<ul style="list-style-type: none"> • New requirement on grouping eventgroups (RS_SOMEIPSD_00026)
Requirements on Standardization Template	<ul style="list-style-type: none"> • Advisory item





Name	Specification history entry
Requirements on Time Synchronization	<ul style="list-style-type: none"> • Support for "Secured Time Synchronization" added • Support for time synchronization on peer-to-peer and multidrop topologies added • AUTOSAR TLV processing enhanced • Use case table added
Requirements on Timing Extensions	<ul style="list-style-type: none"> • Added RS_TIMEX_00026 • Remove uptrace to defunct requirements RS_Main_00160, RS_Main_00161, RS_Main_00480
Safety Requirements for AUTOSAR Adaptive Platform and AUTOSAR Classic Platform	<ul style="list-style-type: none"> • renamed safety goal to top level safety requirement • added safety need for recovery upon failure • added support to include extracted requirements from component requirement specification
Security Extract Template	<ul style="list-style-type: none"> • Filtering of security events
SOME/IP Protocol Specification	<ul style="list-style-type: none"> • Clarification of SOME/IP-TP segmentation • Removed implementsSOMEIPStringHandling • PRS_SOMEIP_00300 extended by uint64 • Corrected serialization with BOM in PRS_SOMEIP_00374 • Corrected multiple Bugs in <ul style="list-style-type: none"> – PRS_SOMEIP_00043, – PRS_SOMEIP_00739, – PRS_SOMEIP_00043, – PRS_SOMEIP_00241, – PRS_SOMEIP_00101, – PRS_SOMEIP_00942 and – PRS_SOMEIP_00922 • Added PRS_SOMEIP_00245 to correct mismatch in size of Method-ID • Editorial Changes
SOME/IP Service Discovery Protocol Specification	<ul style="list-style-type: none"> • Contradicting requirements improved • Editorial changes
Specification of Abstract Platform	<ul style="list-style-type: none"> • No content changes
Specification of Health Monitoring	<ul style="list-style-type: none"> • Introduced Elementary Supervision Status for Adaptive platform • Determination of Supervision Status is now platform specific
Specification of Intrusion Detection System Protocol	<ul style="list-style-type: none"> • No content changes
Specification of Secure Hardware Extensions	<ul style="list-style-type: none"> • No content changes
Specification of Secure Onboard Communication Protocol	<ul style="list-style-type: none"> • Removal of implementation specific contents • Update of configuration parameters • Editorial changes
Specification of the AUTOSAR Network Management Protocol	<ul style="list-style-type: none"> • Added definitions for network states • Added definitions and clarifications for Partial Networking NM protocol





Name	Specification history entry
Standardization Template	<ul style="list-style-type: none">• Advisory item• Sentence pattern• Extension of namePattern for platform
Time Synchronization Protocol Specification	<ul style="list-style-type: none">• Support for "Secured Time Synchronization" added• Support for time synchronization on peer-to-peer and multidrop topologies added• AUTOSAR TLV processing enhanced• Use case table removed
Vehicle-2-X Remote Access Layer Protocol Specification	<ul style="list-style-type: none">• Initial release