Contents

References

[1] Standardization Template
AUTOSAR_TPS_StandardizationTemplate

[2] Requirements on Manifest Specification
AUTOSAR_RS_ManifestSpecification

1 Introduction

1.1 Scope of this document

This document provides an overview of the AUTOSAR standard Adaptive Platform release R22-11.

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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Disclaimers

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.

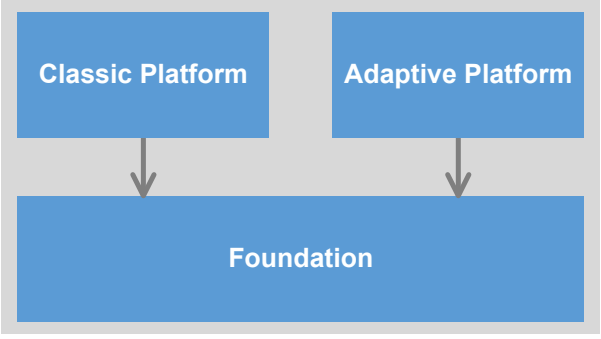

Figure 1.1: Dependencies of AUTOSAR Standards

1.3.6 Dependencies to other Standards

This release of the Adaptive Platform depends on the standard Foundation in release R22-11, which

- defines protocols implemented by Adaptive Platform
- contains the project objectives and the common requirements from which the features of the Adaptive 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.

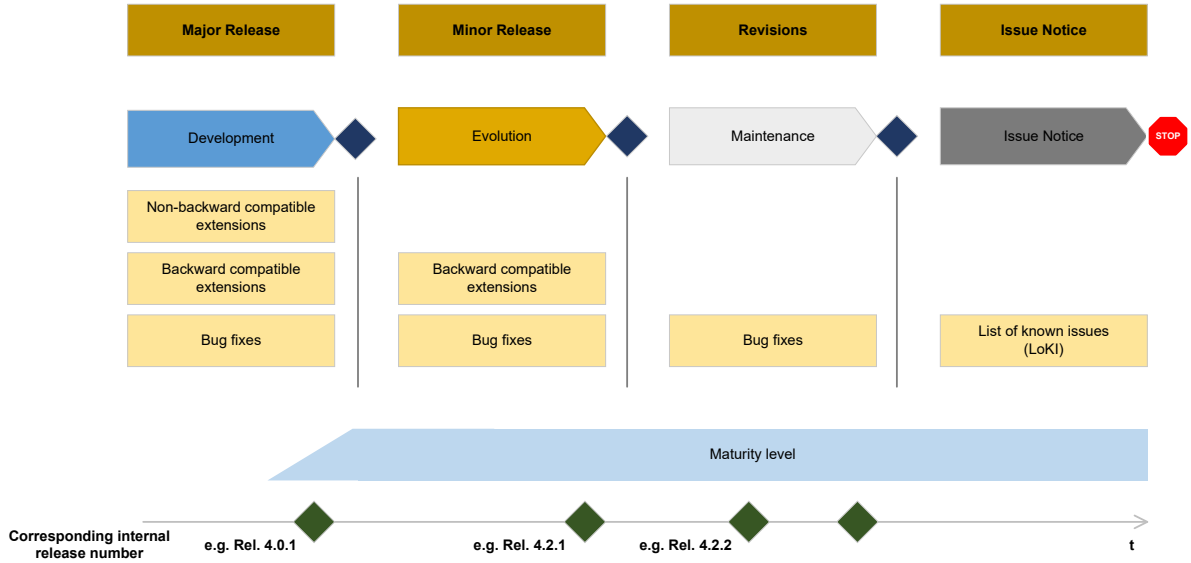

Figure 1.2: Life cycle model of AUTOSAR standards

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
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 Introduction to the Adaptive Platform

The AUTOSAR Adaptive Platform is the standardized platform for microprocessor-based ECUs supporting use cases like highly automated driving as well as high speed on-board and off-board communication.

The Adaptive Platform differs in a number of aspects from the standardization approach of the Classic Platform:

- Parallel validation of specification via software implementation
- Specification of functional clusters instead of modules

1.5.1 Release strategy

The Adaptive Platform has changed its life cycle state to "Evolution" according to AUTOSAR's life cycle model for its standards (as depicted in chapter 1.4.1). Since R19-11, AUTOSAR releases the Adaptive Platform together with the Classic Platform and Foundation in a yearly cycle. The life cycle state "Evolution" implies that users of the Adaptive Platform have a guarantee on backward compatibility for certain parts of the specifications. The differentiation is handled by the life cycle state of the requirements and specification items according to chapter 1.4.2.

1.5.2 Parallel validation of specification via implementation

The Adaptive Platform is partially validated through an AUTOSAR-internal implementation: the Adaptive Platform Demonstrator. The Demonstrator release is available to all the partners and can provide further details to understand the underlying concepts of the Adaptive Platform. The Adaptive Platform Demonstrator is an exemplary implementation of the Adaptive Platform specifications. All further usage based on the Demonstrator (e.g. in production) will become the responsibility of the respective partner. For legal constraints see the dedicated paragraphs in the Development Agreement.

For the current releases, the Demonstrator software implementation has undergone only informal reviews with no strict quality assurance. AUTOSAR is increasing the quality assurance significantly to ensure the quality criteria given by the project.

The Demonstrator comes with traceability up to the specifications to document the validation aspect.

Additionally AUTOSAR develops System Test specifications and implementation to support the test of the demonstrator implementation against the AUTOSAR requirements. These tests are also part of the release.

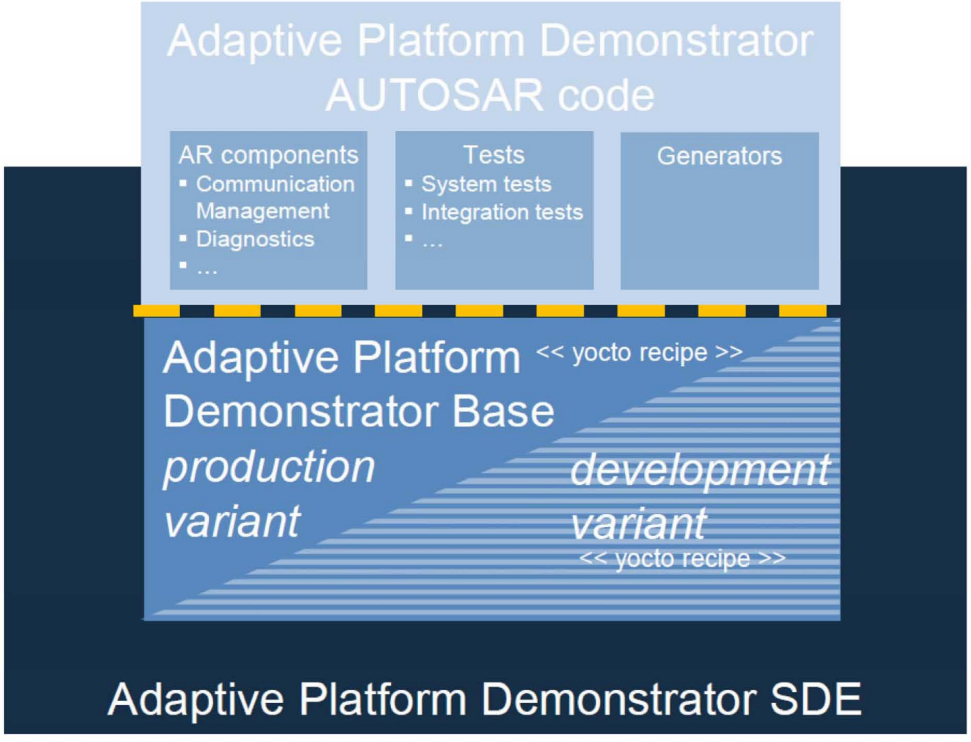

Figure 1.3: Overview of the AUTOSAR Adaptive Platform Demonstrator

1.5.3 Specification depth

Based on the development history of the Classic Platform, AUTOSAR has decided to specify functional clusters instead of a specific software architecture to provide the implementers with options to find efficient solutions for the standardized features.

1.6 Content of chapters

This document is structured as follows:

- Chapter 1 provides an introduction to AUTOSAR's release strategy, the Adaptive Platform and its standardization approach.
- Chapter 2 provides a summary of changes since the previous release of the Adaptive Platform.
- Chapter 3 contains the overview of specifications comprising the release R22-11. This chapter is structured according to the clusters of AUTOSAR release R22-11.
- Chapter 4 contains remarks about known technical deficiencies.
- Chapter 5 contains the detailed release history of all released specifications.

2 Summary of changes

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

2.1 Release R22-11

Several concepts affecting the Adaptive Platform have been introduced with release R22-11 thereby adding functionality to the platform.

Additionally one concept targets the Classic and Adaptive Platform, strengthening the interaction between the two platforms.

2.1.1 Concepts

2.1.1.1 Introduced Concepts

The following concepts in 2.1.1.1.1 - 2.1.1.1.5 have been introduced.

2.1.1.1.1 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)).

2.1.1.1.2 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 Firewall

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 supports also the Intrusion Detection System by raising Security Events to the IdsM.

2.1.1.1.4 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.

2.1.1.1.5 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 artifacts for the actually impacted specifications.

Concept Name	Specification Long Name	Standard	Concept Lifecycle
MACsec	**Requirements on MACsec**	Foundation	draft
	Specification of Manifest	Adaptive Platform	
	Explanation of ara::com API		
	Specification of Communication Management		
	System Template	Classic Platform	

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Concept Name	Specification Long Name	Standard	Concept Lifecycle
	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		
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		
	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		
Firewall	Main Requirements	Foundation	draft

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Concept Name	Specification Long Name	Standard	Concept Lifecycle
	Requirements on Firewall		
	Glossary		
	Explanation of Adaptive Platform Design	Adaptive Platform	
	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	
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:

- CAN XL

2.1.2 Specifications

2.1.2.1 New Specifications

The following new specifications have been introduced via concepts:

- Specification of Firewall in Adaptive Platform (UID 1063, SWS)
- Explanation of Service Oriented Vehicle Diagnostics (UID 1064, EXP)

In addition to the above listed new specifications, the following documents have been added with R22-11:

- none

2.1.2.2 Migrated Specifications

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

- Explanation of Safety Overview (UID 895, EXP)

2.1.2.3 Obsolete Specifications

The following specification has been set to status "obsolete" in this release:

- Guidelines for the use of the C++14 language in critical and safety-related systems (UID 839, RS)

2.1.2.4 Removed Specifications

The following specification has been set to status "removed" in this release:

- Specification of RESTful Communication (UID 876, SWS)

2.1.2.5 Reworked Specifications

The following specifications have been changed fundamentally in R22-11

- none

2.1.2.6 Moved Specification parts

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

- Requirements on Security Management for Adaptive Platform (UID 881, RS) to Explanation of Security Overview (UID 1077, EXP)
- Explanation of Adaptive Platform Software Architectural Decisions (UID 983, EXP) to Explanation of Adaptive and Classic Platform Software Architectural Decisions (UID 1078, EXP)

2.1.2.7 Renamed Specifications

The following specification has been renamed in this release:

- none

2.1.2.8 Life Cycle State of Metamodel

The life cycle of several Adaptive Platform elements in the Metamodel were kept in "draft" until release R21-11. Due to increasing market demands to keep AUTOSAR's XML schema stable, these parts of the model have been set to "valid" in this release. This has an impact on the TPS_Manifest specification [2].

Please be aware that according to [1], only the life cycle states "valid" and "candidate" are used within the Metamodel.

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.

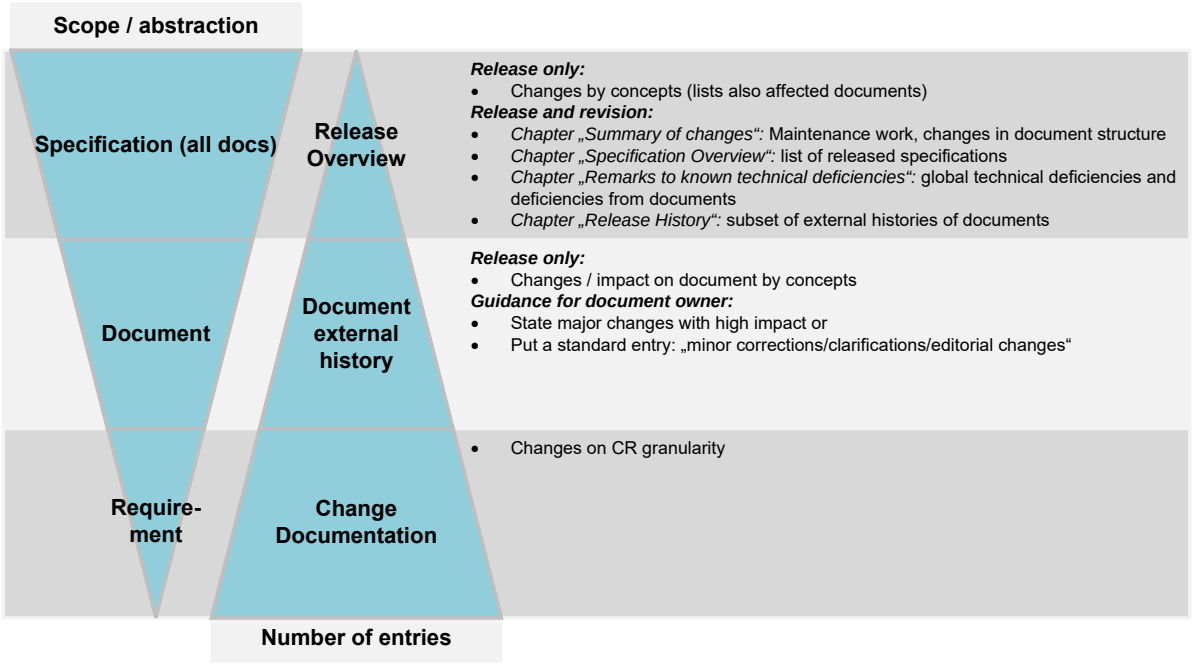

Figure 2.1: History information in AUTOSAR

3 Specification overview

The published specifications are divided into the clusters

- Release Documentation
- Adaptive Foundation
- Adaptive Services
- General
- Methodology and Manifests

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

Long Name	File Name	Life cycle changes
Release Documentation		
Adaptive Platform Release Overview	AUTOSAR_TR_AdaptivePlatform ReleaseOverview	
AUTOSAR Adaptive Platform Specification Hashes	AUTOSAR_TR_AdaptivePlatform SpecificationHashes	
Adaptive Foundation		
Explanation of ara::com API	AUTOSAR_EXP_ARAComAPI	
Explanation of IPsec Implementation Guidelines	AUTOSAR_EXP_ IPsecImplementationGuidelines	
Explanation of Service Oriented Vehicle Diagnostics	AUTOSAR_EXP_SOVD	Initial release
Integration of DDS Security	AUTOSAR_TR_ DDSSecurityIntegration	
Requirements on Communication Management	AUTOSAR_RS_ CommunicationManagement	
Requirements on Cryptography	AUTOSAR_RS_Cryptography	
Requirements on Execution Management	AUTOSAR_RS_ ExecutionManagement	
Requirements on Identity and Access Management	AUTOSAR_RS_ IdentityAndAccessManagement	
Requirements on Operating System Interface	AUTOSAR_RS_ OperatingSystemInterface	
Requirements on Persistency	AUTOSAR_RS_Persistency	
Requirements on Platform Health Management	AUTOSAR_RS_ PlatformHealthManagement	
Specification of Adaptive Platform Core	AUTOSAR_SWS_ AdaptivePlatformCore	
Specification of Communication Management	AUTOSAR_SWS_ CommunicationManagement	
Specification of Cryptography	AUTOSAR_SWS_Cryptography	
Specification of Diagnostics	AUTOSAR_SWS_Diagnostics	
Specification of Execution Management	AUTOSAR_SWS_ ExecutionManagement	
Specification of Firewall in Adaptive Platform	AUTOSAR_SWS_ AdaptivePlatformFirewall	Initial release

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Long Name	File Name	Life cycle changes
Specification of Identity and Access Management	AUTOSAR_SWS_ IdentityAndAccessManagement	
Specification of Intrusion Detection System Manager for Adaptive Platform	AUTOSAR_SWS_AdaptiveIntrusion-DetectionSystemManager	
Specification of Language Binding for modeled AP data types	AUTOSAR_SWS_LanguageBinding-ForModeledAPdatatypes	
Specification of Log and Trace	AUTOSAR_SWS_LogAndTrace	
Specification of Operating System Interface	AUTOSAR_SWS_ OperatingSystemInterface	
Specification of Persistency	AUTOSAR_SWS_Persistency	
Specification of Platform Health Management	AUTOSAR_SWS_ PlatformHealthManagement	
Specification of Time Synchronization	AUTOSAR_SWS_ TimeSynchronization	
Adaptive Services		
Explanation of Sensor Interfaces	AUTOSAR_EXP_SensorInterfaces	
Requirements of State Management	AUTOSAR_RS_StateManagement	
Requirements on Automated Driving Interfaces	AUTOSAR_RS_ AutomatedDrivingInterfaces	
Requirements on Update and Configuration Management	AUTOSAR_RS_ UpdateAndConfigurationManagement	
Specification of Network Management	AUTOSAR_SWS_ NetworkManagement	
Specification of Sensor Interfaces	AUTOSAR_SWS_SensorInterfaces	
Specification of State Management	AUTOSAR_SWS_StateManagement	
Specification of Update and Configuration Management	AUTOSAR_SWS_ UpdateAndConfigurationManagement	
General		
Design guidelines for using parallel processing technologies on Adaptive Platform	AUTOSAR_EXP_ ParallelProcessingGuidelines	
Explanation of Adaptive Platform Design	AUTOSAR_EXP_PlatformDesign	
Explanation of Adaptive Platform Software Architecture	AUTOSAR_EXP_SWArchitecture	
List of Adaptive Platform Functional Clusters	AUTOSAR_TR_ FunctionalClusterShortnames	
General Requirements specific to Adaptive Platform	AUTOSAR_RS_General	
Guidelines for the use of the C++14 language in critical and safety-related systems	AUTOSAR_RS_CPP14Guidelines	obsolete
Guidelines for using Adaptive Platform interfaces	AUTOSAR_EXP_ AdaptivePlatformInterfacesGuidelines	
System Tests of Adaptive Platform	AUTOSAR_TR_ AdaptivePlatformSystemTests	
Methodology and Manifests		
Collection of blueprints for AUTOSAR Adaptive Platform M1 models	AUTOSAR_MOD_ AdaptivePlatformGeneralBlueprints	
Methodology for Adaptive Platform	AUTOSAR_TR_AdaptiveMethodology	
Requirements on Manifest Specification	AUTOSAR_RS_ManifestSpecification	

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Long Name	File Name	Life cycle changes
Specification of Manifest	AUTOSAR_TPS_ManifestSpecification	
Specification of Platform Types for Adaptive Platform	AUTOSAR_SWS_ AdaptivePlatformTypes	
Specification of Timing Extension for Adaptive Platform	AUTOSAR_TPS_ AdaptivePlatformTimingExtensions	

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
851	Specification of Platform Health Management	SWS	4.1
880	Specification of Time Synchronization	SWS	4.2
888	Specification of Update and Configuration Management	SWS	4.3
908	Specification of State Management	SWS	4.4
994	Specification of Language Binding for modeled AP data types	SWS	4.5

4.1 Specification of Platform Health Management (UID 851, SWS)

- Daisy chaining (i.e. forwarding Supervision Status, Checkpoint or Health Channel information to an entity external to PHM or another PHM instance) is currently not supported in this document release
- Interface with the Diagnostic Manager is not specified in this release
- The configuration attribute for the alive notification cycle time (with respect to PHM sending AliveNotification to watchdog interface) is not specified for this release.
- A change in the value of Supervision (Alive/Deadline/Logical) configuration parameters between two Function Group states wherein the process being supervised continues to execute on switching between these states is not considered. The Supervision continues as per configuration in the Supervision Mode corresponding to old Function Group state.
- Similar to above limitation, dynamic change between Supervision exclusion (disable) and Supervision inclusion (enable) on Function Group state change wherein the process under consideration continues to execute on change in Function Group state is not supported. Supervision exclusion or inclusion can be applied starting with the Function Group state in which execution of the process begins and the same is applied until termination of the process
- Currently specified mechanism of Notifying State Management on Global Supervision Status reaching state kStopped is insufficient in case of multiple failures. It could happen that the Global Supervision Status remains in state kStopped without further notification to State Management about successive failures. Thereby the recovery might be hindered

- "PowerMode" dependent Supervision configuration is not supported in this release
- Supervision is not supported for non-reporting processes. Rationale: Supervision depends on process states. Non-reporting process is not expected to report its Execution State to Execution Management. Hence, Platform Health Management cannot be informed about the necessary process states by Execution Management
- Handling of multiple hardware watchdog instances is up to implementation and not standardized in the specification.
- State machine of Elementary Supervision Status is not specified for inter process supervisions (inter process Deadline Supervision and Logical Supervision) in this release.
- The feature Health Channels (HealthChannelExternalStatus) will remain as "obsolete" in this release.
  Note: It is not intended to remove this feature from `AUTOSAR Adaptive Platform` overall (due to clear industry use cases). Rather, it is an architectural question (to which Functional Cluster this feature belongs to) that is expected to be resolved for the next release:
  - SWS_PHM_00010
  - SWS_PHM_01328
  - SWS_PHM_01329
  - SWS_PHM_01330
  - SWS_PHM_00102
  - SWS_PHM_01113
  - SWS_PHM_01114
  - SWS_PHM_01115
  - SWS_PHM_01118
  - SWS_PHM_01119
  - SWS_PHM_01129
  - SWS_PHM_01122
  - SWS_PHM_01139
  - SWS_PHM_00457
  - SWS_PHM_01222
  - SWS_PHM_01224
  - SWS_PHM_01128

- SWS_PHM_01221
- SWS_PHM_01223
- SWS_PHM_01225
- SWS_PHM_01231
- SWS_PHM_01233
- SWS_PHM_01234
- SWS_PHM_01235
- SWS_PHM_01236
- SWS_PHM_01232
- SWS_PHM_01237
- SWS_PHM_01238
- SWS_PHM_01239

4.2 Specification of Time Synchronization (UID 880, SWS)

Known limitations
The Time Synchronization module is bound to Adaptive Platform Systems.

- Configuration
  Please refer to the corresponding model elements.
- Time Gateway
  Time Gateway functionality is currently not in scope of the Time Synchronization module for the Adaptive Platform.
- Out of Scope
  Errors, which occurred during Global Time establishment and which are not caused by the module itself (i.e. loss of PTP global time is not an issue of the TS but of the TSP modules) are out of the scope of this module.
- Security
  Secured Time Synchronization using the AUTOSAR Sub-TLV: Time Authenticated (see PRS-TimeSync [1]) is currently not supported for the Adaptive Platform.
  Note: Secured Time Synchronization messages received in AP ECUs works without verifying the security measures (i.e., AUTOSAR Sub-TLV:Time Authenticated is ignored).

4.3 Specification of Update and Configuration Management (UID 888, SWS)

UCM is not responsible to initiate the update process. UCM realizes a service interface to achieve this operation. The user of this service interface is responsible to verify that the vehicle is in a updatable state before executing a software update procedure on demand. It is also in the responsibility of the user to communicate with other AUTOSAR Adaptive Platforms or AUTOSAR Classic Platforms within the vehicle. The UCM receives a locally available software package for processing. The software package is usually downloaded from the OEM backend. The download of the software packages has to be done by another application, i.e. UCM does not manage the connection to the OEM backend. Prior to triggering their processing, the software packages have to be transferred to UCM by using the provided ara::com interface. The UCM update process is designed to cover updates on use case with single AUTOSAR Adaptive Platform. UCM can update Adaptive Applications, the AUTOSAR Adaptive Platform itself, including all functional clusters and the underlying OS.

The UCM is not responsible for enforcing authentication and access control to the provided interfaces. The document currently does not provide any mechanism for the confidentiality protection as well as measures against denial of service attacks. The assumption is that the platform preserves the integrity of parameters exchanged between UCM and its user.

The possibility to restart a specific application instead of a Machine reboot depends of the kind of update and application, is therefore implementation specific and is defined in the Software Package manifest.

UCM does only support updates of ARA::COM and UDS (ISO-14229) compliant ECUs. UCM is not controlling any action done by diagnostic tool directly updating a Classic platform. For instance UCM cannot protect against downgrading of a Software Cluster in a Classic platform by a diagnostic tool.

4.4 Specification of State Management (UID 908, SWS)

The State Machine API is a subject for rework in a future release.

4.5 Specification of Language Binding for modeled AP data types (UID 994, SWS)

Although future versions of this specification may add further Language Bindings, the primary focus of the AP (and therefore this specification) is a binding to the C++ language.