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Document Owner	AUTOSAR
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Document Status	Final
Part of AUTOSAR Standard	Foundation
Part of Standard Release	1.4.0
Release Life Cycle Status	R1.4 is in Evolution, R1.4 supersedes R1.3

Document Change History

Date	Release	Changed by	Description
2018-03-29	1.4.0	AUTOSAR Release Management	Updated according to Release 1.4.0
2017-12-08	1.3.0	AUTOSAR Release Management	Updated according to Release 1.3.0
2017-10-27	1.2.0	AUTOSAR Release Management	Updated according to Release 1.2.0
2017-03-31	1.1.0	AUTOSAR Release Management	Updated according to Release 1.1.0
2016-11-30	1.0.0	AUTOSAR Release Management	Initial release

Table of Contents

1 Introduction

1.1 Scope of this document

This document provides an overview of the complement of AUTOSAR specifications of the AUTOSAR standard “Foundation” comprising the initial Release 1.4.0 and its latest Revision.

1.2 AUTOSAR standards

1.2.1 Introduction

AUTOSAR addresses with its standards a wide range of use cases in automotive software development. 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
- allows AUTOSAR to scale with market needs

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

Each AUTOSAR Standard has its own release schedule. At the time of release, AUTOSAR ensures that the dependencies are fulfilled when a standard depends on another.

1.2.3 Overview on AUTOSAR’s standards

AUTOSAR delivers the following standards:

Cluster / Standard	Abbreviation
Classic Platform	CP
Adaptive Platform	AP
Foundation	FO

1.2.3.1 Foundation

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

Foundation contains common requirements and technical specifications (e.g. protocols) shared between the AUTOSAR platforms.

1.2.3.2 Classic Platform

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

1.2.3.3 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.

1.2.4 Dependencies between Standards

Each release of Classic and Adaptive Platform relies on a dedicated version of Foundation. The specific dependency is documented in the release overview of the respective standard.

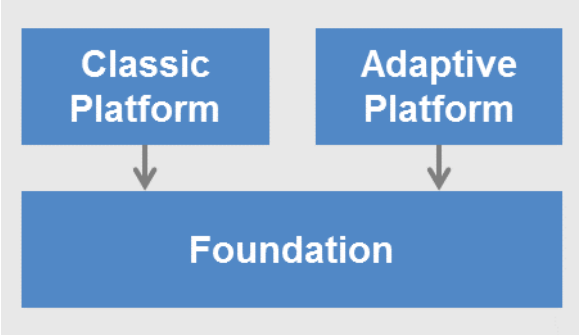

Figure 1: Dependencies of AUTOSAR Standards

1.2.5 Overview of AUTOSAR schema versions and corresponding valid AUTOSAR releases

Schema Version	Classic Platform Release	Adaptive Platform Release
AUTOSAR_00042	R 4.3.0	17-03
AUTOSAR_00043	R 4.3.0	17-10
AUTOSAR_00044	R 4.3.1	17-10
AUTOSAR_00045	R 4.3.1	18-03

1.3 Content of chapters

This document is structured as follows:

- Chapter 2 provides a list of documentation references.
- Chapter 3 contains the overview of specifications comprising the AUTOSAR Foundation Release 1.4.0 in its latest Revision. This chapter is structured according to the clusters being in use in AUTOSAR Foundation Release 1.4.0.
- Chapter 4 provides a summary of changes e.g. in case a document has been migrated from another standard like the Classic Platform.
- Chapter 5 contains remarks about known technical deficiencies.
- Chapter 6 contains the detailed revision history of all released specifications.
- Chapter 7.1 provides a set of definitions aimed to increase the understanding of the content of this document and the AUTOSAR Foundation Release 1.4.0.

2 Related documentation

1) AUTOSAR specifications in general
2) Change Documentation
3) Glossary

3 Specification overview

The published specifications are divided into the following clusters:

- Release Documentation
- General
- Diagnostics
- Methodology and Templates
- Communication Management
- Health Monitoring
- Protocols

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

Long Name	File Name	Life cycle changes	Draft Specification
Cluster: Cluster: Release Documentation			
Foundation Release Overview	AUTOSAR_TR_Foundation ReleaseOverview		
AUTOSAR Foundation Specification Hashes	AUTOSAR_TR_Foundation SpecificationHashes		
Foundation Change Documentation	AUTOSAR_TR_Foundation ChangeDocumentation		
Cluster: General			
Main Requirements	AUTOSAR_RS_Main		
Glossary	AUTOSAR_TR_Glossary		
Project Objectives	AUTOSAR_RS_Project Objectives		
Foundation UML Model	AUTOSAR_MOD_Foundation UMLModel		
Cluster: Diagnostics			
Requirements on Diagnostic	AUTOSAR_SRS_Diagnostic		
Cluster: Methodology and Templates			
Requirements on Methodology	AUTOSAR_RS_Methodology		
Cluster: Communication Management			
Requirements on E2E	AUTOSAR_RS_E2E		
Requirements on Log and Trace	AUTOSAR_RS_LogAndTrace		
Cluster: Health Monitoring			
Requirements on Health Monitoring	AUTOSAR_RS_Health Monitoring		x
Specification of Health Monitoring	AUTOSAR_SWS_Health Monitoring	Initial release	x
Cluster: Protocols			
SOME/IP Protocol Specification	AUTOSAR_PRS_SOMEIP Protocol		
Log and Trace Protocol Specification	AUTOSAR_PRS_LogAndTrace Protocol		

Long Name	File Name	Life cycle changes	Draft Specification
Requirements on SOME/IP Protocol	AUTOSAR_RS_SOMEIP Protocol		
Requirements on SOME/IP Service Discovery Protocol	AUTOSAR_RS_SOMEIP ServiceDiscoveryProtocol		
SOME/IP Service Discovery Protocol Specification	AUTOSAR_PRS_SOMEIP ServiceDiscoveryProtocol		
Remote Event Communication Protocol Specification	AUTOSAR_PRS_RemoteEvent CommunicationProtocol	obsolete	
E2E Protocol Specification	AUTOSAR_PRS_E2EProtocol		

4 Summary of changes

This chapter contains a summary of changes which were implemented. This can have the following sources:

- Regular maintenance of document
- Documents have been migrated from the Classic Platform or Adaptive Platform to the Foundation
- New documents have been created and are first time released
- Documents went through a major rework

4.1 Release 1.4.0

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

With the current release, this goal has been pursued once more. Foundation contains common requirements and technical specifications (e.g. protocols) shared between the AUTOSAR platforms.

4.1.1 Concepts

No concepts have been introduced with FO R1.4.0.

4.1.2 Specifications

4.1.2.1 New Specifications

- Specification of Health Monitoring (UID 850, SWS)

4.1.2.2 Migrated Specifications

With this release, the following specifications were moved from Adaptive Platform to the Foundation standard:

- No migration from Adaptive Platform to Foundation R1.4.0

With this release, the following specifications were moved from Classic Platform to the Foundation standard:

- No migration from Classic Platform to Foundation R1.4.0

4.1.2.3 Obsolete Specifications

The following specification is set to status “obsolete” in this release:

- Remote Event Communication Protocol Specification (UID 812, PRS)

4.1.2.4 Draft Specification

The status of the following specifications are set to “draft” in this release:

- Requirements on Health Monitoring (UID 878, RS)
- Specification of Health Monitoring (UID 850, SWS)

4.1.3 Release Documentation

There were no major changes regarding the Release Documentation.

5 Remarks to known technical deficiencies

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

There are the following technical deficiencies to be mentioned which are not related to a specific specification:

- none

5.1 Known technical deficiencies per document

- **E2E Protocol Specification (UID 849, PRS):** E2E communication protection is limited to periodic or semi-periodic data communication paradigm, where the receiver (subscriber) has an expectancy on the regular reception of data and in case of communication loss/timeout or error, performs an error handling.
  Data communication is called sender/receiver in Classic Platform, and it is called event communication in Adaptive Platform.
  Note that the word event is a bit confusing as a periodic communication is required. This means, a protection of client-server (methods) as well as non-periodic data communication (e.g. transmission only on occurrence of a specific event) are not supported by E2E communication protection.

- **Requirements on Health Monitoring (UID 878, RS)** is set back to status "draft" and **Specification of Health Monitoring (UID 850, SWS)** is set to status "draft" with the initial release. Both specifications currently only describe the Adaptive Platform part and are therefore treated like Adaptive Platform specifications which are not handled with the AUTOSAR Change Management Process for Foundation. A clear separation between the documents in all three standards, Classic Platform, Adaptive Platform and Foundation is foreseen in the upcoming releases AP R18-10, CP R4.4.0 and FO R1.5.0.

6 Revision history

6.1 Release 1.4.0

Revision 0 of Release 1.4.0 has been released on the 29th of March 2018. The following deliverables had major changes.

Name	Specification history entry
E2E Protocol Specification	• No content changes
Glossary	Added terms: • Access Control Policy • Access Control Decision • MetaDataItem • Policy Decision Point (PDP) • Policy Enforcement Point (PEP) • Identity and Access Management (IAM) Removed terms: • FlexRay Global Time • Meta Model • MetaDataLength • Model • Multiple Configuration Sets • Shipping • Template • Variation Definition Time Changed terms: • AUTOSAR Definition • AUTOSAR Metamodel • AUTOSAR Model • AUTOSAR Service • AUTOSAR XML description • Link Time Configuration • Manifest • PDU MetaData
Log and Trace Protocol Specification	• No content changes
Main Requirements	• Improvement of definition of selected requirements • Removal of information hiding as main requirement • Merge of overlapping communication protocol requirements • Corrections
Project Objectives	• No content changes
Remote Event Communication Protocol Specification	• Marked the specification as obsolete • Replaced OSEK references by references to ISO 17356-4:2005
Requirements on Diagnostic	• New requirements for CP and AP • Structural optimization of document

Name	Specification history entry
Requirements on E2E	• No content changes
Requirements on Health Monitoring	• Status set back to “draft” • Editorial changes"
Requirements on Log and Trace	• No content changes
Requirements on Methodology	• No content changes
Requirements on SOME/IP Protocol	• No content changes
Requirements on SOME/IP Service Discovery Protocol	• No content changes
SOME/IP Protocol Specification	• Improved traceability
SOME/IP Service Discovery Protocol Specification	• No content changes
Specification of Health Monitoring	• Initial release as "draft"

More specifications might have been changed, which are not listed here. Those specifications have then only “minor corrections, clarifications or editorial changes; for details please refer to the Change Documentation” [3].

7 Appendix

7.1 Definitions

As far as not explained in this chapter, a collection of AUTOSAR definitions is provided in 3).

7.1.1 Release number

AUTOSAR applies a two-digit numbering scheme Rx.y to identify Releases. Its primary purpose is to identify a Release as a major (upgrade, can contain non-backward-compatible extensions) or as minor (update, backward compatible extensions) Release. Referring to previous Releases (e.g. R2.0), incrementing the first digit “x” does identify a Release as major, whereas incrementing “y” will mark a Release as only minor by nature.

7.1.2 Revision number

The Revision Number was first time introduced with Release 2.1 and extends the Release Numbering scheme as explained in section 7.1.1. Combined with the Release Number, the Revision Number shall:

1) Precisely identify the actual content (set of specifications) of a given Release.
2) As depicted in every specification, precisely identify a given specification (with its unique name and three-digit version ID) as being part of the Release.

Item 1) addresses the fact that the set of specifications comprising a Release (in the meaning of a baseline) is rarely established once at a certain point in time (“Big Bang”), but rather evolves and/or varies over a certain timeframe. The maximum duration, which is limited by the timeframe, a Release is declared as “valid” by the AUTOSAR Partnership (see section 7.1.3).

Hence with Item 1), a major prerequisite will be put in place to enable the Standard Maintenance as planned by the AUTOSAR Partnership. In general, the primary objective is to avoid the provision of an additional – previously not planned – Release in case only one or a few specifications were to be modified as part of the Standard Maintenance. Conversely, without the application of a Revision Number, if the AUTOSAR partnership wants to avoid the provision of (an) additional intermediate Release(s), one would have to defer the introduction of any changes until the next planned Release – even in case of changes urgently needed by the applicants of the AUTOSAR Standard.

Item 2) is complementary to Item 1) in that for every specification a unique identifier is provided upon which Revision a) a specification was either 1st time added to/removed from a Release or b) a specification was modified as being part of one and the same Release, as long the latter is valid and therefore subject to Standard Maintenance.

Hence with item 2), the combination of Release and Revision Number in a specification can be interpreted either as a) “specification was (1st time) added to the Release x.y Rev n” or b) as “specification was modified as part of Release x.y Rev m”, with m > n.

Conversely, the Revision number will only change for specifications subject to addition or modification of a valid Release (baseline). After their 1st time addition to the Release (baseline), it will not change for specifications which are not modified.

In the light of the above provided background, as an additional remark, the Revision Number will only be applied for each specification’s Release version, i.e. it will not be applied to working versions.

7.1.3 Release life cycle of a major release

Each major release goes through four consecutive steps within its lifecycle:

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 contents 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.

7.1.4 Specification item and requirement life cycle states

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.
- **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 obsolete and will be removed in the next release.

If there is no life cycle state information stated then the state is Valid.

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

7.1.5 History information in AUTOSAR

The following diagram shows where which changes are documented.