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## 1 Scope of Document

This document specifies requirements on Logging of the AUTOSAR Adaptive Platform.

This is a draft specification to indicate the intended scope and direction of discussion to the AUTOSAR development community. This specification has seen less quality measures, less discussions among partners and may, generally, be in a less mature state.

## 2 Document Conventions

The representation of requirements in AUTOSAR documents follows the table specified in [TPS\_STDT\_00078], see Standardization Template, chapter Support for Traceability [1].

The verbal forms for the expression of obligation specified in [TPS\_STDT\_00053] shall be used to indicate requirements, see Standardization Template, chapter Support for Traceability [1].

### 3 Acronyms and abbreviations

<b>Abbreviation / Acronym:</b>	<b>Description:</b>
Logging information	Meta information about software internal parameters or states
Logging framework	Implementation of a Software Module used for Logging purpose
Severity	Classification of logging information, i.e.: A logging information can be rated e.g. as "fatal" or as "information"

## 4 Functional Overview

The AUTOSAR Adaptive Platform Logging provides interfaces for Applications to initialize a Logging framework, forwarding logging information to the console, the file system, or the communication bus, and to convert decimal values into the hexadecimal- or binary system.

## 5 Requirements Tracing

The following table references the features specified in [2] and links to the fulfillments of these.

Feature	Description	Satisfied by
[RS_Main_00060]	AUTOSAR shall provide a standardized software interface for communication between Applications	<a href="#">[RS_LOG_00005]</a> <a href="#">[RS_LOG_00006]</a> <a href="#">[RS_LOG_00007]</a> <a href="#">[RS_LOG_00008]</a> <a href="#">[RS_LOG_00009]</a> <a href="#">[RS_LOG_00010]</a>
[RS_Main_00400]	AUTOSAR shall provide a layered software architecture	<a href="#">[RS_LOG_00001]</a> <a href="#">[RS_LOG_00002]</a> <a href="#">[RS_LOG_00003]</a> <a href="#">[RS_LOG_00004]</a>



## 6 Requirements Specification

This chapter describes all requirements driving the work to define the logging functionality.

### 6.1 Initialization and registration

#### [RS\_LOG\_00001] Initialization and registration [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall support to initialize the logging framework, and to register the source of logging information.
<b>Rationale:</b>	To be able to filter and associate logging information with the origin, it is necessary that Applications register themselves at the logging framework.
<b>Dependencies:</b>	- -
<b>Use Case:</b>	Associate logging information with the origin, apply filter settings, and provide additional information.
<b>Supporting Material:</b>	- -

]([RS\\_Main\\_00400](#))

#### [RS\_LOG\_00002] Meta information about Applications [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall enable Applications to provide additional information about themselves.
<b>Rationale:</b>	Being able to identify the origin of generated logging information.
<b>Dependencies:</b>	- -
<b>Use Case:</b>	Sort, filter and associate received logging information.
<b>Supporting Material:</b>	- -

]([RS\\_Main\\_00400](#))

#### [RS\_LOG\_00003] Providing Logging Information [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall enable Applications to provide logging information. The logging information shall include information about its severity.
<b>Rationale:</b>	While developing applications, it is important to get additional information what is going on internally of an application.
<b>Dependencies:</b>	- -
<b>Use Case:</b>	Getting internal information of an application, e.g.: Variable values, the current internal state of a state machine, and other information.
<b>Supporting Material:</b>	- -

](RS\_Main\_00400)

**[RS\_LOG\_00004] Grouping of Logging Information.** [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall support to logically group logging information.
<b>Rationale:</b>	Cluster logging information, which logically belong together.
<b>Dependencies:</b>	- -
<b>Use Case:</b>	Associate or filter all logging information which belong together.
<b>Supporting Material:</b>	- -

](RS\_Main\_00400)

**[RS\_LOG\_00005] Logging Information targets** [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall allow to select the destination of the provided logging information.
<b>Rationale:</b>	There are different possibilities where the logging information can be stored.
<b>Dependencies:</b>	- -
<b>Use Case:</b>	Forward logging information to the console, to the file system, or to send it via the communication bus.
<b>Supporting Material:</b>	- -

](RS\_Main\_00060)

**[RS\_LOG\_00010] Early logging** [

<b>Type:</b>	draft
<b>Description:</b>	Logging framework shall provide early logging possibility. The API shall be able to handle log message attempts as well as creating new log contexts instances, before the main initialization phase of the Logging back-end was accomplished.
<b>Rationale:</b>	Calling the initialization procedure at earliest is possible when the program code is executed within the main event loop. Before that, applications might create global/static objects which constructors might already log useful information. Since global/static object are instantiated before the main event loop enters, the Logging framework <b>must</b> support calls to all its interfaces without crashing. Ideally it <b>shall</b> buffer log attempts (an unspecified amount) and statically created log context instances and process them ASAP after the initialization phase.
<b>Dependencies:</b>	- -
<b>Use Case:</b>	Create log contexts and/or initiate log messages before initialization phase of the Logging back-end was accomplished.
<b>Supporting Material:</b>	- -

](RS\_Main\_00060)

## 6.2 Logging Information

### [RS\_LOG\_00006] Interface for logging information [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall provide Interfaces for applications to forward its logging information, including the associated severity level.
<b>Rationale:</b>	Forward logging information to the logging framework.
<b>Dependencies:</b>	--
<b>Use Case:</b>	Forward logging information to a logging framework for further process it (e.g. store it locally, or forward it to the communication bus).
<b>Supporting Material:</b>	--

]([RS\\_Main\\_00060](#))

### [RS\_LOG\_00007] Provide raw buffer content [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall support to provide the content of a raw buffer as logging information.
<b>Rationale:</b>	The original content of a buffer might be of interest for developing purpose.
<b>Dependencies:</b>	--
<b>Use Case:</b>	Get the exact raw data which is located in the memory.
<b>Supporting Material:</b>	--

]([RS\\_Main\\_00060](#))

### [RS\_LOG\_00008] Check the current severity level [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall provide the possibility for applications to check the current active severity level.
<b>Rationale:</b>	To avoid unnecessary CPU and/or memory consumption, which is needed for the generation of logging information, Applications shall have the possibility to first check whether or not its created logging information will be filtered out anyway by the underlying logging framework.
<b>Dependencies:</b>	--
<b>Use Case:</b>	Avoidance of unnecessary CPU and/or memory consumption.
<b>Supporting Material:</b>	--

]([RS\\_Main\\_00060](#))

### [RS\_LOG\_00009] Conversion functions for hexadecimal and binary values [

<b>Type:</b>	draft
<b>Description:</b>	Logging shall provide the possibility for applications to convert decimal values into the hexadecimal or binary system.

<b>Rationale:</b>	Provide some debug information as a hexadecimal or as a binary value, instead of a decimal value.
<b>Dependencies:</b>	- -
<b>Use Case:</b>	Providing logging information as hexadecimal value or as binary value.
<b>Supporting Material:</b>	- -

]([RS\\_Main\\_00060](#))

## 7 References

- [1] System Template  
AUTOSAR\_TPS\_SystemTemplate
- [2] Requirements on AUTOSAR Features  
AUTOSAR\_RS\_Features