Elektrobit

EB tresos® AutoCore Generic 8
CSM and CRYIF documentation

release notes update for the Csm module

product release 8.8.7

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Table of Contents

1. Overview

This document provides you with the release notes to accompany an update to the `Csm` module. Refer to the changelog Section 2.1, “Change log” for details of changes made for this update.

Release notes details

- EB tresos AutoCore release version: 8.8.7
- EB tresos Studio release version: 29.2.1
- AUTOSAR R4.3 Rev 0
- Build number: B587955

2. Csm module release notes

- AUTOSAR R4.3 Rev 0
- AUTOSAR SWS document version: 4.3.0
- Module version: 3.1.26.B587955
- Supplier: Elektrobit Automotive GmbH

2.1. Change log

This chapter lists the changes between different versions.

Module version 3.1.26

2022-11-25

- ASCCSM-627 Fixed known issue: Csm does not generate KeyManagement port for CsmKey without a CsmJob reference.

Module version 3.1.25

2022-10-28

- Replaced type Csm_DataPtr with direction OUT with type uint8 in ARXML interface for AUTOSAR 4.4.0.
- Internal module improvement. This module version update does not affect module functionality.

Module version 3.1.24

2022-09-23

- Added configuration check for core alignment.
- Added new APIs Csm_KeySetInvalid() and Csm_KeyGetStatus() based on ASR R20-11.
- Corrected processing of inputs for configuration parameters Csm<Service>AlgorithmFamilyCustom, Csm<Service>AlgorithmSecondaryFamilyCustom and Csm<Service>AlgorithmModeCustom.
- Internal module improvement. This module version update does not affect module functionality.

- ASCCSM-563 Fixed known issue: Csm callback notification via Rte does not provide an event for task mapping.
- ASCCSM-592 Implemented multicore feature according to AUTOSAR R20-11.

Module version 3.1.23

2022-08-19

- ASCCSM-631 Fixed known issue: Wrong orientation of partnerPublicValueLength parameter causes Csm_JobKeyExchangeCalcSecret to malfunction.

Module version 3.1.22

2022-07-15

- Added AUTOSAR 4.4.0 API and ARXML compatibility.

Module version 3.1.21

2022-05-13

- ASCCSM-536 Implemented asynchronous interfaces from R20-11

Module version 3.1.20

2022-04-08

- Internal module improvement. This module version update does not affect module functionality.

Module version 3.1.18

2022-02-18

- ASCCSM-548 Fixed known issue: Concurrency issue that affects synchronous jobs when two consecutive CSM calls with the START mode of operation for the same job ID are made.
- ASCCSM-563 Fixed known issue: Csm callback notification via Rte does not provide an event for task mapping.

Module version 3.1.15

2021-09-17

- Internal module improvement. This module version update does not affect module functionality.

Module version 3.1.13

2021-06-25

- Add configuration check to ensure that the queue and key referenced in a Csm Job are refering to the same Crypto driver.

Module version 3.1.12

2021-05-28

- Added justifications for tasking compiler warnings and fixed a compiler warning.

Module version 3.1.11

2021-04-30

- ASCCSM-473 Fixed known issue: Placing the Csm plugin in another directory than <tresos>/plugins is not possible.
- Added support for EB tresos HandleIdWizards.

Module version 3.1.8

2021-01-22

- Internal module improvement. This module version update does not affect module functionality.

Module version 3.1.7

2020-12-18

- Adjusted Code-Metric Deviation rule texts to follow specified syntax.

- Fixed availability of the declartion for Csm_CancelJob, if all jobs with enabled RTE usage only reference primitives of service CRYPTO_RANDOMGENERATE.

Module version 3.1.6

2020-10-23

- Internal module improvement. This module version update does not affect module functionality.

Module version 3.1.5

2020-09-25

- Internal module improvement. This module version update does not affect module functionality.

Module version 3.1.4

2020-06-19

- Internal module improvement. This module version update does not affect module functionality.

Module version 3.1.3

2020-05-22

- Added configuration parameter to switch the the implementation of the Client-Server-Operation KeyElementGet of the Client-Server-Interface CsmKeyManagement_{Config} [SWS_Csm_01905] to be compliant with the original AUTOSAR specification or to be correct respective to the specification of Csm_KeyElementGet [SWS_Csm_00959].

Module version 3.1.2

2020-03-25

- ASCCSM-407 Fixed known issue: Incorrect queuing of Csm jobs causes negative response or execution on the wrong Crypto Driver Object.

Module version 3.1.1

2020-01-24

- Internal module improvement. This module version update does not affect module functionality.

Module version 3.1.0

2019-12-06

- Added configuration parameter to switch between Csm 4.3.0 and 4.3.1 API and ARXML compatibility and improved API and ARXML compatibility in general. Also this configuration parameter provides the possibility to choose the mixed 4.3.0 and 4.3.1 EB style API and ARXML version that is necessary for old EB Crypto modules less than version 2.0.0.

Module version 3.0.16

2019-10-11

- Internal module improvement. This module version update does not affect module functionality.

Module version 3.0.15

2019-08-09

- ASCCSM-368 Fixed known issue: Csm does not use symbolic names for referenced CryIfChannels and CryIfKeys.

Module version 3.0.14

2019-06-19

- Added open source statement to the release documentation.

Module version 3.0.13

2019-05-17

- ASCCSM-363 Fixed known issue: DESTINATION-REFs in the VSMD violate TPS_ECUC_06015.
- Added macro CRYPTO_KE_KEYEXCHANGE_SHAREDVALUE (cRYpto_-...) for identification of key exchange shared value key elements in parallel to the existing misspelled but specified macro CYRPTO_KE_KEYEXCHANGE_SHAREDVALUE (cYRpto_-...).

Module version 3.0.12

2019-01-25

- ASCCSM-349 Fixed known issue: Incorrect definition of POSSIBLE-ERROR-REFS for client-server operations SignatureVerify and KeyDerive causes RTE generation errors.

Module version 3.0.11

2018-10-30

- Added take over of primitive configuration parameter 'CsmMacVerifyCompareLength' or 'CsmSignatureVerifyCompareLength' in member jobPrimitiveInfo->primitiveInfo->resultLength of the Crypto_JobType data structure of a job, to which a primitive of service 'MacVerify' or 'SignatureVerify' is assigned to.
- ASCCSM-341 Fixed known issue: Csm_CertificateVerify() uses wrong verification CryIf key id.
- Removed unnecessary and wrong CompuMethod 'CM_Csm_ConfigIdType' as well as the reference to this CompuMethod in ImplementationDataType 'Csm_ConfigIdType'.

Module version 3.0.10

2018-06-22

- ASCCSM-311 Fixed known issue: CsmCallbacks are only triggered if result is E_OK.

Module version 3.0.9

2018-05-25

- ASCCSM-295 Fixed known issue: Crypto primitive SIPHASH cannot be used for Csm service MacGenerate.
- ASCCSM-296 Fixed known issue: RTE ports of CsmCallbacks are generated improperly.

Module version 3.0.8

2018-04-20

- Changed the sizes of Implementation Data Types 'Csm_KeyDataType_{Crypto}', 'Csm_SeedDataType_{Crypto}' and 'Csm_PublicValueDataType_{Crypto}' from 'sum' to 'max' of all relevant key element sizes as it is discussed in https://jira.autosar.org/browse/AR-58024.

Module version 3.0.7

2018-03-16

- ASCCSM-253 Fixed known issue: Variant tags mismatch between Csm and AUTOSAR ECU configuration schema files.

Module version 3.0.6

2018-02-16

- ASCCSM-242 Fixed known issue: Csm does not generate correct values for the symbolic names identifiers of the CsmKeyId parameter.
- ASCCSM-255 Fixed known issue: Csm interface generator creates zero-size arrays.

Module version 3.0.5

2018-01-19

- ASCCSM-233 Fixed known issue: Compiler warning due to misplaced preprocessor instruction in function Csm_CancelJob.
- ASCCSM-234 Fixed known issue: Out-of-bounds access in function Csm_CancelJob() if no callback is referenced.

Module version 3.0.4

2017-12-15

- ASCCSM-207 Fixed known issue: Csm compiler errors occur due to unconditional inclusion of DET header file.
- ASCCSM-223 Fixed known issue: Queue slot not released after dequeuing via Csm_Mainfunction() causes NULL POINTER exception.

Module version 3.0.3

2017-11-17

- ASCCSM-195 Fixed known issue: Csm does not generate correct symbolic names for CsmJobId parameters.

- ASCCSM-201 Fixed known issue: Client/server interfaces for CsmPrimitives are generated without existing and referenced implementation data types.

Module version 3.0.2

2017-10-02

- ASCCSM-174 Fixed known issue: Definition of internal constant is placed in the wrong memory section.
- ASCCSM-180 Fixed known issue: Csm primitives KeyLength configuration parameters are not considered in all name variations.

Module version 3.0.1

2017-09-04

- Changed multiplicity of containers CsmCallbacks and CsmKeys to "1", of container CsmPrimitives to "1..inf" and of parameters CsmAEADDecryptAssociatedDataMaxLength, CsmAEADDecryptCiphertextMaxLength, CsmAEADDecryptPlaintextMaxLength, CsmAEADEncryptAssociatedDataMaxLength, CsmAEADEncryptCiphertextMaxLength, CsmAEADEncryptPlaintextMaxLength, CsmDecryptDataMaxLength, CsmDecryptResultMaxLength, CsmEncryptDataMaxLength, CsmEncryptResultMaxLength, CsmHashDataMaxLength, CsmMacGenerateDataMaxLength, CsmMacVerifyDataMaxLength, CsmSignatureGenerateDataMaxLength and CsmSignatureVerifyDataMaxLength to "1".
- Added Csm_Cbk.h.
- Fixed order of entries in Csm_JobConfigurations global configuration data structure.
- API functions can now be invoked concurrently via RTE.

Module version 3.0.0

2017-07-28

- Initial release as AUTOSAR 4.3.0 module

2.2. New features

- The Csm module provides multicore feature based on AUTOSAR R20-11.
- `Csm_KeySetInvalid` API: The module supports the ASR R20-11 Csm_KeySetInvalid API and provides the option to set the state of a key to invalid through `Csm_KeySetInvalid`.

- `Csm_KeyGetStatus` API: The module supports the ASR R20-11 Csm_KeyGetStatus API and provides the option to obtain the status of a key through `Csm_KeyGetStatus`.

2.3. Elektrobit-specific enhancements

This chapter lists the enhancements provided by the module.

- Added not specified but necessary configuration parameter

  Description:

  The configuration parameters
  - CsmMacVerify/CsmMacVerifyConfig/CsmMacVerifyAlgorithmKeyLength
  - CsmMacVerify/CsmMacVerifyConfig/CsmMacVerifyAlgorithmMode
  - CsmMacVerify/CsmMacVerifyConfig/CsmMacVerifyAlgorithmModeCustom
  - CsmEncrypt/CsmEncryptConfig/CsmEncryptAlgorithmKeyLength
  - CsmSignatureVerify/CsmSignatureVerifyConfig/CsmSignatureVerifyKeyLength

  are added to complete the set of necessary configuration options. See Autosar Bugzilla entries
  - https://www.autosar.org/bugzilla/show_bug.cgi?id=77271
  - https://www.autosar.org/bugzilla/show_bug.cgi?id=78276
  - https://www.autosar.org/bugzilla/show_bug.cgi?id=78327

  Rationale:

  The SWS specifies an incomplete set of Csm configuration parameters.
- Added additional DET checks

  Description:

  The following DET checks
  - jobID is out of range [=> CSM_E_PARAM_HANDLE]
  - configured service of job references by jobID did not match services designated by API function [=> CSM_E_SERVICE_NOT_IDENTICAL (0xE1)]

  are added to enhance the set of meaningful DET checks.

  Rationale:

  The SWS specifies an potentially incomplete set of Csm DET checks.
- Added Csm_DataPtr and Csm_ConstDataPtr in CSM_API_VERSION_440

Description:

The Implementation Data Types

- Name: Csm_DataPtr

  Kind: Pointer

  Type uint8*

  Description Byte-pointer to the output data.

  Variation --

  Available via Rte_Csm_Type.h
- Name: Csm_ConstDataPtr

  Kind: Const Pointer

  Type const uint8*

  Description Byte-pointer to the output data.

  Variation --

  Available via Rte_Csm_Type.h

are added to ensure correct functionality if the Csm module shall be used with AUTOSAR 4.4.0 compatibility and RTE.

Rationale:

The AUTOSAR 4.4.0 SWS is incomplete.

2.4. Deviations

This chapter lists the deviations of the module from the AUTOSAR standard.

- Type Csm_DataPtr of parameters with direction OUT of Client-Server-Interface

  Description:

  The type 'Csm_DataPtr' of parameters with direction 'OUT' of Client-Server-Interfaces (DATA_REFERENCES and Key Management) were adapted to 'uint8'.

  Rationale:

- Because of the direction OUT of the parameters the RTE generates P2VAR(Csm_DataPtr) which is not compliant with the C API.

Requirements:

AUTOSAR 4.4.0: SWS_Csm_91039, SWS_Csm_91051, SWS_Csm_91052, SWS_Csm_91054, SWS_Csm_91055, SWS_Csm_91056, SWS_Csm_91057, SWS_Csm_91058, SWS_Csm_91060

- Direction of parameter partnerPublicValueLength of Client-Server-Interface CsmJobKeyExchangeCalcSecret

Description:

The direction of parameter 'partnerPublicValueLength' of operation KeyExchangeCalcSecret of the Client-Server-Interface 'CsmJobKeyExchangeCalcSecret' was corrected to 'IN' according to AUTOSAR R19-11.

Rationale:

- Error was recognized by AUTOSAR itself and corrected in R19-11.

Requirements:

AUTOSAR 4.4.0: SWS_Csm_91040

- Type Csm_DataPtr of parameters with direction IN of Client-Server-Interface

Description:

The type 'Csm_DataPtr' of parameters with direction 'IN' of Client-Server-Interfaces (DATA_REFERENCES and Key Management) were adapted to 'Csm_ConstDataPtr'.

Rationale:

- Error/Necessity was recognized by AUTOSAR itself and corrected similar in R20-11.

Requirements:

AUTOSAR 4.4.0: SWS_Csm_91051, SWS_Csm_91052, SWS_Csm_91053, SWS_Csm_91054, SWS_Csm_91055, SWS_Csm_91056, SWS_Csm_91057, SWS_Csm_91058, SWS_Csm_91059, SWS_Csm_91036, SWS_Csm_91040

- Directions of parameters of Interface Csm_JobKeyExchangeCalcPubVal

Description:

The direction of parameter 'publicValuePtr' and 'publicValueLengthPtr' were corrected to 'OUT' and 'INOUT' according to AUTOSAR R19-11.

Rationale:

- Error was recognized by AUTOSAR itself and corrected in R19-11.

Requirements:

AUTOSAR 4.4.0: SWS_Csm_91031

- Directions of operation KeyExchangeCalcPubVal of Client-Server-Interface CsmJobKeyExchangeCalcPubVal

Description:

The direction of parameter 'publicValueLengthPtr' of operation KeyExchangeCalcPubVal of the Client-Server-Interface 'CsmJobKeyExchangeCalcPubVal' was corrected to 'INOUT' according to AUTOSAR R19-11.

Rationale:

- Error was recognized by AUTOSAR itself and corrected in R19-11.

Requirements:

AUTOSAR 4.4.0: SWS_Csm_91039

- Directions of operation Hash of Client-Server-Interface CsmHash

Description:

The direction of parameter 'resultBuffer' of operation Hash of the Client-Server-Interface 'CsmHash' was corrected to 'OUT'.

Rationale:

- https://jira.autosar.org/browse/AR-113568

Requirements:

AUTOSAR 4.4.0: SWS_Csm_91051

- Member targetCryptoKeyId of Crypto_JobType in AUTOSAR 4.4.0 compatibility mode

Description:

The Elektrobit Crypto driver adds the member targetCryptoKeyId in the structure data type Crypto_JobType directly after the member jobRedirectionInfoRef as it is specified in AUTOSAR R19-11, R20-11.

Rationale:

- Without this member no correct key id translation for jobs can be processed by the CryIf (see AUTOSAR 4.4.0 SWS_CryIf_00133). Also the Crypto can not work properly (see AUTOSAR 4.4.0 SWS_Crypto_00202 (with correction in R20-11) and AUTOSAR R19-11 SWS_Crypto_00217).

Requirements:

AUTOSAR 4.4.0: SWS_Csm_01013

- Member cryptoKeyId of Crypto_JobType in AUTOSAR 4.4.0 compatibility mode

Description:

The Elektrobit Crypto driver kept the member cryptoKeyId in the structure data type Crypto_JobType directly after the member jobInfo as it was specified in AUTOSAR 4.3.0, 4.3.1 and is specified in AUTOSAR R19-11, R20-11.

Rationale:

- Without this member no correct key id translation for jobs can be processed by the CryIf (see AUTOSAR 4.4.0 SWS_CryIf_00133). Also the Crypto can not work properly (see AUTOSAR 4.4.0 SWS_Crypto_00201).

Requirements:

AUTOSAR 4.4.0: SWS_Csm_01013

- Csm<Service>AlgorithmFamiliy

Description:

The Elektrobit Crypto driver is based on AUTOSAR 4.3.0. Additionally it implements adjustments from later releases where it is necessary. E.g. it completes the range and values of enumeration type configuration parameters 'Csm<Service>AlgorithmFamiliy'. But it does not change the name of these configuration parameters, even though these names were changed in later releases.

Rationale:

- The Elektrobit Crypto driver is based on AUTOSAR 4.3.0.

Requirements:

AUTOSAR 4.3.1: ECUC_Csm_00188, ECUC_Csm_00051 AUTOSAR 4.4.0: ECUC_Csm_00188, ECUC_Csm_00051

- Directions of operation Hash of Client-Server-Interface CsmHash_{Primitive}

Description:

The directions of parameters 'resultBuffer' and 'resultLength' of operation Hash of the Client-Server-Interface 'CsmHash_{Primitive}' were corrected to 'OUT' and 'INOUT' according to AUTOSAR 4.3.1.

Rationale:

- https://jira.autosar.org/browse/AR-57689

Requirements:

AUTOSAR 4.3.0: SWS_Csm_00946

- Size of Csm_KeyDataType_{Crypto}, Csm_SeedDataType_{Crypto} and Csm_PublicValue-DataType_{Crypto}

Description:

The sizes of Implementation Data Types 'Csm_KeyDataType_{Crypto}', 'Csm_SeedDataType_{Crypto}' and 'Csm_PublicValueDataType_{Crypto}' are changed from 'sum' to 'max' of all relevant key element sizes.

Rationale:

- https://jira.autosar.org/browse/AR-58024

Requirements:

SWS_Csm_00827, SWS_Csm_00828, SWS_Csm_00829

- Variation of 'Primitive' and 'Crypto'

Description:

The variations for '{Primitive}' and '{Crypto}' of 'Client-Server-Interfaces', 'Implementation Data Types' and 'Ports' were corrected regarding specification errors.

Rationale:

- https://jira.autosar.org/browse/AR-58070, point 12) of problem description

Requirements:

SWS_Csm_00946, SWS_Csm_009000, SWS_Csm_09000, SWS_Csm_00936, SWS_Csm_00947, SWS_Csm_01906, SWS_Csm_01910, SWS_Csm_01915, SWS_Csm_00903, SWS_Csm_00943, SWS_Csm_00902, SWS_Csm_01920, SWS_Csm_00912, SWS_Csm_00935, SWS_Csm_00927, SWS_Csm_00802, SWS_Csm_00803, SWS_Csm_01921, SWS_Csm_01922, SWS_Csm_01923, SWS_Csm_01924, SWS_Csm_01925, SWS_Csm_01928, SWS_Csm_01927, SWS_Csm_01926, SWS_Csm_00922, SWS_Csm_00923, SWS_Csm_01074, SWS_Csm_01075, SWS_Csm_01083, SWS_Csm_01083___D0002 (second occurence of duplicated SWS_Csm_01083 == SWS_Csm_-01077), SWS_Csm_01078, SWS_Csm_01079, SWS_Csm_00930, SWS_Csm_00931, SWS_Csm_-00932, SWS_Csm_00934___D0002 (first occurence of duplicated SWS_Csm_00934), SWS_Csm_-00933, SWS_Csm_00825, SWS_Csm_00832, SWS_Csm_00833, SWS_Csm_00834, SWS_Csm_-00835, SWS_Csm_00838

- Variation of 'Job'

  Description:

  The variation for '{Job}' of 'Ports' was corrected regarding specification errors.

  Rationale:

  - https://jira.autosar.org/browse/AR-58070, point 11) of problem description

  Requirements:

  SWS_Csm_00931, SWS_Csm_00932, SWS_Csm_00934___D0002 (first occurence of duplicated SWS_Csm_00934), SWS_Csm_00933, SWS_Csm_00825, SWS_Csm_00832, SWS_Csm_00833, SWS_Csm_00834, SWS_Csm_00835, SWS_Csm_00838

- Corrections

  Description:

  The Csm SWS requirements listed below were corrected regarding individual specification errors.

  Rationale:

  - https://jira.autosar.org/browse/AR-58037
  - https://jira.autosar.org/browse/AR-58157
  - https://jira.autosar.org/browse/AR-3181
  - https://jira.autosar.org/browse/AR-57537
  - https://jira.autosar.org/browse/AR-57607
  - https://jira.autosar.org/browse/AR-58917
  - https://jira.autosar.org/browse/AR-58063
  - https://jira.autosar.org/browse/AR-57080
  - https://jira.autosar.org/browse/AR-57804
  - https://jira.autosar.org/browse/AR-57159
  - https://jira.autosar.org/browse/AR-9272
  - https://jira.autosar.org/browse/AR-14415
  - https://jira.autosar.org/browse/AR-2907
  - https://jira.autosar.org/browse/AR-56909
  - https://jira.autosar.org/browse/AR-58714
  - https://jira.autosar.org/browse/AR-57545
  - https://jira.autosar.org/browse/AR-57648

- https://jira.autosar.org/browse/AR-59041
- https://jira.autosar.org/browse/AR-59039
- https://jira.autosar.org/browse/AR-57524

Requirements:

SWS_Csm_00803, SWS_Csm_00903, SWS_Csm_00928, SWS_Csm_00934, SWS_Csm_00936, SWS_Csm_00943, SWS_Csm_00947, SWS_Csm_00966, SWS_Csm_00970, SWS_Csm_00992, SWS_Csm_00996, SWS_Csm_01001, SWS_Csm_01008, SWS_Csm_01009, SWS_Csm_01012, SWS_Csm_01023, SWS_Csm_01025, SWS_Csm_01026, SWS_Csm_01027, SWS_Csm_01031, SWS_Csm_01035, SWS_Csm_01044, SWS_Csm_01053, SWS_Csm_01074, SWS_Csm_01080, SWS_Csm_01543, SWS_Csm_01905, SWS_Csm_01926, SWS_Csm_01927, SWS_Csm_009000, ECUC_Csm_00015, ECUC_Csm_00051, ECUC_Csm_00076, ECUC_Csm_00084, ECUC_Csm_00111, ECUC_Csm_00119, ECUC_Csm_00172, ECUC_Csm_00183, ECUC_Csm_00188

- Duplicated Requirement Ids

Description:

Duplicated requirement Ids are replaced with new, unique Ids.

Rationale:

- https://jira.autosar.org/browse/AR-57728
- https://jira.autosar.org/browse/AR-14126

Requirements:

SWS_Csm_00037___D0002, SWS_Csm_00828___D0002, SWS_Csm_00930___D0002, SWS_Csm_-00932___D0002, SWS_Csm_00934___D0002, SWS_Csm_01083___D0002

- Direction of publicValueLengthPtr changed to INOUT

Description:

Direction for parameter publicValueLengthPtr for Client Server operation KeyExchangeCalcPubVal present in CsmKeyManagement C/S interface is INOUT.

Rationale:

- There exists an inconsistency between SWS_Csm_01905 and SWS_Csm_00966 in terms of the direction for the parameter publicValueLengthPtr for KeyExchangeCalcPubVal operation present in CsmKeyManagement C/S interface.

Requirements:

SWS_Csm_01905

- Simplified 'Multiplicities'

  Description:

  The muliplicities specified by the Csm SWS for the containers Csm/CsmCallbacks and Csm/CsmKeys as well as for the parameters CsmAEADDecryptAssociatedDataMaxLength, CsmAEADDecryptCiphertextMaxLength, CsmAEADDecryptPlaintextMaxLength, CsmAEADEncryptAssociatedDataMaxLength, CsmAEADEncryptCiphertextMaxLength, CsmAEADEncryptPlaintextMaxLength, CsmDecryptDataMaxLength, CsmDecryptResultMaxLength, CsmEncryptDataMaxLength, CsmEncryptResultMaxLength, CsmHashDataMaxLength, CsmMacGenerateDataMaxLength, CsmMacVerifyDataMaxLength, CsmSignatureGenerateDataMaxLength and CsmSignatureVerifyDataMaxLength is customized to '1'. The multiplicity of container Csm/CsmPrimitives is changed to '1..*'.

  Rationale:

  - All these configuration objects are necessary to create meaningful and accurate ECU configurations.

  Requirements:

  ECUC_Csm_00818, ECUC_Csm_00040, ECUC_Csm_00056, ECUC_Csm_00137, ECUC_Csm_00146, ECUC_Csm_00147, ECUC_Csm_00154, ECUC_Csm_00155, ECUC_Csm_00158, ECUC_Csm_00159, ECUC_Csm_00160, ECUC_Csm_00162, ECUC_Csm_00163, ECUC_Csm_00165, ECUC_Csm_00169, ECUC_Csm_00175

- CsmDevErrorDetect

  Description:

  The 'Default value' of configuration parameter 'CsmDevErrorDetect' is changed to 'true'.

  Rationale:

  - 'CsmDevErrorDetect' is enabled by default to ease integration.

  Requirements:

  ECUC_Csm_00001

- Csm_Init

  Description:

  We do not implement the requirements to create an separate init function and init variable for each partition.

  Rationale:

  - This use case has not yet been given by the customer.

  Requirements:

CSM.Req.Dev/CsmMulticore/Init/00001

2.5. Limitations

This chapter lists the limitations of the module. Refer to the module references chapter *Integration notes*, subsection *Integration requirements* for requirements on integrating this module.

- No implementation of requirements marked as 'deprecated'

  Description:

  The EB Csm module does not implement requirements marked as 'deprecated'.

  Rationale:

  - This is a design decision.

  Requirements:

  Csm.ASR430.SWS_Csm_00006, Csm.ASR430.SWS_Csm_00075, Csm.ASR430.SWS_Csm_00089, Csm.ASR430.SWS_Csm_00094, Csm.ASR430.SWS_Csm_00101, Csm.ASR430.SWS_Csm_00108, Csm.ASR430.SWS_Csm_00114, Csm.ASR430.SWS_Csm_00121, Csm.ASR430.SWS_Csm_00128, Csm.ASR430.SWS_Csm_00134, Csm.ASR430.SWS_Csm_00141, Csm.ASR430.SWS_Csm_00149, Csm.ASR430.SWS_Csm_00156, Csm.ASR430.SWS_Csm_00163, Csm.ASR430.SWS_Csm_00168, Csm.ASR430.SWS_Csm_00173, Csm.ASR430.SWS_Csm_00180, Csm.ASR430.SWS_Csm_00187, Csm.ASR430.SWS_Csm_00192, Csm.ASR430.SWS_Csm_00199, Csm.ASR430.SWS_Csm_00206, Csm.ASR430.SWS_Csm_00212, Csm.ASR430.SWS_Csm_00221, Csm.ASR430.SWS_Csm_00228, Csm.ASR430.SWS_Csm_00234, Csm.ASR430.SWS_Csm_00243, Csm.ASR430.SWS_Csm_00250, Csm.ASR430.SWS_Csm_00256, Csm.ASR430.SWS_Csm_00265, Csm.ASR430.SWS_Csm_00272, Csm.ASR430.SWS_Csm_00278, Csm.ASR430.SWS_Csm_00287, Csm.ASR430.SWS_Csm_00294, Csm.ASR430.SWS_Csm_00300, Csm.ASR430.SWS_Csm_00307, Csm.ASR430.SWS_Csm_00314, Csm.ASR430.SWS_Csm_00320, Csm.ASR430.SWS_Csm_00327, Csm.ASR430.SWS_Csm_00335, Csm.ASR430.SWS_Csm_00341, Csm.ASR430.SWS_Csm_00348, Csm.ASR430.SWS_Csm_00418, Csm.ASR430.SWS_Csm_00425, Csm.ASR430.SWS_Csm_00432, Csm.ASR430.SWS_Csm_00436, Csm.ASR430.SWS_Csm_00443, Csm.ASR430.SWS_Csm_00450, Csm.ASR430.SWS_Csm_00455, Csm.ASR430.SWS_Csm_00457, Csm.ASR430.SWS_Csm_00665, Csm.ASR430.SWS_Csm_00666, Csm.ASR430.SWS_Csm_00667, Csm.ASR430.SWS_Csm_00668, Csm.ASR430.SWS_Csm_00669, Csm.ASR430.SWS_Csm_00670, Csm.ASR430.SWS_Csm_00671, Csm.ASR430.SWS_Csm_00672, Csm.ASR430.SWS_Csm_00673, Csm.ASR430.SWS_Csm_00700, Csm.ASR430.SWS_Csm_00775, Csm.ASR430.SWS_Csm_00776, Csm.ASR430.SWS_Csm_00777, Csm.ASR430.SWS_Csm_00780, Csm.ASR430.SWS_Csm_00781, Csm.ASR430.SWS_Csm_00782, Csm.ASR430.SWS_Csm_00783, Csm.ASR430.SWS_Csm_00784, Csm.ASR430.SWS_Csm_00785, Csm.ASR430.SWS_Csm_00786, Csm.ASR430.SWS_Csm_00787, Csm.ASR430.SWS_Csm_00821, Csm.ASR430.SWS_Csm_00840,

Csm.ASR430.SWS_Csm_00841, Csm.ASR430.SWS_Csm_00842, Csm.ASR430.SWS_Csm_00843, Csm.ASR430.SWS_Csm_00856, Csm.ASR430.SWS_Csm_00857, Csm.ASR430.SWS_Csm_00864, Csm.ASR430.SWS_Csm_00865, Csm.ASR430.SWS_Csm_00866, Csm.ASR430.SWS_Csm_00867, Csm.ASR430.SWS_Csm_00871, Csm.ASR430.SWS_Csm_00872, Csm.ASR430.SWS_Csm_00873, Csm.ASR430.SWS_Csm_00874, Csm.ASR430.SWS_Csm_00875, Csm.ASR430.SWS_Csm_00876, Csm.ASR430.SWS_Csm_00877, Csm.ASR430.SWS_Csm_00877___D0002, Csm.ASR430.SWS_Csm_00878, Csm.ASR430.SWS_Csm_00879, Csm.ASR430.SWS_Csm_00880, Csm.ASR430.SWS_Csm_00881, Csm.ASR430.SWS_Csm_00882, Csm.ASR430.SWS_Csm_00883, Csm.ASR430.SWS_Csm_00888, Csm.ASR430.SWS_Csm_00889, Csm.ASR430.SWS_Csm_00906, Csm.ASR430.SWS_Csm_00907, Csm.ASR430.SWS_Csm_00910, Csm.ASR430.SWS_Csm_00911, Csm.ASR430.SWS_Csm_00913, Csm.ASR430.SWS_Csm_00914, Csm.ASR430.SWS_Csm_00915, Csm.ASR430.SWS_Csm_00916, Csm.ASR430.SWS_Csm_00937, Csm.ASR430.SWS_Csm_00938, Csm.ASR430.SWS_Csm_00939, Csm.ASR431.SWS_Csm_00006, Csm.ASR431.SWS_Csm_00075, Csm.ASR431.SWS_Csm_00089, Csm.ASR431.SWS_Csm_00094, Csm.ASR431.SWS_Csm_00101, Csm.ASR431.SWS_Csm_00108, Csm.ASR431.SWS_Csm_00114, Csm.ASR431.SWS_Csm_00121, Csm.ASR431.SWS_Csm_00128, Csm.ASR431.SWS_Csm_00134, Csm.ASR431.SWS_Csm_00141, Csm.ASR431.SWS_Csm_00149, Csm.ASR431.SWS_Csm_00156, Csm.ASR431.SWS_Csm_00163, Csm.ASR431.SWS_Csm_00168, Csm.ASR431.SWS_Csm_00173, Csm.ASR431.SWS_Csm_00180, Csm.ASR431.SWS_Csm_00187, Csm.ASR431.SWS_Csm_00192, Csm.ASR431.SWS_Csm_00199, Csm.ASR431.SWS_Csm_00206, Csm.ASR431.SWS_Csm_00212, Csm.ASR431.SWS_Csm_00221, Csm.ASR431.SWS_Csm_00228, Csm.ASR431.SWS_Csm_00234, Csm.ASR431.SWS_Csm_00243, Csm.ASR431.SWS_Csm_00250, Csm.ASR431.SWS_Csm_00256, Csm.ASR431.SWS_Csm_00265, Csm.ASR431.SWS_Csm_00272, Csm.ASR431.SWS_Csm_00278, Csm.ASR431.SWS_Csm_00287, Csm.ASR431.SWS_Csm_00294, Csm.ASR431.SWS_Csm_00300, Csm.ASR431.SWS_Csm_00307, Csm.ASR431.SWS_Csm_00314, Csm.ASR431.SWS_Csm_00320, Csm.ASR431.SWS_Csm_00327, Csm.ASR431.SWS_Csm_00335, Csm.ASR431.SWS_Csm_00341, Csm.ASR431.SWS_Csm_00348, Csm.ASR431.SWS_Csm_00418, Csm.ASR431.SWS_Csm_00425, Csm.ASR431.SWS_Csm_00432, Csm.ASR431.SWS_Csm_00436, Csm.ASR431.SWS_Csm_00443, Csm.ASR431.SWS_Csm_00450, Csm.ASR431.SWS_Csm_00455, Csm.ASR431.SWS_Csm_00457, Csm.ASR431.SWS_Csm_00665, Csm.ASR431.SWS_Csm_00666, Csm.ASR431.SWS_Csm_00667, Csm.ASR431.SWS_Csm_00668, Csm.ASR431.SWS_Csm_00669, Csm.ASR431.SWS_Csm_00670, Csm.ASR431.SWS_Csm_00671, Csm.ASR431.SWS_Csm_00672, Csm.ASR431.SWS_Csm_00673, Csm.ASR431.SWS_Csm_00700, Csm.ASR431.SWS_Csm_00775, Csm.ASR431.SWS_Csm_00776, Csm.ASR431.SWS_Csm_00777, Csm.ASR431.SWS_Csm_00780, Csm.ASR431.SWS_Csm_00781, Csm.ASR431.SWS_Csm_00782, Csm.ASR431.SWS_Csm_00783, Csm.ASR431.SWS_Csm_00784, Csm.ASR431.SWS_Csm_00785, Csm.ASR431.SWS_Csm_00786, Csm.ASR431.SWS_Csm_00787, Csm.ASR431.SWS_Csm_00821, Csm.ASR431.SWS_Csm_00840, Csm.ASR431.SWS_Csm_00841, Csm.ASR431.SWS_Csm_00842, Csm.ASR431.SWS_Csm_00843, Csm.ASR431.SWS_Csm_00856, Csm.ASR431.SWS_Csm_00857, Csm.ASR431.SWS_Csm_00864, Csm.ASR431.SWS_Csm_00865, Csm.ASR431.SWS_Csm_00866, Csm.ASR431.SWS_Csm_00867, Csm.ASR431.SWS_Csm_00871, Csm.ASR431.SWS_Csm_00872, Csm.ASR431.SWS_Csm_00873, Csm.ASR431.SWS_Csm_00874, Csm.ASR431.SWS_Csm_00875, Csm.ASR431.SWS_Csm_00876, Csm.ASR431.SWS_Csm_00877, Csm.ASR431.SWS_Csm_00878, Csm.ASR431.SWS_

Csm_00879, Csm.ASR431.SWS_Csm_00880, Csm.ASR431.SWS_Csm_00881, Csm.ASR431.SWS_-Csm_00882, Csm.ASR431.SWS_Csm_00883, Csm.ASR431.SWS_Csm_00888, Csm.ASR431.SWS_-Csm_00889, Csm.ASR431.SWS_Csm_00906, Csm.ASR431.SWS_Csm_00907, Csm.ASR431.SWS_-Csm_00910, Csm.ASR431.SWS_Csm_00911, Csm.ASR431.SWS_Csm_00913, Csm.ASR431.SWS_-Csm_00914, Csm.ASR431.SWS_Csm_00915, Csm.ASR431.SWS_Csm_00916, Csm.ASR431.SWS_-Csm_00937, Csm.ASR431.SWS_Csm_00938, Csm.ASR431.SWS_Csm_00939, Csm.ASR431.SWS_-Csm_91002, Csm.ASR440.SWS_Csm_00937, Csm.ASR440.SWS_Csm_00938, Csm.ASR440.SWS_-Csm_00939

- No implementation of requirements related to 'SecureCounter'

  Description:

  The EB Csm module does not implement requirements related to 'SecureCounter'.

  Rationale:

  - This is a design decision.

  Requirements:

  Csm.ASR430.ECUC_Csm_00030, Csm.ASR430.ECUC_Csm_00101, Csm.ASR430.ECUC_Csm_-00102, Csm.ASR430.SWS_Csm_00837, Csm.ASR430.SWS_Csm_00973, Csm.ASR430.SWS_Csm_-00998, Csm.ASR430.SWS_Csm_00999, Csm.ASR430.SWS_Csm_01000, Csm.ASR430.SWS_Csm_-09260, Csm.ASR431.ECUC_Csm_00030, Csm.ASR431.ECUC_Csm_00101, Csm.ASR431.ECUC_-Csm_00102, Csm.ASR431.SWS_Csm_00837, Csm.ASR431.SWS_Csm_00998, Csm.ASR431.SWS_-Csm_00999, Csm.ASR431.SWS_Csm_09260

- Rejected requirements 1/11

  Description:

  The EB Csm module does not implement all requirements as specified by AUTOSAR.

  Rationale:

  - These requirements are informational only.

  Requirements:

  Csm.ASR430.SWS_Csm_00002, Csm.ASR430.SWS_Csm_00484, Csm.ASR430.SWS_Csm_00941, Csm.ASR431.SWS_Csm_00002, Csm.ASR431.SWS_Csm_00484, Csm.ASR431.SWS_Csm_00941, Csm.ASR440.SWS_Csm_00002, Csm.ASR440.SWS_Csm_00484, Csm.ASR440.SWS_Csm_00941

- Rejected requirements 2/11

  Description:

  The EB Csm module does not implement all requirements as specified by AUTOSAR.

Rationale:

- These requirement are not applicable. They are not requirements for the Csm, but for the CryIf.

Requirements:

Csm.ASR430.SWS_Csm_00694, Csm.ASR431.SWS_Csm_00694

- Rejected requirements 3/11

Description:

The EB Csm module does not implement all requirements as specified by AUTOSAR.

Rationale:

- These requirement are not applicable. They are not requirements for the Csm, but for the Crypto.

Requirements:

Csm.ASR430.SWS_Csm_00024, Csm.ASR430.SWS_Csm_00951, Csm.ASR430.SWS_Csm_00952, Csm.ASR430.SWS_Csm_00954, Csm.ASR430.SWS_Csm_00974, Csm.ASR431.SWS_Csm_00024, Csm.ASR431.SWS_Csm_00951, Csm.ASR431.SWS_Csm_00952, Csm.ASR431.SWS_Csm_00954, Csm.ASR431.SWS_Csm_00974, Csm.ASR440.SWS_Csm_00024, Csm.ASR440.SWS_Csm_00951, Csm.ASR440.SWS_Csm_00952, Csm.ASR440.SWS_Csm_00954, Csm.ASR440.SWS_Csm_00974

- Rejected requirements 4/11

Description:

The EB Csm module does not implement all requirements as specified by AUTOSAR.

Rationale:

- These requirement are not applicable. They are not requirements for the Csm, but for the application and Crypto.

Requirements:

Csm.ASR430.SWS_Csm_01019, Csm.ASR431.SWS_Csm_01019, Csm.ASR440.SWS_Csm_01019

- Rejected requirements 5/11

Description:

The EB Csm module does not implement all requirements as specified by AUTOSAR.

Rationale:

- These requirement are not applicable. They are not realizable in line with general AUTOSAR requirements.

Requirements:

Csm.ASR430.SWS_Csm_00029, Csm.ASR431.SWS_Csm_00029, Csm.ASR440.SWS_Csm_00029

- Rejected requirements 6/11

Description:

The EB Csm module does not implement all requirements as specified by AUTOSAR.

Rationale:

- These requirement are not applicable. They are not not unambiguous and are in conflict with SWS_Csm_00037 and SWS_Csm_91007.

Requirements:

Csm.ASR430.SWS_Csm_00035, Csm.ASR431.SWS_Csm_00035, Csm.ASR440.SWS_Csm_00035

- Rejected requirements 7/11

Description:

The EB Csm module does not implement all requirements as specified by AUTOSAR.

Rationale:

- These requirement are not applicable. They are contradicting requirements SWS_Csm_01015, SWS_Csm_01017, SWS_Csm_01016, SWS_Csm_00986, SWS_Csm_00989, SWS_Csm_01025, SWS_Csm_01027, SWS_Csm_00993, SWS_Csm_00996 and SWS_Csm_01001.

Requirements:

Csm.ASR430.SWS_Csm_00036

- Rejected requirements 8/11

Description:

The EB Csm module does not implement all requirements as specified by AUTOSAR.

Rationale:

- These requirement are not applicable. They are not correct.

Requirements:

Csm.ASR430.SWS_Csm_00945, Csm.ASR430.SWS_Csm_01041, Csm.ASR431.SWS_Csm_00945, Csm.ASR431.SWS_Csm_01041

- Rejected requirements 9/11

  Description:

  The EB Csm module does not implement all requirements as specified by AUTOSAR.

  Rationale:

  - These requirement are not applicable. According to the SWS the Crypto driver has no dependency to the DEM, except these requirements.

  Requirements:

  Csm.ASR430.SWS_Csm_00486, Csm.ASR431.SWS_Csm_00486

- Rejected requirements 10/11

  Description:

  The EB Csm module does not implement all requirements as specified by AUTOSAR.

  Rationale:

  - These requirements are not applicable. The EB Csm does only implement selected features from AS 4.3.1.

  Requirements:

  Csm.ASR431.ECUC_Csm_00038, Csm.ASR431.ECUC_Csm_00066, Csm.ASR431.ECUC_Csm_00074, Csm.ASR431.ECUC_Csm_00082, Csm.ASR431.ECUC_Csm_00085, Csm.ASR431.ECUC_Csm_00089, Csm.ASR431.ECUC_Csm_00096, Csm.ASR431.ECUC_Csm_00105, Csm.ASR431.ECUC_Csm_00113, Csm.ASR431.ECUC_Csm_00131, Csm.ASR431.ECUC_Csm_00134, Csm.ASR431.ECUC_Csm_00182, Csm.ASR431.SWS_Csm_00036, Csm.ASR431.SWS_Csm_00925, Csm.ASR431.SWS_Csm_00953, Csm.ASR431.SWS_Csm_00959, Csm.ASR431.SWS_Csm_00969, Csm.ASR431.SWS_Csm_00970, Csm.ASR431.SWS_Csm_00984, Csm.ASR431.SWS_Csm_00989, Csm.ASR431.SWS_Csm_01011, Csm.ASR431.SWS_Csm_01024, Csm.ASR431.SWS_Csm_01028, Csm.ASR431.SWS_Csm_01039, Csm.ASR431.SWS_Csm_01050, Csm.ASR431.SWS_Csm_91004, Csm.ASR431.SWS_Csm_91008, Csm.ASR431.SWS_Csm_91009, Csm.ASR431.SWS_Csm_91010, Csm.ASR431.SWS_Csm_91011, Csm.ASR431.SWS_Csm_91012

- Rejected requirements 11/11

  Description:

  The EB Csm module does not implement all requirements as specified by AUTOSAR.

Rationale:

- These requirements are not applicable. The EB Csm does only implement selected features from AS 4.4.0.

Requirements:

Csm.ASR440.ECUC_Csm_00032, Csm.ASR440.ECUC_Csm_00038, Csm.ASR440.ECUC_Csm_-00066, Csm.ASR440.ECUC_Csm_00074, Csm.ASR440.ECUC_Csm_00082, Csm.ASR440.ECUC_-Csm_00089, Csm.ASR440.ECUC_Csm_00096, Csm.ASR440.ECUC_Csm_00105, Csm.ASR440.-ECUC_Csm_00113, Csm.ASR440.ECUC_Csm_00119, Csm.ASR440.ECUC_Csm_00131, Csm.-ASR440.ECUC_Csm_00134, Csm.ASR440.ECUC_Csm_00175, Csm.ASR440.ECUC_Csm_00176, Csm.ASR440.ECUC_Csm_00182, Csm.ASR440.ECUC_Csm_00262, Csm.ASR440.ECUC_Csm_-00263, Csm.ASR440.ECUC_Csm_00264, Csm.ASR440.ECUC_Csm_00265, Csm.ASR440.ECUC_-Csm_00266, Csm.ASR440.ECUC_Csm_00267, Csm.ASR440.ECUC_Csm_00268, Csm.ASR440.-ECUC_Csm_00269, Csm.ASR440.ECUC_Csm_00270, Csm.ASR440.ECUC_Csm_00271, Csm.-ASR440.ECUC_Csm_00272, Csm.ASR440.ECUC_Csm_00273, Csm.ASR440.ECUC_Csm_00274, Csm.ASR440.ECUC_Csm_00275, Csm.ASR440.ECUC_Csm_00276, Csm.ASR440.SWS_Csm_00002, Csm.ASR440.SWS_Csm_00024, Csm.ASR440.SWS_Csm_00029, Csm.ASR440.SWS_Csm_00035, Csm.ASR440.SWS_Csm_00036, Csm.ASR440.SWS_Csm_00037, Csm.ASR440.SWS_Csm_00068, Csm.ASR440.SWS_Csm_00186, Csm.ASR440.SWS_Csm_00484, Csm.ASR440.SWS_Csm_00691, Csm.ASR440.SWS_Csm_00802, Csm.ASR440.SWS_Csm_00803, Csm.ASR440.SWS_Csm_00828, Csm.ASR440.SWS_Csm_00902, Csm.ASR440.SWS_Csm_00903, Csm.ASR440.SWS_Csm_00912, Csm.ASR440.SWS_Csm_00922, Csm.ASR440.SWS_Csm_00923, Csm.ASR440.SWS_Csm_00925, Csm.ASR440.SWS_Csm_00927, Csm.ASR440.SWS_Csm_00928, Csm.ASR440.SWS_Csm_00930, Csm.ASR440.SWS_Csm_00935, Csm.ASR440.SWS_Csm_00936, Csm.ASR440.SWS_Csm_00937, Csm.ASR440.SWS_Csm_00938, Csm.ASR440.SWS_Csm_00939, Csm.ASR440.SWS_Csm_00941, Csm.ASR440.SWS_Csm_00943, Csm.ASR440.SWS_Csm_00945, Csm.ASR440.SWS_Csm_00946, Csm.ASR440.SWS_Csm_00947, Csm.ASR440.SWS_Csm_00951, Csm.ASR440.SWS_Csm_00952, Csm.ASR440.SWS_Csm_00953, Csm.ASR440.SWS_Csm_00954, Csm.ASR440.SWS_Csm_00955, Csm.ASR440.SWS_Csm_00956, Csm.ASR440.SWS_Csm_00957, Csm.ASR440.SWS_Csm_00958, Csm.ASR440.SWS_Csm_00959, Csm.ASR440.SWS_Csm_00966, Csm.ASR440.SWS_Csm_00967, Csm.ASR440.SWS_Csm_00968, Csm.ASR440.SWS_Csm_00969, Csm.ASR440.SWS_Csm_00970, Csm.ASR440.SWS_Csm_00971, Csm.ASR440.SWS_Csm_00974, Csm.ASR440.SWS_Csm_00980, Csm.ASR440.SWS_Csm_00982, Csm.ASR440.SWS_Csm_00984, Csm.ASR440.SWS_Csm_00989, Csm.ASR440.SWS_Csm_00992, Csm.ASR440.SWS_Csm_00996, Csm.ASR440.SWS_Csm_01008, Csm.ASR440.SWS_Csm_01010, Csm.ASR440.SWS_Csm_01011, Csm.ASR440.SWS_Csm_01012, Csm.ASR440.SWS_Csm_01019, Csm.ASR440.SWS_Csm_01021, Csm.ASR440.SWS_Csm_01022, Csm.ASR440.SWS_Csm_01023, Csm.ASR440.SWS_Csm_01024, Csm.ASR440.SWS_Csm_01026, Csm.ASR440.SWS_Csm_01028, Csm.ASR440.SWS_Csm_01030, Csm.ASR440.SWS_Csm_01034, Csm.ASR440.SWS_Csm_01036, Csm.ASR440.SWS_Csm_01038, Csm.ASR440.SWS_Csm_01039, Csm.ASR440.SWS_Csm_01041, Csm.ASR440.SWS_Csm_01048, Csm.ASR440.SWS_Csm_01049, Csm.ASR440.SWS_Csm_01050, Csm.ASR440.SWS_Csm_01051, Csm.ASR440.SWS_Csm_01054,

Csm.ASR440.SWS_Csm_01074, Csm.ASR440.SWS_Csm_01075, Csm.ASR440.SWS_Csm_01078, Csm.ASR440.SWS_Csm_01079, Csm.ASR440.SWS_Csm_01083, Csm.ASR440.SWS_Csm_01086, Csm.ASR440.SWS_Csm_01087, Csm.ASR440.SWS_Csm_01088, Csm.ASR440.SWS_Csm_01089, Csm.ASR440.SWS_Csm_01543, Csm.ASR440.SWS_Csm_01905, Csm.ASR440.SWS_Csm_01906, Csm.ASR440.SWS_Csm_01910, Csm.ASR440.SWS_Csm_01915, Csm.ASR440.SWS_Csm_01920, Csm.ASR440.SWS_Csm_01921, Csm.ASR440.SWS_Csm_01922, Csm.ASR440.SWS_Csm_01923, Csm.ASR440.SWS_Csm_01924, Csm.ASR440.SWS_Csm_01925, Csm.ASR440.SWS_Csm_01926, Csm.ASR440.SWS_Csm_01928, Csm.ASR440.SWS_Csm_09000, Csm.ASR440.SWS_Csm_91004, Csm.ASR440.SWS_Csm_91005, Csm.ASR440.SWS_Csm_91008, Csm.ASR440.SWS_Csm_91009, Csm.ASR440.SWS_Csm_91011, Csm.ASR440.SWS_Csm_91012, Csm.ASR440.SWS_Csm_91013, Csm.ASR440.SWS_Csm_91014, Csm.ASR440.SWS_Csm_91015, Csm.ASR440.SWS_Csm_91016, Csm.ASR440.SWS_Csm_91017, Csm.ASR440.SWS_Csm_91019, Csm.ASR440.SWS_Csm_91020, Csm.ASR440.SWS_Csm_91021, Csm.ASR440.SWS_Csm_91022

2.6. Open-source software

`Csm` does not use open-source software.