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1 Document Information and Content

This auxiliary document provides a collection of constraints for AUTOSAR models. All constraints are copied from template specification from the AUTOSAR Foundation, so this document does not introduce any new constraints.

A list of the documents that the constraints originate from can be found in the table of contents. Chapter [2](#) contains the collected constraints, grouped by source documents. All constraints from the same source document are contained within a single section.

2 Autosar Model Constraints

2.1 FO_TPS_AbstractPlatformSpecification

[constr_6803] Standardized values of [CompositionSwComponentType.category](#)

Status: DRAFT

Imposition time: IT_Apsd

[In a [System](#) with the [category](#) set to ABSTRACT_PLATFORM_SYSTEM_DESCRIPTION, any [CompositionSwComponentType](#) which is referenced by a [SwComponentPrototype](#) in the role [type](#) shall have the [category](#) set to:

- XP_COMPONENT_APPLICATION

]

[constr_6806] Standardized values of [ApplicationInterface.category](#)

Status: DRAFT

Imposition time: IT_Apsd

[The [category](#) of a [ApplicationInterface](#) can be set to either:

- XP_PORT_SECURITY
- XP_PORT_TIMESYNC
- XP_PORT_STORAGE
- XP_PORT_APPLICATION
- XP_PORT_SAFETY

]

[constr_6807] Exclusivity of a [ApplicationInterface](#) to an Abstract Platform

Status: DRAFT

Imposition time: IT_Apsd

[A [ApplicationInterface](#) shall not type a [PortPrototype](#) unless the [category](#) of the [System](#) is ABSTRACT_PLATFORM_SYSTEM_DESCRIPTION.

]

[constr_6810] Applicable *categorys* for data types in an abstract platform

Status: DRAFT

Imposition time: IT_Apsd

[

| Category | Applicable to ... | | | | | | | Description |
|------------------|---------------------|-----------------------------|--------------------------|---------------------------|------------------------------|--------------------------|-------------------------|---|
| | ApplicationDataType | ApplicationDeferredDataType | ApplicationArrayDataType | ApplicationRecordDataType | ApplicationPrimitiveDataType | ApplicationRecordElement | ApplicationArrayElement | |
| VALUE | | | | x | x | x | | Contains a single value. |
| STRUCTURE | | | x | | x | x | | Holds one or several further elements which can have different AutosarDataTypes . |
| STRING | | | | x | x | x | | Contains a single value interpreted as a text string (note that it appears as a single value for the application domain). |
| ARRAY | | x | | | x | x | | A fixed-sized array of sub-elements of the same type. |
| BOOLEAN | | | | x | x | x | | Contains a single boolean (true/false) state. |

]

[constr_6812] Supported `SwDataDefProps` applicable to `ApplicationDataTypes` exclusive to the abstract platform

Status: DRAFT

Imposition time: IT_Apsd

[

| Attributes of SwDataDefProps | Root Elem. | | | | Attribute Existence per Category | | | | |
|--|---------------------|-----------------------------|--------------------------|-------------------------|----------------------------------|-----------|-------|--------|---------|
| | ApplicationDataType | ApplicationDeferredDataType | ApplicationRecordElement | ApplicationArrayElement | VALUE | STRUCTURE | ARRAY | STRING | BOOLEAN |
| <code>annotation</code> | x | x | x | x | * | * | * | * | * |
| <code>compuMethod</code> | x | | | | 0..1 | | | | 0..1 |
| <code>dataConstr.dataConstrRule.physConstrs</code> | x | | x | x | 0..1 | | 0..1 | | 0..1 |
| <code>dataConstr.dataConstrRule.internalConstrs</code> | x | | x | x | d/c ¹ | | d/c | | d/c |
| <code>displayFormat</code> | x | | x | x | 0..1 | | 0..1 | 0..1 | 0..1 |
| <code>invalidValue</code> | x | | | | 0..1 | | | 0..1 | 0..1 |
| <code>swTextProps</code> | x | | | | | | | 1 | |
| <code>unit</code> | x | | | | 0..1 | | | 0..1 | 0..1 |
| Other Attributes below the Root Element | | | | | | | | | |
| <code>element:ApplicationRecordElement</code> | x | | x | x | | 1..* | | | |
| <code>element:ApplicationArrayElement</code> | x | | x | x | | | 1 | | |
| <code>ApplicationArrayElement.arraySizeSemantics</code> | x | | | | | | 0..1 | | |
| <code>ApplicationArrayElement.maxNumberOfElements</code> | x | | | | | | 1 | | |

]

[constr_6814] Restriction of `ApplicationDeferredDataType.category`

Status: DRAFT

Imposition time: IT_Apsd

[The `category` of an `ApplicationDeferredDataType` shall be unassigned/undefined.

]

¹don't care

2.2 FO_TPS_FeatureModelExchangeFormat

[constr_3657] Multiplicity of **FMAttributeDef.max** and **FMAttributeDef.min**

Imposition time: IT_FeatMod

[For each **FMAttributeDef** the attributes **max** and **min** shall exist.
]

[constr_3658] Multiplicity of **FMFeatureDecomposition.category**

Imposition time: IT_FeatMod

[For each **FMFeatureDecomposition** the attribute **category** shall exist.
]

[constr_3659] Multiplicity of **FMFeatureDecomposition.feature**

Imposition time: IT_FeatMod

[For each **FMFeatureDecomposition** at least one reference in the role **feature** shall exist.
]

[constr_3660] Multiplicity of **FMFeatureRelation.feature**

Imposition time: IT_FeatMod

[For each **FMFeatureRelation** at least one reference in the role **feature** shall exist.
]

[constr_3661] Multiplicity of **FMFeatureSelection.feature**

Imposition time: IT_FeatMod

[For each **FMFeatureSelection** the reference in the role **feature** shall exist.
]

[constr_3662] Multiplicity of **FMFeatureSelection.state**

Imposition time: IT_FeatMod

[For each **FMFeatureSelection** the attribute **state** shall exist.
]

[constr_3663] Multiplicity of `FMAttributeValue.definition`

Imposition time: IT_FeatMod

[For each `FMAttributeValue` the reference in the role `definition` shall exist.

]

[constr_3664] Multiplicity of `FMAttributeValue.value`

Imposition time: IT_FeatMod

[For each `FMAttributeValue` the attribute `value` shall exist.

]

[constr_3665] Multiplicity of `FMFormulaByFeaturesAndAttributes.attribute`

Imposition time: IT_FeatMod

[For each `FMFormulaByFeaturesAndAttributes` the reference in the role `attribute` shall exist.

]

[constr_3666] Multiplicity of `FMFormulaByFeaturesAndAttributes.feature`

Imposition time: IT_FeatMod

[For each `FMFormulaByFeaturesAndAttributes` the reference in the role `feature` shall exist.

]

[constr_3667] Multiplicity of `FMFormulaByFeaturesAndSwSystemconsts.feature`

Imposition time: IT_FeatMod

[For each `FMFormulaByFeaturesAndSwSystemconsts` the reference in the role `feature` shall exist.

]

[constr_5001] `FMFeatureRelation` shall not establish self-references

Imposition time: IT_FeatMod

[A `FMFeatureRelation` that is aggregated by a `FMFeature` f shall not reference f in the role `feature`. In other words: self-references are not allowed.

]

[constr_5002] FMFeatureSelectionSet shall not have cycles in the include relation

Imposition time: IT_FeatMod

[Let S be a FMFeatureSelectionSet and let G be the inclusion graph for all FMFeatureSelectionSets as defined in [TPS_FMDT_00032]. There shall be no cycles in the inclusion graph.

]

[constr_5003] FMFeatureSelectionSet shall not overwrite the state of included features

Imposition time: IT_FeatMod

[Let S be a FMFeatureSelectionSet that aggregates a FMFeatureSelection that has the state s and which refers to a FMFeature f in the role feature. Furthermore, let S_1 be a FMFeatureSelectionSet that aggregates a FMFeatureSelection that has the state s_1 and refers to the same FMFeature f in the role feature. Finally assume that S refers to S_1 in the role include.

Then the following conditions shall hold:

1. If the value of the attribute state of s_1 is undecided, then the value of the attribute state of s may be one of selected, deselected, and undecided.
2. If the value of the attribute state of s_1 is selected or deselected, then the value of the attribute state of s shall be the same as the attribute state in s_1 , or undecided.
3. Any other constellation is considered an error.

]

[constr_5005] FMFeature shall not be referenced from more than one FMFeatureDecomposition

Imposition time: IT_FeatMod

[Let f be a FMFeature that is referenced from a FMFeatureDecomposition in the role feature. Then no other FMFeatureDecomposition shall reference f in the role feature.

]

[constr_5007] FMFeature shall only be referenced from one FMFeatureModel in the role feature

Imposition time: IT_FeatMod

[Let f be a FMFeature, and F, F' be FMFeatureModels where F references f in the role feature, and F' also references f in the role feature. Then $F = F'$.

]

[constr_5008] If present, the root feature shall be part of the feature model

Imposition time: IT_FeatMod

[Let r be the FMFeature referenced from FMFeatureModel in the role root, and $\{f_1, f_2, \dots, f_n\}$ the set of features referenced from the same FMFeatureModel in the role feature.

Then the following condition shall hold: $r \in \{f_1, f_2, \dots, f_n\}$.

]

[constr_5009] Root feature shall be present if and only if the feature model is not empty

Imposition time: IT_FeatMod

[If a FMFeatureModel refers to one or more FMFeature elements in the role feature, then exactly one of them shall be referenced by FMFeatureModel in the role root.

On the contrary, if FMFeatureModel does not refer to any FMFeatures in the role feature, then root shall be empty.

]

[constr_5010] FMFeatureDecomposition may refer to a root feature of another feature model, but only once.

Imposition time: IT_FeatMod

[Let f_A be a FMFeature that is referenced by FMFeatureModel A in the role feature, but is also referenced from a FMFeatureDecomposition that is aggregated by a FMFeature f_B in the role decomposition.

Furthermore, let B be the FMFeatureModel that references f_B in the role feature with $A \neq B$. That is, f_A and f_B belong to different feature models.

Then both the following conditions shall hold:

1. f_A is referenced from A in the role root.
2. There is no other FMFeatureDecomposition (neither in B nor in any other FMFeatureModel) that references f_B in the role feature.

]

[constr_5011] FMFormulaByFeaturesAndAttributes can refer to FMFeatures and FMAttributeDefs, but not to system constants

Imposition time: IT_FeatMod

[A formula of class FMFormulaByFeaturesAndAttributes is an expression that can use FMFeatures and FMAttributeDefs, but is not allowed to use SwSystemConsts.

]

[constr_5013] Attributes min and max of FMFeatureDecomposition reserved for category MULTIPLEFEATURE

Imposition time: IT_FeatMod

[The optional attributes min and max of FMFeatureDecomposition are only allowed to be present if the category of the FMFeatureDecomposition is MULTIPLEFEATURE.

]

[constr_5018] FMFeatureSelectionSet shall not include the same feature twice

Imposition time: IT_FeatMod

[Let $\{s_1, s_2, \dots, s_n\}$ be the set of FMFeatureSelection elements that are aggregated by a FMFeatureSelectionSet in the role selection. Furthermore, for each s_i , let f_i be the FMFeature that is referred to in the role feature. Then the following condition shall hold true:

]

[constr_5019] FMFeatureModel shall not contain the same FMFeature twice

Imposition time: IT_FeatMod

[Let F be a FMFeatureModel, and let f, f' be FMFeatures that are referenced from F in the role feature. Then $f \neq f'$.

]

[constr_5020] Every FMFeature shall be contained in a FMFeatureModel

Imposition time: IT_FeatMod

[For every FMFeature f , there shall be a FMFeatureModel that refers to f in the role feature.

]

[constr_5021] The underlying graph of a feature model shall be a tree.

Imposition time: IT_FeatMod

[Let F be a `FMFeatureModel` and G be the underlying graph of F as defined in [TPS_FMDT_00034]. Then G shall be a tree. Hence, we also refer to G as the *underlying tree* of F .

]

[constr_5022] The root feature of a `FMFeatureModel` refers to the root of the underlying tree.

Imposition time: IT_FeatMod

[Let F be a `FMFeatureModel` and G be the underlying tree of F as defined in [TPS_FMDT_00034]. Furthermore, let r be the `FMFeature` referred to by the `root` feature of the `FMFeatureModel`.

Then the node in G which corresponds to r is the root of the tree G .

]

[constr_5023] `FMFeatureSelectionSet` may only refer to `FMFeatures` from the associated `FMFeatureModel`

Imposition time: IT_FeatMod

[Let S be a `FMFeatureSelectionSet`, and $\{f_1, f_2, \dots, f_n\}$ be its *feature set* ([TPS_FMDT_00009]). Furthermore, let $\{g_1, g_2, \dots, g_m\}$ be the combined *feature sets* of the `FMFeatureModels` to which S refers to in the role `featureModel`.

Then the following condition shall hold: $\{f_1, f_2, \dots, f_n\} \subseteq \{g_1, g_2, \dots, g_m\}$.

]

[constr_5024] `FMFeatureSelectionSet` shall not include itself

Imposition time: IT_FeatMod

[Let S be a `FMFeatureSelectionSet` and let S' be the `FMFeatureSelectionSet` to which S refers to in the role `include`.

Then the following condition shall hold: $S \neq S'$.

]

[constr_5025] `FMFeatureSelectionSet` shall not overwrite the state of included features

Imposition time: IT_FeatMod

[Let S be a `FMFeatureSelectionSet` that aggregates a `FMFeatureSelection` that has the `state` s and which refers to a `FMFeature` f in the role `feature`. Furthermore, let S_1 (S_2) be a `FMFeatureSelectionSet` that aggregates a `FMFeature`

Selection that has the `state` s_1 (s_2) and refers to the same `FMFeature` f in the role `feature`. Finally assume that S refers to S_1 and S_2 in the role `include`.

Then the following conditions shall hold:

1. If the values of the attributes `state` of s_1 and s_2 are both `undecided`, then the value of the attribute `state` of s may be `selected`, `deselected` or `undecided`.
2. If the value of the attribute `state` of s_1 is `undecided` and the value of the attribute `state` of s_2 is `selected` or `deselected`, then the value of the attribute `state` of s shall be the same as the attribute `state` in s_2 , or `undecided`.
3. If the value of the attribute `state` of s_2 is `undecided` and the value of the attribute `state` of s_1 is `selected` or `deselected`, then the value of the attribute `state` of s shall be the same as the attribute `state` in s_1 , or `undecided`.
4. If the values of the attributes `state` of s_1 and s_2 are both either `selected` or `deselected`, then the value of the attribute `state` of s shall be the same as in attribute s_1 , or `undecided`.
5. Any other constellation is considered an error.

]

[constr_5026] Semantics of attributes `max` and `min` in class `FMAAttributeDef`

Imposition time: IT_FeatMod

[The following conditions shall hold for all instances of the class `FMAAttributeDef`:

- $\text{min} \leq \text{defaultValue} \leq \text{max}$ (`min` and `max` are both closed intervals)
- $\text{min} < \text{defaultValue} \leq \text{max}$ (`min` is an open interval, `max` is a closed interval)
- $\text{min} < \text{defaultValue} < \text{max}$ (`min` and `max` are both open intervals)
- $\text{min} \leq \text{defaultValue} < \text{max}$ (`min` is a closed interval, `max` is an open interval)

]

[constr_5027] Semantics of attributes `max` and `min` of `FMAAttributeDef` in class `FMAAttributeValue`

Imposition time: IT_FeatMod

[Let v be the attribute `value` of an `FMAAttributeValue` V that refers to `FMAAttributeDef` D in the role `definition`. Furthermore, let min and max be the values of the attributes `min` and `max` of D .

The following condition shall hold true:

]

[constr_5028] Only one `FMAttributeValue` per `FMAttributeDef`

Imposition time: IT_FeatMod

[Let S be a `FMFeatureSelectionSet` whose `FMFeatureSelections` aggregate `FMAttributeValues` $\{v_1, v_2, \dots, v_n\}$ in the role `attributeValue`. For each v_i , let f_i be the `FMFeature` to which v_i refers to in the role `attributeDef`. Then the following condition shall hold:

]

2.3 FO_TPS_LogAndTraceExtract

[constr_5098] Allowed `SwDataDefProps` attributes for `DltArgument.networkRepresentation`

Imposition time: IT_LogTrace

[

| Attributes of <code>SwDataDefProps</code> | <code>networkRepresentation</code> |
|---|------------------------------------|
| <code>annotation</code> | N/A |
| <code>baseType</code> | D |
| <code>compuMethod</code> | D |
| <code>dataConstr</code> | D |
| <code>displayFormat</code> | D |
| <code>displayPresentation</code> | N/A |
| <code>invalidValue</code> | N/A |
| <code>swComparisonVariable</code> | N/A |
| <code>swHostVariable</code> | N/A |
| <code>swTextProps</code> | D |
| <code>unit</code> | D |

]

[constr_5294] Existence of `DltEcu.ecuId`

Imposition time: IT_LogTrace

[For each `DltEcu`, the attribute `ecuId` shall exist when the Log And Trace Extract is created.

]

[constr_5295] Existence of `DltApplication.context`*Imposition time:* IT_LogTrace

[Each `DltApplication` shall reference at least one `DltContext` in the role `context` when the Log And Trace Extract is created.

]

[constr_5296] Existence of `DltApplication.applicationId`*Imposition time:* IT_LogTrace

[For each `DltApplication`, the attribute `applicationId` shall exist when the Log And Trace Extract is created.

]

[constr_5297] Existence of `DltApplication.applicationDescription`*Imposition time:* IT_LogTrace

[For each `DltApplication`, the attribute `applicationDescription` shall exist when the Log And Trace Extract is created.

]

[constr_5298] Existence of `DltContext.contextId`*Imposition time:* IT_LogTrace

[For each `DltContext`, the attribute `contextId` shall exist when the Log And Trace Extract is created.

]

[constr_5299] Existence of `DltContext.contextDescription`*Imposition time:* IT_LogTrace

[For each `DltContext`, the attribute `contextDescription` shall exist when the Log And Trace Extract is created.

]

[constr_5300] Existence of `DltContext.dltMessage`*Imposition time:* IT_LogTrace

[Each `DltContext` shall reference at least one `DltMessage` in the role `dltMessage` when the Log And Trace Extract is created.

]

[constr_5301] Existence of `DltMessage.messageId`

Imposition time: IT_LogTrace

[For each `DltMessage`, the attribute `messageId` shall exist when the Log And Trace Extract is created.

]

[constr_5302] Restriction in usage of `DltArgument.optional` attribute

Imposition time: IT_LogTrace

[The `optional` attribute shall not be set in a `DltArgument` that represents an array dimension.

]

[constr_5303] Restriction of `baseTypeSize` of a `DltArgument`

Imposition time: IT_LogTrace

[The `baseTypeSize` in the `networkRepresentation` of a `DltArgument` is restricted to 8, 16, 32, and 64 Bits.

]

[constr_5304] Datatype of an Array

Imposition time: IT_LogTrace

[The `dltArgumentEntry` that is aggregated by a `DltArgument` that has the `length` attribute set to a value (represents an Array) shall not define a `SwBaseType` in the `networkRepresentation` since the data type of the Array is described by the `SwBaseType` in the `networkRepresentation` of the aggregating `DltArgument`.

]

[constr_5305] `CompuMethod` in `DltArgument.networkRepresentation`

Imposition time: IT_LogTrace

[The `CompuMethod` that is used in the `networkRepresentation` of a `DltArgument` is limited to `category` TEXTTABLE.

]

[constr_5340] Range of `DltMessage.privacyLevel.privacyLevel`

Imposition time: IT_LogTrace

[The value of `DltMessage.privacyLevel.privacyLevel` shall be in the range between 0 and 255.

]

[constr_5341] Range of [PrivacyLevel.compuMethod](#)

Imposition time: IT_LogTrace

[The [CompuMethod](#) that is referenced from [PrivacyLevel](#) in the role [compuMethod](#) shall have the category TEXTTABLE.

]

[constr_5363] Allowed usage of attributes for description of payload data types

Imposition time: IT_LogTrace

[

| Type | length | dltArgumentEntry | SwBaseType of top level Dlt Argument |
|---------------------|--------|------------------|--------------------------------------|
| Predefined Text | NA | NA | NA |
| primitive Type | NA | NA | D |
| String | D | NA | D |
| 1-dimensional Array | D | NA | D |
| n-dimensional Array | D | D | D |
| Struct | NA | D | NA |

]

[constr_5364] Allowed usage of attributes in case of a [dltArgumentEntry](#)

Imposition time: IT_LogTrace

[

| DltArgumentEntry type | length | dltArgumentEntry | SwBaseType of DltArgumentEntry |
|-----------------------|--------|------------------|--------------------------------|
| Struct member | NA | D | D |
| Array dimension | D | D | NA |

]

2.4 FO_TPS_SecurityExtractTemplate

[constr_5600] Valid interval for attribute [SecurityEventDefinition.id](#)

Status: DRAFT

[The valid interval for attribute [SecurityEventDefinition.id](#) is 0..65535.

]

[constr_5601] Uniqueness of `SecurityEventDefinition.id`

Status: DRAFT

[Within the scope of an IDS, i.e. for all `SecurityEventDefinitions` referenced by the same `IdsDesign`, there shall be no attribute `id` of any other `SecurityEventDefinition` that has the same value.

]

[constr_5602] Valid interval for attribute `SecurityEventOneEveryNFilter.n`

Status: DRAFT

[The valid interval for attribute `SecurityEventOneEveryNFilter.n` is 1..65535.

]

[constr_5603] Valid interval for attribute `SecurityEventAggregationFilter.minimumIntervalLength`

Status: DRAFT

[The valid interval for attribute `SecurityEventAggregationFilter.minimumIntervalLength` is]0..INF[seconds.

]

[constr_5604] Valid interval for attribute `SecurityEventThresholdFilter.intervalLength`

Status: DRAFT

[The valid interval for attribute `SecurityEventThresholdFilter.intervalLength` is]0..INF[seconds.

]

[constr_5605] Valid interval for attribute `SecurityEventThresholdFilter.thresholdNumber`

Status: DRAFT

[The valid interval for attribute `SecurityEventThresholdFilter.thresholdNumber` is 1..INF[.

]

[constr_5606] Valid interval for attribute `IdsmRateLimitation.timeInterval`

Status: DRAFT

[The valid interval for attribute `IdsmRateLimitation.timeInterval` is 0..65535 seconds.

]

[constr_5607] Valid interval for attribute `IdsmRateLimitation.maxEventsInInterval`

Status: DRAFT

[The valid interval for attribute `IdsmRateLimitation.maxEventsInInterval` is $0..(2^{64} - 1)$.

]

[constr_5608] Valid interval for attribute `IdsmTrafficLimitation.timeInterval`

Status: DRAFT

[The valid interval for attribute `IdsmTrafficLimitation.timeInterval` is $0..65535$ seconds.

]

[constr_5609] Valid interval for attribute `IdsmTrafficLimitation.maxBytesInInterval`

Status: DRAFT

[The valid interval for attribute `IdsmTrafficLimitation.maxBytesInInterval` is $0..(2^{64} - 1)$.

]

[constr_5610] Unambiguous definition of execution platform for an `IdsmInstance`

Status: DRAFT

[For the meta-class `IdsmInstance`, either the reference in the role `ecuInstance` or the reference in the role `idsmModuleInstantiation` shall be defined in order to ensure that the platform (Classic or Adaptive) on which an `IdsmInstance` is targeted to run is unambiguously defined.

]

[constr_5611] Unambiguous configuration of platform-dependent signature support for an `IdsmInstance`

Status: DRAFT

[For the meta-class `IdsmInstance`, either the aggregation of `IdsmSignatureSupportCp` or of `IdsmSignatureSupportAp` shall be defined in order to ensure that the platform-dependent signature support is unambiguously configured.

]

[constr_5612] Unambiguous definition of platform-dependent network configuration for an [IdsmInstance](#)

Status: DRAFT

[For the meta-class [IdsmInstance](#), either the configuration of one [GeneralPurposeIPdu](#) with `category="IDS"` (for the Classic Platform as specified in [TPS_SECXT_01038]) or the network configuration through the reference [idsmModuleInstantiation](#) (for the Adaptive Platform as specified in [TPS_SECXT_01039]) shall be defined in order to ensure that the platform-dependent network configuration is unambiguously defined.

]

[constr_5613] Unambiguous definition of [SecurityEventStateFilter](#) for CP or AP

Status: DRAFT

[For [SecurityEventStateFilter](#), either the references in the role [blockIfStateActiveCp](#) or the references in the role [blockIfStateActiveAp](#) shall be defined in order to ensure the unambiguous applicability of the [SecurityEventStateFilter](#) towards the Classic or the Adaptive Platform.

]

[constr_5614] Upper bound for multiplicity of [BlockStates](#) aggregated by [IdsmInstance](#)

Status: DRAFT

[For the meta-class [IdsmInstance](#), the maximum number of aggregated [BlockStates](#) in the role [blockState](#) shall be 16.

]

[constr_5615] Restriction of [SecurityEventStateFilter](#) referencing [BlockStates](#) on CP

Status: DRAFT

[For a [SecurityEventStateFilter](#) on the Classic Platform, the references in the role [blockIfStateActiveCp](#) shall only reference those [BlockStates](#) that are aggregated in the role [blockState](#) by the [IdsmInstance](#) which is mapped (by [SecurityEventContextMapping](#)) to that [SecurityEventFilterChain](#) of which the [SecurityEventStateFilter](#) is part of.

]

[constr_9339] SecurityEventContextDataElement.maxLength usage restriction

Status: DRAFT

[The `SecurityEventContextDataElement.maxLength` attribute shall only be set if the `SecurityEventContextDataElement.networkRepresentation` defines an Array or a String.

]

[constr_9340] Datatype of an Array

Status: DRAFT

[The `nestedContextData` that is aggregated by a `SecurityEventContextDataElement` that has the `maxLength` attribute set to a value (represents an Array) shall not define a `SwBaseType` in the `networkRepresentation` since the data type of the Array is described by the `SwBaseType` in the `networkRepresentation` of the aggregating `SecurityEventContextDataElement`.

]

[constr_9341] CompuMethod in SecurityEventContextDataElement.networkRepresentation

Status: DRAFT

[The `CompuMethod` that is used in the `networkRepresentation` of a `SecurityEventContextDataElement` is limited to category TEXTTABLE.

]

[constr_9342] Allowed range of SecurityEventContextDataDefinition.version

Status: DRAFT

[The value given for `SecurityEventContextDataDefinition.version` shall be in the range from 0 to 65535.

]

[constr_12000] Usage of references in the context of SecurityEventReportInstanceValue

Status: DRAFT

[Within each `SecurityEventReportInstanceValue`, exactly one of the references in the role

- `flatObject`
- `object`

shall exist.

]

[constr_12001] Existence of attribute `SecurityEventReportInstanceValue.id`

Status: DRAFT

[For each `SecurityEventReportInstanceValue`, attribute `id` shall exist.

]

[constr_12002] Existence of attribute `SecurityEventReportInstanceDefinition.targetType`

Status: DRAFT

[For each `SecurityEventReportInstanceDefinition`, the attribute `targetType` shall exist.

]

[constr_12003] Existence of reference `SecurityEventReportInstanceValue.contextDataElementIdentification`

Status: DRAFT

[In the context of a `SecurityEventContextDataElement`, if the reference in the role `SecurityEventContextDataElement.securityEventReportInstanceDefinition` does not exist, then the `SecurityEventContextDataElement` shall not be referenced in the role `SecurityEventReportInstanceValue.contextDataElementIdentification`.

]

A Mentioned Class Tables

| | | | | |
|-------------------------|---|--------------|-------------|--|
| Class | ApplicationArrayDataType | | | |
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Datatype::Datatypes | | | |
| Note | An application data type which is an array, each element is of the same application data type. Tags: atp.recommendedPackage=ApplicationDataTypes | | | |
| Base | <i>ARElement, ARObject, ApplicationCompositeDataType, ApplicationDataType, AtpBlueprint, AtpBlueprintable, AtpClassifier, AtpType, AutosarDataType, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| dynamicArraySizeProfile | String | 0..1 | attr | Specifies the profile which the array will follow if it is a variable size array. |
| element | ApplicationArrayElement | 0..1 | aggr | This association implements the concept of an array element. That is, in some cases it is necessary to be able to identify single array elements, e.g. as input values for an interpolation routine. |

Table A.1: ApplicationArrayDataType

| | | | | |
|----------------------|---|--------------|-------------|--|
| Class | ApplicationArrayElement | | | |
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Datatype::DataPrototypes | | | |
| Note | Describes the properties of the elements of an application array data type. | | | |
| Base | <i>ARObject, ApplicationCompositeElementDataPrototype, AtpFeature, AtpPrototype, DataPrototype, Identifiable, MultilanguageReferrable, Referrable</i> | | | |
| Aggregated by | ApplicationArrayDataType.element , <i>AtpClassifier.atpFeature</i> | | | |
| Attribute | Type | Mult. | Kind | Note |
| arraySizeHandling | ArraySizeHandlingEnum | 0..1 | attr | The way how the size of the array is handled. |
| arraySizeSemantics | ArraySizeSemanticsEnum | 0..1 | attr | This attribute controls how the information about the array size shall be interpreted. |
| indexDataType | ApplicationPrimitiveDataType | 0..1 | ref | This reference can be taken to assign a CompuMethod of category TEXTTABLE to the array. The texttable entries associate a textual value to an index number such that the element with that index number is represented by a symbolic name. |
| maxNumberOfElements | PositiveInteger | 0..1 | attr | The maximum number of elements that the array can contain. Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime |

Table A.2: ApplicationArrayElement

| | | | | |
|----------------------|--|--------------|-------------|-------------|
| Class | ApplicationDataType (abstract) | | | |
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Datatype::Datatypes | | | |
| Note | <p>ApplicationDataType defines a data type from the application point of view. Especially it should be used whenever something "physical" is at stake.</p> <p>An ApplicationDataType represents a set of values as seen in the application model, such as measurement units. It does not consider implementation details such as bit-size, endianness, etc.</p> <p>It should be possible to model the application level aspects of a VFB system by using ApplicationData Types only.</p> | | | |
| Base | <i>ARElement, ARObject, AtpBlueprint, AtpBlueprintable, AtpClassifier, AtpType, AutosarDataType, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable</i> | | | |
| Subclasses | <i>ApplicationCompositeDataType, ApplicationDeferredDataType, ApplicationPrimitiveDataType</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| – | – | – | – | – |

Table A.3: ApplicationDataType

| | | | | |
|----------------------|---|--------------|-------------|-------------|
| Class | ApplicationDeferredDataType | | | |
| Package | M2::AUTOSARTemplates::AbstractPlatform | | | |
| Note | <p>A placeholder data type in which the precise application data type is deferred to a later stage.</p> <p>Tags: atp.Status=draft atp.recommendedPackage=ApplicationDataTypes</p> | | | |
| Base | <i>ARElement, ARObject, ApplicationDataType, AtpBlueprint, AtpBlueprintable, AtpClassifier, AtpType, AutosarDataType, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| – | – | – | – | – |

Table A.4: ApplicationDeferredDataType

| | | | | |
|----------------------|---|--------------|-------------|---|
| Class | ApplicationInterface | | | |
| Package | M2::AUTOSARTemplates::AbstractPlatform | | | |
| Note | <p>This represents the ability to define a PortInterface that consists of a composition of commands (method calls), indications (events) and attributes (fields)</p> <p>Tags: atp.Status=draft atp.recommendedPackage=Interfaces</p> | | | |
| Base | <i>ARElement, ARObject, AtpBlueprint, AtpBlueprintable, AtpClassifier, AtpType, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, PortInterface, Referrable</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| attribute | Field | * | aggr | <p>This represents the set of attributes defined in the context of an Abstract Platform ApplicationInterface.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=attribute.shortName, attribute.variation Point.shortLabel atp.Status=draft vh.latestBindingTime=blueprintDerivationTime</p> |





| Class | ApplicationInterface | | | |
|------------|-----------------------|---|------|--|
| command | ClientServerOperation | * | aggr | <p>This represents the collection of commands or function calls (with optional data arguments) defined in the context of an ApplicationInterface.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=command.shortName, command.variation Point.shortLabel atp.Status=draft vh.latestBindingTime=blueprintDerivationTime</p> |
| indication | VariableDataPrototype | * | aggr | <p>This represents the collection of indication or events (with optional data argument) defined in the context of an ApplicationInterface.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=indication.shortName, indication.variation Point.shortLabel atp.Status=draft vh.latestBindingTime=blueprintDerivationTime</p> |

Table A.5: ApplicationInterface

| Class | ApplicationPrimitiveDataType | | | |
|----------------------|---|--------------|-------------|-------------|
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Datatype::Datatypes | | | |
| Note | A primitive data type defines a set of allowed values. Tags: atp.recommendedPackage=ApplicationDataTypes | | | |
| Base | ARElement, ARObject, ApplicationDataType , AtpBlueprint, AtpBlueprintable, AtpClassifier, AtpType, AutosarDataType , CollectableElement, Identifiable , MultilanguageReferrable, PackageableElement, Referrable | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| – | – | – | – | – |

Table A.6: ApplicationPrimitiveDataType

| Class | ApplicationRecordDataType | | | |
|----------------------|--|--------------|-------------|-------------|
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Datatype::Datatypes | | | |
| Note | An application data type which can be decomposed into prototypes of other application data types. Tags: atp.recommendedPackage=ApplicationDataTypes | | | |
| Base | ARElement, ARObject, ApplicationCompositeDataType , ApplicationDataType , AtpBlueprint, AtpBlueprintable, AtpClassifier, AtpType, AutosarDataType , CollectableElement, Identifiable , MultilanguageReferrable, PackageableElement, Referrable | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| – | – | – | – | – |





| Class | ApplicationRecordDataType | | | |
|-------------------|--|---|------|---|
| element (ordered) | ApplicationRecordElement | * | aggr | <p>Specifies an element of a record.</p> <p>The aggregation of ApplicationRecordElement is subject to variability with the purpose to support the conditional existence of elements inside a ApplicationrecordData Type.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=element.shortName, element.variation Point.shortLabel vh.latestBindingTime=preCompileTime</p> |

Table A.7: ApplicationRecordDataType

| Class | ApplicationRecordElement | | | |
|----------------------|---|-------|------|--|
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Datatype::DataPrototypes | | | |
| Note | Describes the properties of one particular element of an application record data type. | | | |
| Base | <i>ARObject, ApplicationCompositeElementDataPrototype, AtpFeature, AtpPrototype, DataPrototype, Identifiable, MultilanguageReferrable, Referrable</i> | | | |
| Aggregated by | ApplicationRecordDataType.element , <i>AtpClassifier.atpFeature</i> | | | |
| Attribute | Type | Mult. | Kind | Note |
| isOptional | Boolean | 0..1 | attr | <p>This attribute represents the ability to declare the enclosing ApplicationRecordElement as optional. This means the that, at runtime, the ApplicationRecord Element may or may not have a valid value and shall therefore be ignored.</p> <p>The underlying runtime software provides means to set the ApplicationRecordElement as not valid at the sending end of a communication and determine its validity at the receiving end.</p> |

Table A.8: ApplicationRecordElement

| Class | AutosarDataType (abstract) | | | |
|----------------------|--|-------|------|--|
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Datatype::Datatypes | | | |
| Note | Abstract base class for user defined AUTOSAR data types for software. | | | |
| Base | <i>ARElement, ARObject, AtpClassifier, AtpType, CollectableElement, Identifiable, Multilanguage Referrable, PackageableElement, Referrable</i> | | | |
| Subclasses | <i>AbstractImplementationDataType, ApplicationDataType</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| swDataDef Props | SwDataDefProps | 0..1 | aggr | <p>The properties of this AutosarDataType.</p> <p>Stereotypes: atpSplitable</p> <p>Tags: atp.Splitkey=swDataDefProps</p> |

Table A.9: AutosarDataType

| | | | | |
|----------------------|---|--------------|-------------|--|
| Class | BaseTypeDirectDefinition | | | |
| Package | M2::MSR::AsamHdo::BaseTypes | | | |
| Note | This BaseType is defined directly (as opposite to a derived BaseType) | | | |
| Base | ARObject, BaseTypeDefinition | | | |
| Aggregated by | BaseType.baseTypeDefinition | | | |
| Attribute | Type | Mult. | Kind | Note |
| baseTypeEncoding | BaseTypeEncodingString | 0..1 | attr | This specifies, how an object of the current BaseType is encoded, e.g. in an ECU within a message sequence. Tags: xml.sequenceOffset=90 |
| baseTypeSize | PositiveInteger | 0..1 | attr | Describes the length of the data type specified in the container in bits. Tags: xml.sequenceOffset=70 |
| byteOrder | ByteOrderEnum | 0..1 | attr | This attribute specifies the byte order of the base type. Tags: xml.sequenceOffset=110 |
| memAlignment | PositiveInteger | 0..1 | attr | This attribute describes the alignment of the memory object in bits. E.g. "8" specifies, that the object in question is aligned to a byte while "32" specifies that it is aligned four byte. If the value is set to "0" the meaning shall be interpreted as "unspecified". Tags: xml.sequenceOffset=100 |
| nativeDeclaration | NativeDeclarationString | 0..1 | attr | This attribute describes the declaration of such a base type in the native programming language, primarily in the Programming language C. This can then be used by a code generator to include the necessary declarations into a header file. For example BaseType with shortName: "MyUnsignedInt" native Declaration: "unsigned short" Results in typedef unsigned short MyUnsignedInt; If the attribute is not defined the referring Implementation DataTypes will not be generated as a typedef by RTE. If a nativeDeclaration type is given it shall fulfill the characteristic given by baseTypeEncoding and baseTypeSize. This is required to ensure the consistent handling and interpretation by software components, RTE, COM and MCM systems. Tags: xml.sequenceOffset=120 |

Table A.10: BaseTypeDirectDefinition

| | | | | |
|----------------------|--|--------------|-------------|-------------|
| Class | BlockState | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class defines a block state that is part of the collection of block states belonging to a specific IdsmInstance. The Idsm shall discard any reported security event that is mapped to a filter chain containing a SecurityEventStateFilter that references the block state which is currently active in the Idsm. Tags: atp.Status=candidate | | | |
| Base | ARObject, Identifiable, MultilanguageReferrable, Referrable | | | |
| Aggregated by | IdsmInstance.blockState | | | |
| Attribute | Type | Mult. | Kind | Note |
| – | – | – | – | – |

Table A.11: BlockState

| | | | | |
|----------------------------|---|--------------|-------------|---|
| Class | CompositionSwComponentType | | | |
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Composition | | | |
| Note | <p>A CompositionSwComponentType aggregates SwComponentPrototypes (that in turn are typed by SwComponentTypes) as well as SwConnectors for primarily connecting SwComponentPrototypes among each others and towards the surface of the CompositionSwComponentType. By this means, a hierarchical structures of software-components can be created.</p> <p>Tags: atp.recommendedPackage=SwComponentTypes</p> | | | |
| Base | <i>ARElement, ARObject, AtpBlueprint, AtpBlueprintable, AtpClassifier, AtpType, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, SwComponentType</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| component | SwComponentPrototype | * | aggr | <p>Stereotypes: atpSplittable; atpVariation</p> <p>Tags: atp.Splitkey=component.shortName, component.variation Point.shortLabel vh.latestBindingTime=postBuild</p> |
| connector | SwConnector | * | aggr | <p>SwConnectors have the principal ability to establish a connection among PortPrototypes. They can have many roles in the context of a CompositionSwComponentType. Details are refined by subclasses.</p> <p>The aggregation of SwConnectors is subject to variability with the purpose to support variant data flow.</p> <p>Stereotypes: atpSplittable; atpVariation</p> <p>Tags: atp.Splitkey=connector.shortName, connector.variation Point.shortLabel vh.latestBindingTime=postBuild</p> |
| physical Dimension Mapping | PhysicalDimensionMappingSet | 0..1 | ref | <p>This reference identifies the PhysicalDimensionMappingSet that is applicable in the context of the enclosing CompositionSwComponentType. The PhysicalDimensionMappings contained in the PhysicalDimensionMappingSet shall be taken into account for the assessment of the compatibility of PhysicalDimensions in the context of creation of a PortInterfaceMapping in the scope of the CompositionSwComponentType.</p> |

Table A.12: CompositionSwComponentType

| | | | | |
|----------------------|---|--------------|-------------|-------------|
| Class | CompuMethod | | | |
| Package | M2::MSR::AsamHdo::ComputationMethod | | | |
| Note | <p>This meta-class represents the ability to express the relationship between a physical value and the mathematical representation.</p> <p>Note that this is still independent of the technical implementation in data types. It only specifies the formula how the internal value corresponds to its physical pendant.</p> <p>Tags: atp.recommendedPackage=CompuMethods</p> | | | |
| Base | <i>ARElement, ARObject, AtpBlueprint, AtpBlueprintable, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |





| Class | CompuMethod | | | |
|---------------------|---------------------|------|------|--|
| compuInternalToPhys | Compu | 0..1 | aggr | This specifies the computation from internal values to physical values. Stereotypes: atpSplittable Tags: atp.Splitkey=compuInternalToPhys xml.sequenceOffset=80 |
| compuPhysToInternal | Compu | 0..1 | aggr | This represents the computation from physical values to the internal values. Stereotypes: atpSplittable Tags: atp.Splitkey=compuPhysToInternal xml.sequenceOffset=90 |
| displayFormat | DisplayFormatString | 0..1 | attr | This property specifies, how the physical value shall be displayed e.g. in documents or measurement and calibration tools. Tags: xml.sequenceOffset=20 |
| unit | Unit | 0..1 | ref | This is the physical unit of the Physical values for which the CompuMethod applies. Tags: xml.sequenceOffset=30 |

Table A.13: CompuMethod

| Class | DataConstr | | | |
|----------------|---|-------|------|---|
| Package | M2::MSR::AsamHdo::Constraints::GlobalConstraints | | | |
| Note | This meta-class represents the ability to specify constraints on data. Tags: atp.recommendedPackage=DataConstrs | | | |
| Base | ARElement, ARObject, AtpBlueprint, AtpBlueprintable, CollectableElement, Identifiable, Multilanguage Referrable, PackageableElement, Referrable | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| dataConstrRule | DataConstrRule | * | aggr | This is one particular rule within the data constraints. Tags: xml.roleElement=true xml.roleWrapperElement=true xml.sequenceOffset=30 xml.typeElement=false xml.typeWrapperElement=false |

Table A.14: DataConstr

| Class | DataConstrRule | | | |
|---------------|--|-------|------|------|
| Package | M2::MSR::AsamHdo::Constraints::GlobalConstraints | | | |
| Note | This meta-class represents the ability to express one specific data constraint rule. | | | |
| Base | ARObject | | | |
| Aggregated by | DataConstr.dataConstrRule | | | |
| Attribute | Type | Mult. | Kind | Note |





| Class | DataConstrRule | | | |
|-----------------|-----------------|------|------|--|
| constrLevel | Integer | 0..1 | attr | <p>This attribute describes the category of a constraint. One of its functions is in the area of constraint violation, where it can be used from a certain level, to produce error messages.</p> <p>The lower the level, the more stringent the check.</p> <p>Used to distinguish hard or soft limits.</p> <p>Tags: xml.sequenceOffset=20</p> |
| internalConstrs | InternalConstrs | 0..1 | aggr | <p>Describes the limitations applicable on the internal domain (as opposed to the physical domain).</p> <p>Tags: xml.sequenceOffset=40</p> |
| physConstrs | PhysConstrs | 0..1 | aggr | <p>Describes the limitations applicable on the physical domain (as opposed to the internal domain).</p> <p>Tags: xml.sequenceOffset=30</p> |

Table A.15: DataConstrRule

| Class | DltApplication | | | |
|------------------------|---|-------|------|--|
| Package | M2::AUTOSARTemplates::LogAndTraceExtract | | | |
| Note | This meta-class represents the application from which the log and trace message originates. | | | |
| Base | ARObject, Identifiable , MultilanguageReferrable , Referrable | | | |
| Aggregated by | DltEcu.application | | | |
| Attribute | Type | Mult. | Kind | Note |
| applicationDescription | String | 0..1 | attr | This attribute can be used to describe the applicationId that is used in the log and trace message in more detail. |
| applicationId | String | 0..1 | attr | This attribute identifies the SW-C/BSW module in the log and trace message. |
| context | DltContext | * | ref | <p>Definition of ContextIds for the Application.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=context.dltContext, context.variation Point.shortLabel vh.latestBindingTime=systemDesignTime</p> |

Table A.16: DltApplication

| Class | DltArgument | | | |
|-----------------------|---|-------|------|---|
| Package | M2::AUTOSARTemplates::LogAndTraceExtract | | | |
| Note | This element defines an Argument in a DltMessage. | | | |
| Base | ARObject, Identifiable , MultilanguageReferrable , Referrable | | | |
| Aggregated by | DltArgument.dltArgumentEntry , DltMessage.dltArgument | | | |
| Attribute | Type | Mult. | Kind | Note |
| dltArgumentEntry | DltArgument | * | aggr | This aggregation is used to describe subElements of a DltArgument that defines a Structure. |
| length | PositiveInteger | 0..1 | attr | Describes the DltArgument length in case of Arrays and Strings in number of BaseType. |
| networkRepresentation | SwDataDefProps | 0..1 | aggr | Definition of the networkRepresentation of the DltArgument. |





| Class | DitArgument | | | |
|----------------|-------------|------|------|--|
| optional | Boolean | 0..1 | attr | This attribute defines whether the argument is optional or not. If set to true, the argument can be omitted from the payload of a DLT message. |
| predefinedText | Boolean | 0..1 | attr | This attribute defines whether the DitArgument is a predefinedText (Static Data). |
| variableLength | Boolean | 0..1 | attr | This attribute defines whether the length of the Dit Argument is variable (determined at runtime) or not. |

Table A.17: DitArgument

| Class | DitContext | | | |
|----------------------|--|-------|------|---|
| Package | M2::AUTOSARTemplates::LogAndTraceExtract | | | |
| Note | This meta-class represents the Context that groups Log and Trace Messages that are generated by an application. Tags: atp.recommendedPackage=DitContexts | | | |
| Base | ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| contextDescription | String | 0..1 | attr | This attribute can be used to describe the contextId that is used in the log and trace message in more detail. |
| contextId | String | 0..1 | attr | This attribute is used to group log and trace messages produced by an application to distinguish functionality. |
| ditMessage | DitMessage | * | ref | Group of Log and Trace Messages assigned to the Dit Context Stereotypes: atpSplittable; atpVariation Tags: atp.Splitkey=ditMessage.ditMessage, ditMessage.variationPoint.shortLabel vh.latestBindingTime=systemDesignTime |

Table A.18: DitContext

| Class | DitEcu | | | |
|----------------------|---|-------|------|---|
| Package | M2::AUTOSARTemplates::LogAndTraceExtract | | | |
| Note | This element represents an Ecu or Machine that produces logging and tracing information. Tags: atp.recommendedPackage=DitEcus | | | |
| Base | ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| application | DitApplication | * | aggr | Application on DitEcu that provides log or trace data. Stereotypes: atpSplittable; atpVariation Tags: atp.Splitkey=application.shortName, application.variationPoint.shortLabel vh.latestBindingTime=systemDesignTime |
| eculd | String | 0..1 | attr | This attribute defines the name of the ECU for use within the Dit protocol. |

Table A.19: DitEcu

| | | | | |
|-----------------------|---|--------------|-------------|--|
| Class | DitMessage | | | |
| Package | M2::AUTOSARTemplates::LogAndTraceExtract | | | |
| Note | This element defines a DitMessage. | | | |
| Base | ARObject, Identifiable , MultilanguageReferrable , Referrable | | | |
| Aggregated by | LogAndTraceMessageCollectionSet.ditMessage | | | |
| Attribute | Type | Mult. | Kind | Note |
| dltArgument (ordered) | DltArgument | * | aggr | Ordered collection of DltArguments in the DitMessage. |
| messageId | PositiveInteger | 0..1 | attr | This attribute defines the unique Id for the DitMessage. |
| messageLine Number | PositiveInteger | 0..1 | attr | This attribute describes the position in the source file in which this log message was called. |
| messageSource File | String | 0..1 | attr | This attribute describes the source file in which this log message was called. |
| messageType Info | String | 0..1 | attr | This attribute describes the message Type |
| privacyLevel | PrivacyLevel | 0..1 | aggr | The Privacy Level helps to identify the Log and Trace content towards the degree of privacy to it. |

Table A.20: DitMessage

| | | | | |
|----------------------|---|--------------|-------------|--|
| Class | FMAttributeDef | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | This metaclass represents the ability to define attributes for a feature. | | | |
| Base | ARObject, Identifiable , MultilanguageReferrable , Referrable | | | |
| Aggregated by | FMFeature.attributeDef | | | |
| Attribute | Type | Mult. | Kind | Note |
| defaultValue | Numerical | 0..1 | attr | This represents the default value of the attribute. |
| max | Limit | 0..1 | attr | Maximum possible value for the value of this attribute |
| min | Limit | 0..1 | attr | Minimum possible value for the value of this attribute |

Table A.21: FMAttributeDef

| | | | | |
|----------------------|--|--------------|-------------|--|
| Class | FMAttributeValue | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | This defines a value for the attribute that is referred to in the role definition. | | | |
| Base | ARObject | | | |
| Aggregated by | FMFeatureSelection.attributeValue | | | |
| Attribute | Type | Mult. | Kind | Note |
| definition | FMAttributeDef | 0..1 | ref | This refers to the definition of this attribute. Stereotypes: atpIdentityContributor |
| value | Numerical | 0..1 | attr | This represents the value of this attribute. |

Table A.22: FMAttributeValue

| | | | | |
|------------------------------|---|--------------|-------------|---|
| Class | FMFeature | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | A FMFeature describes an essential characteristic of a product. Each FMFeature is contained in exactly one FMFeatureModel. Tags: atp.recommendedPackage=FMFeatureModels | | | |
| Base | ARElement, ARObject, CollectableElement, Identifiable , MultilanguageReferrable, PackageableElement, Referrable | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| attributeDef | FMAttributeDef | * | aggr | This defines the attributes of the given feature. |
| decomposition | FMFeatureDecomposition | * | aggr | Lists the sub-features of a feature. |
| maximum IntendedBinding Time | BindingTimeEnum | 0..1 | attr | Defines an upper bound for the binding time of the variation points that are associated with the FMFeature. This attribute is meant as a hint for the development process. |
| minimum IntendedBinding Time | BindingTimeEnum | 0..1 | attr | Defines a lower bound for the binding time of the variation points that are associated with the FMFeature. This attribute is meant as a hint for the development process. |
| relation | FMFeatureRelation | * | aggr | Defines relations for FMFeatures, for example dependencies on other FMFeatures, or conflicts with other FMFeatures. A FMFeature can only be part of a FMFeatureSelectionSet if all its relations are fulfilled. |
| restriction | FMFeatureRestriction | * | aggr | Defines restrictions for FMFeatures. A FMFeature can only be part of a FMFeatureSelectionSet if at least one of its restrictions evaluates to true. |

Table A.23: FMFeature

| | | | | |
|----------------------|--|--------------|-------------|---|
| Class | FMFeatureDecomposition | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | A FMFeatureDecomposition describes dependencies between a list of features and their parent feature (i.e., the FMFeature that aggregates the FMFeatureDecomposition). The kind of dependency is defined by the attribute category. | | | |
| Base | ARObject | | | |
| Aggregated by | FMFeature.decomposition | | | |
| Attribute | Type | Mult. | Kind | Note |
| category | CategoryString | 0..1 | attr | The category of a FMFeatureDecomposition defines the type of dependency that is defined by the FMFeatureDecomposition. There are four different categories: MANDATORYFEATURE, OPTIONALFEATURE, ALTERNATIVEFEATURE, and MULTIPLEFEATURE. |
| feature | FMFeature | * | ref | The features that are affected by the dependency defined by the FMFeatureDecomposition. |
| max | PositiveInteger | 0..1 | attr | For a dependency of category MULTIPLEFEATURE, this defines the maximum number of features allowed. |
| min | PositiveInteger | 0..1 | attr | For a dependency of category MULTIPLEFEATURE, this defines the minimum number of features allowed. |

Table A.24: FMFeatureDecomposition

| | | | | |
|----------------------|--|--------------|-------------|---|
| Class | FMFeatureModel | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | A Feature model describes the features of a product line and their dependencies. Feature models are an optional part of an AUTOSAR model. Tags: atp.recommendedPackage=FMFeatureModels | | | |
| Base | ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| feature | FMFeature | * | ref | "feature" holds the list of features of the feature model. No FMFeature may be contained twice in this list. Also, each FMFeature may be contained on only one feature model. Stereotypes: atp.Splitable Tags: atp.Splitkey=feature |
| root | FMFeature | 0..1 | ref | The features of a feature model define a tree. The attribute root points to the root of this tree. |

Table A.25: FMFeatureModel

| | | | | |
|----------------------|---|--------------|-------------|--|
| Class | FMFeatureRelation | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | Defines relations for FMFeatures, for example dependencies on other FMFeatures, or conflicts with other FMFeatures. A FMFeature can only be part of a FMFeatureSelectionSet if all its relations are fulfilled. | | | |
| Base | ARObject, Identifiable, MultilanguageReferrable, Referrable | | | |
| Aggregated by | FMFeature.relation | | | |
| Attribute | Type | Mult. | Kind | Note |
| feature | FMFeature | * | ref | The FMFeature that is targeted by this FMFeature Relation. |
| restriction | FMConditionByFeaturesAndAttributes | 0..1 | aggr | If given, the condition shall evaluate to true, in order for the FMFeatureRelation to be active. |

Table A.26: FMFeatureRelation

| | | | | |
|----------------------|---|--------------|-------------|---|
| Class | FMFeatureSelection | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | A FMFeatureSelection represents the state of a particular FMFeature within a FMFeatureSelectionSet. | | | |
| Base | ARObject, Identifiable, MultilanguageReferrable, Referrable | | | |
| Aggregated by | FMFeatureSelectionSet.selection | | | |
| Attribute | Type | Mult. | Kind | Note |
| attributeValue | FMAtributeValue | * | aggr | This defines a value for the attribute that is referred to in the role definition. Note that a FMFeatureSelection cannot include two FMAtributeValues that refer to the same FMAtributeDef in the role definition. Tags: xml.sequenceOffset=50 |
| feature | FMFeature | 0..1 | ref | The FMFeature whose state is defined by this FMFeature Selection. Tags: xml.sequenceOffset=10 |





| Class | FMFeatureSelection | | | |
|------------------------------|--|------|------|--|
| maximum SelectedBinding Time | BindingTimeEnum | 0..1 | attr | Defines an upper bound for the binding time of the variation points that are associated with the FMFeature, and refines its maximumIntendedBindingTime. This attribute is meant as a hint for the development process. Tags: xml.sequenceOffset=40 |
| minimum SelectedBinding Time | BindingTimeEnum | 0..1 | attr | Defines a lower bound for the binding time of the variation points that are associated with the FMFeature, and refines its minimumIntendedBindingTime. This attribute is meant as a hint for the development process. Tags: xml.sequenceOffset=30 |
| state | FMFeatureSelection State | 0..1 | attr | Defines how the FMFeature that is described by this FMFeatureSelection contributes to the FMFeature SelectionSet. A FMFeature may have the state selected, deselected or undecided. Tags: xml.sequenceOffset=20 |

Table A.27: FMFeatureSelection

| Class | FMFeatureSelectionSet | | | |
|----------------------|--|-------|------|--|
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | A FMFeatureSelectionSet is a set of FMFeatures that describes a specific product. Tags: atp.recommendedPackage=FMFeatureModelSelectionSets | | | |
| Base | ARElement , ARObject , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| featureModel | FMFeatureModel | * | ref | All FMFeatures in this FMFeatureSelectionSet shall be part of the referenced FMFeatureModel. |
| include | FMFeatureSelectionSet | * | ref | Each FMFeatureSelectionSet may include one or more FMFeatureSelectionSets. This establishes a hierarchy among FMFeatureSelectionSets. See constr_5003 and constr_5025 for details. |
| selection | FMFeatureSelection | * | aggr | The set of FMFeatureSelections of this FMFeature SelectionSet. |

Table A.28: FMFeatureSelectionSet

| Enumeration | FMFeatureSelectionState |
|----------------------|--|
| Package | M2::AUTOSARTemplates::FeatureModelTemplate |
| Note | Defines how a particular FMFeature contributes to a FMFSelectionSet. |
| Aggregated by | FMFeatureSelection.state |
| Literal | Description |
| deselected | The feature is excluded from the selection. Tags: atp.EnumerationLiteralIndex=0 |
| selected | The feature is included in the selection. Tags: atp.EnumerationLiteralIndex=1 |
| undecided | It is not yet decided whether the feature shall be included into or excluded from the selection. Tags: atp.EnumerationLiteralIndex=2 |

Table A.29: FMFeatureSelectionState

| | | | | |
|-------------------|--|--------------|-------------|---|
| Class | «atpMixedString» FMFormulaByFeaturesAndAttributes (abstract) | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | An expression that has the syntax of the AUTOSAR formula language but uses only references to features or feature attributes (not system constants) as operands. | | | |
| Base | <i>ARObject, FormulaExpression</i> | | | |
| Subclasses | FMConditionByFeaturesAndAttributes | | | |
| Attribute | Type | Mult. | Kind | Note |
| attribute | FMAttributeDef | 0..1 | ref | An expression of type FMFormulaByFeaturesAndAttributes may refer to attributes of FMFeatures. |
| feature | FMFeature | 0..1 | ref | An expression of type FMFormulaByFeaturesAndAttributes may refer to FMFeatures. |

Table A.30: FMFormulaByFeaturesAndAttributes

| | | | | |
|-------------------|---|--------------|-------------|--|
| Class | «atpMixedString» FMFormulaByFeaturesAndSwSystemconst (abstract) | | | |
| Package | M2::AUTOSARTemplates::FeatureModelTemplate | | | |
| Note | An expression that has the syntax of the AUTOSAR formula language and may use references to features or system constants as operands. | | | |
| Base | <i>ARObject, FormulaExpression, SwSystemconstDependentFormula</i> | | | |
| Subclasses | FMConditionByFeaturesAndSwSystemconst | | | |
| Attribute | Type | Mult. | Kind | Note |
| feature | FMFeature | 0..1 | ref | An expression of type FMFormulaByFeaturesAndSwSystemconst may refer to FMFeatures. |

Table A.31: FMFormulaByFeaturesAndSwSystemconst

| | | | | |
|----------------------|---|--------------|-------------|-------------|
| Class | GeneralPurposeIPdu | | | |
| Package | M2::AUTOSARTemplates::SystemTemplate::Fibex::FibexCore::CoreCommunication | | | |
| Note | This element is used for AUTOSAR Pdus without attributes that are routed by the PduR. Please note that the category name of such Pdus is standardized in the AUTOSAR System Template. Tags: atp.recommendedPackage=Pdus | | | |
| Base | <i>ARElement, ARObject, CollectableElement, FibexElement, IPdu, Identifiable, MultilanguageReferrable, PackageableElement, Pdu, Referrable, UploadableDesignElement, UploadablePackageElement</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| – | – | – | – | – |

Table A.32: GeneralPurposeIPdu

| | | | | |
|----------------|--|--|--|--|
| Class | Identifiable (abstract) | | | |
| Package | M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::Identifiable | | | |
| Note | Instances of this class can be referred to by their identifier (within the namespace borders). In addition to this, Identifiables are objects which contribute significantly to the overall structure of an AUTOSAR description. In particular, Identifiables might contain Identifiables. | | | |
| Base | <i>ARObject, MultilanguageReferrable, Referrable</i> | | | |





| Class | Identifiable (abstract) | | | |
|-------------------|---|--------------|-------------|--|
| Subclasses | <p>ARPackage, <i>AbstractDolpLogicAddressProps</i>, <i>AbstractEvent</i>, <i>AbstractImplementationDataTypeElement</i>, <i>AbstractSecurityEventFilter</i>, <i>AbstractSecurityIdsmInstanceFilter</i>, <i>AbstractServiceInstance</i>, Application Endpoint, ApplicationError, AppliedStandard, ArtifactChecksum, <i>AtpBlueprint</i>, <i>AtpBlueprintable</i>, <i>AtpClassifier</i>, <i>AtpFeature</i>, AutosarOperationArgumentInstance, AutosarVariableInstance, BlockState, <i>BuildActionEntity</i>, BuildActionEnvironment, Chapter, ClassContentConditional, ClientIdDefinition, ClientServer Operation, Code, <i>CollectableElement</i>, ComManagementMapping, <i>CommConnectorPort</i>, <i>CommunicationConnector</i>, <i>CommunicationController</i>, Compiler, ConsistencyNeeds, ConsumedEventGroup, Coupling Port, <i>CouplingPortAbstractShaper</i>, <i>CouplingPortStructuralElement</i>, CryptoKeySlot, <i>CryptoServiceMapping</i>, DataPrototypeGroup, DataPrototypeTransformationPropsIdent, DataTransformation, DdsCp Domain, DdsCpPartition, DdsCpQosProfile, DdsCpTopic, DependencyOnArtifact, <i>DiagEventDebounceAlgorithm</i>, DiagnosticAuthTransmitCertificateEvaluation, DiagnosticConnectedIndicator, DiagnosticData Element, DiagnosticDebounceAlgorithmProps, DiagnosticFunctionInhibitSource, DiagnosticParameter Element, <i>DiagnosticRoutineSubfunction</i>, DltApplication, DltArgument, DltMessage, DolpInterface, Dolp LogicAddress, DolpRoutingActivation, EndToEndProtection, EthernetWakeupSleepOnDatalineConfig, EventHandler, ExclusiveArea, <i>ExecutableEntity</i>, <i>ExecutionTime</i>, FMAttributeDef, FMFeatureMap Assertion, FMFeatureMapCondition, FMFeatureMapElement, FMFeatureRelation, FMFeatureRestriction, FMFeatureSelection, FlexrayArTpNode, FlexrayTpPduPool, <i>FrameTriggering</i>, GeneralParameter, Global TimeGateway, <i>GlobalTimeMaster</i>, <i>GlobalTimeSlave</i>, <i>HeapUsage</i>, HwAttributeDef, HwAttributeLiteral Def, HwPin, HwPinGroup, <i>IEEE1722TpAcfBus</i>, <i>IEEE1722TpAcfBusPart</i>, IPSecRule, IPv6ExtHeader FilterList, ISignalToIPduMapping, ISignalTriggering, <i>IdentCaption</i>, ImpositionTime, InternalTriggering Point, Keyword, LifeCycleState, Linker, MacAddressVlanMembership, MacSecKay Participant, McDataInstance, MemorySection, ModeDeclaration, ModeDeclarationMapping, ModeSwitch Point, NetworkEndpoint, <i>NmCluster</i>, <i>NmNode</i>, <i>PackageableElement</i>, ParameterAccess, PduActivation RoutingGroup, PduToFrameMapping, PduTriggering, PerInstanceMemory, <i>PhysicalChannel</i>, PortGroup, <i>PortInterfaceMapping</i>, ResourceConsumption, RootSwCompositionPrototype, RptComponent, Rpt Container, RptExecutableEntity, RptExecutableEntityEvent, RptExecutionContext, RptProfile, RptService Point, RunnableEntityGroup, <i>SdgAttribute</i>, SdgClass, SecOcJobRequirement, SecureCommunication AuthenticationProps, SecureCommunicationFreshnessProps, SecurityEventContextDataElement, SecurityEventContextProps, <i>ServiceNeeds</i>, SignalServiceTranslationEventProps, SignalService TranslationProps, SocketAddress, SomeipTpChannel, <i>SpecElementReference</i>, <i>StackUsage</i>, Static SocketConnection, StructuredReq, SwGenericAxisParamType, SwServiceArg, SwcServiceDependency, SwitchAsynchronousTrafficShaperGroupEntry, SystemMapping, <i>TimeBaseResource</i>, <i>TimingClock</i>, TimingClockSyncAccuracy, TimingCondition, <i>TimingConstraint</i>, <i>TimingDescription</i>, TimingExtension Resource, TimingModelInstance, Topic1, TpAddress, TraceableTable, TraceableText, <i>TracedFailure</i>, TransformationISignalPropsIdent, <i>TransformationProps</i>, TransformationTechnology, Trigger, Variable Access, VariationPointProxy, ViewMap, VlanConfig, WaitPoint</p> | | | |
| Attribute | Type | Mult. | Kind | Note |
| adminData | AdminData | 0..1 | aggr | <p>This represents the administrative data for the identifiable object.</p> <p>Stereotypes: atpSplitable Tags: atp.Splitkey=adminData xml.sequenceOffset=-40</p> |
| annotation | Annotation | * | aggr | <p>Possibility to provide additional notes while defining a model element (e.g. the ECU Configuration Parameter Values). These are not intended as documentation but are mere design notes.</p> <p>Tags: xml.sequenceOffset=-25</p> |
| category | CategoryString | 0..1 | attr | <p>The category is a keyword that specializes the semantics of the Identifiable. It affects the expected existence of attributes and the applicability of constraints.</p> <p>Tags: xml.sequenceOffset=-50</p> |





| Class | Identifiable (abstract) | | | |
|--------------|--------------------------------|------|------|--|
| desc | MultiLanguageOverviewParagraph | 0..1 | aggr | <p>This represents a general but brief (one paragraph) description what the object in question is about. It is only one paragraph! Desc is intended to be collected into overview tables. This property helps a human reader to identify the object in question.</p> <p>More elaborate documentation, (in particular how the object is built or used) should go to "introduction".</p> <p>Tags: xml.sequenceOffset=-60</p> |
| introduction | DocumentationBlock | 0..1 | aggr | <p>This represents more information about how the object in question is built or is used. Therefore it is a DocumentationBlock.</p> <p>Tags: xml.sequenceOffset=-30</p> |
| uuid | String | 0..1 | attr | <p>The purpose of this attribute is to provide a globally unique identifier for an instance of a meta-class. The values of this attribute should be globally unique strings prefixed by the type of identifier. For example, to include a DCE UUID as defined by The Open Group, the UUID would be preceded by "DCE:". The values of this attribute may be used to support merging of different AUTOSAR models. The form of the UUID (Universally Unique Identifier) is taken from a standard defined by the Open Group (was Open Software Foundation). This standard is widely used, including by Microsoft for COM (GUIDs) and by many companies for DCE, which is based on CORBA. The method for generating these 128-bit IDs is published in the standard and the effectiveness and uniqueness of the IDs is not in practice disputed. If the id namespace is omitted, DCE is assumed. An example is "DCE:2fac1234-31f8-11b4-a222-08002b34c003". The uuid attribute has no semantic meaning for an AUTOSAR model and there is no requirement for AUTOSAR tools to manage the timestamp.</p> <p>Tags: xml.attribute=true</p> |

Table A.33: Identifiable

| Class | IdsDesign | | | |
|----------------------|---|--------------|-------------|-------------|
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | <p>This meta-class represents the root element of a SecurityExtract file for IDS development. It defines the scope of an IDS to be designed and implemented by referencing all SecurityExtract meta-classes that need to be included into the IDS development process.</p> <p>Tags: atp.Status=candidate atp.recommendedPackage=IdsDesigns</p> | | | |
| Base | ARElement, ARObject, CollectableElement, Identifiable , MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |





| Class | IdsDesign | | | |
|---------|------------------|---|-----|--|
| element | IdsCommonElement | * | ref | <p>This reference includes an element with IDS related definitions into the IdsDesign.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=element.idsCommonElement, element.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=systemDesignTime</p> |

Table A.34: IdsDesign

| Class | IdsmInstance | | | |
|-------------------------|--|-------|------|---|
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | <p>This meta-class provides the ability to create a relation between an EcuInstance and a specific class of filters for security events that apply for all security events reported on the referenced EcuInstance.</p> <p>Tags: atp.Status=candidate atp.recommendedPackage=IdsmInstanceToEcuInstanceMappings</p> | | | |
| Base | <i>ARElement, ARObject, CollectableElement, Identifiable, IdsCommonElement, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| blockState | BlockState | * | aggr | <p>This reference defines the BlockState in the collection BlockStateSet.</p> <p>Tags: atp.Status=candidate</p> |
| ecuInstance | EcuInstance | 0..1 | ref | <p>This reference identifies the EcuInstance whose security events (of any type) shall be limited by the specific class of filters.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=ecuInstance.ecuInstance, ecuInstance.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=systemDesignTime</p> |
| idsmInstanceCld | PositiveInteger | 0..1 | attr | <p>This attribute is used to provide a source identification in the context of reporting security events..</p> <p>Tags: atp.Status=candidate</p> |
| idsmModuleInstantiation | IdsmModuleInstantiation | 0..1 | ref | <p>This reference identifies the meta-class that defines the attributes for the IdsM configuration on a specific machine.</p> <p>Stereotypes: atpSplitable Tags: atp.Splitkey=idsmModuleInstantiation atp.Status=candidate</p> |
| rateLimitationFilter | IdsmRateLimitation | 0..1 | ref | <p>This reference identifies the applicable rate limitation filter for all security events on the related EcuInstance.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=rateLimitationFilter.idsmRateLimitation, rateLimitationFilter.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=preCompileTime</p> |





| Class | IdsmInstance | | | |
|-------------------------|--|------|------|---|
| signatureSupportAp | IdsmSignatureSupportAp | 0..1 | aggr | <p>The existence of this aggregation specifies that the IdsM shall add a signature to the QSEv messages it sends onto the network. The cryptographic algorithm and key to be used for this signature is further specified by the aggregated meta-class specifically for the Adaptive Platform.</p> <p>Stereotypes: atpSplitable Tags: atp.Splitkey=signatureSupportAp atp.Status=candidate</p> |
| signatureSupportCp | IdsmSignatureSupportCp | 0..1 | aggr | <p>The existence of this aggregation specifies that the IdsM shall add a signature to the QSEv messages it sends onto the network. The cryptographic algorithm and key to be used for this signature is further specified by the aggregated meta-class specifically for the Classic Platform.</p> <p>Stereotypes: atpSplitable Tags: atp.Splitkey=signatureSupportCp atp.Status=candidate</p> |
| timestampFormat | String | 0..1 | attr | <p>The existence of this attribute specifies that the IdsM shall add a timestamp to the QSEv messages it sends onto the network. I.e., if this attribute does not exist, no timestamp shall be added to the QSEv messages.</p> <p>The content of this attribute further specifies the timestamp format as follows: - "AUTOSAR" defines AUTOSAR standardized timestamp format according to the Synchronized Time-Base Manager - Any other string defines a proprietary timestamp format.</p> <p>Note: A string defining a proprietary timestamp format shall be prefixed by a company-specific name fragment to avoid collisions.</p> <p>Tags: atp.Status=candidate</p> |
| trafficLimitationFilter | IdsmTrafficLimitation | 0..1 | ref | <p>This reference identifies the applicable traffic limitation filter for all security events on the related EcuInstance.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=trafficLimitationFilter.idsmTrafficLimitation, trafficLimitationFilter.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=preCompileTime</p> |

Table A.35: IdsmInstance

| Class | IdsmRateLimitation | | | |
|---------------|---|-------|------|------|
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | <p>This meta-class represents the configuration of a rate limitation filter for security events. This means that security events are dropped if the number of events (of any type) processed within a configurable time window is greater than a configurable threshold.</p> <p>Tags: atp.Status=candidate</p> | | | |
| Base | <i>ARObject, AbstractSecurityIdsmInstanceFilter, Identifiable, MultilanguageReferrable, Referrable</i> | | | |
| Aggregated by | IdsmProperties.rateLimitationFilter | | | |
| Attribute | Type | Mult. | Kind | Note |





| Class | IdsmRateLimitation | | | |
|---------------------|--------------------|---|------|---|
| maxEventsInInterval | PositiveInteger | 1 | attr | This attribute configures the threshold for dropping security events if the number of all processed security events exceeds the threshold in the respective time interval. Tags: atp.Status=candidate |
| timeInterval | Float | 1 | attr | This attribute configures the length of the time interval in seconds for dropping security events if the number of all processed security events exceeds the configurable threshold within the respective time interval. Tags: atp.Status=candidate |

Table A.36: IdsmRateLimitation

| Class | IdsmSignatureSupportAp | | | |
|-----------------|--|-------|------|---|
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class defines, for the Adaptive Platform, the cryptographic algorithm and key to be used by the IdsM instance for providing signature information in QSEv messages. Tags: atp.Status=candidate | | | |
| Base | ARObject | | | |
| Aggregated by | IdsmInstance.signatureSupportAp | | | |
| Attribute | Type | Mult. | Kind | Note |
| cryptoPrimitive | String | 1 | attr | This attribute defines the cryptographic algorithm to be used for providing authentication information in QSEv messages. The content of this attribute shall comply to the "Cryptographic Primitives Naming Convention". Tags: atp.Status=candidate |
| keySlot | CryptoKeySlot | 0..1 | ref | This reference denotes the cryptographic key to be used by the cryptographic algorithm for providing authentication information in QSEv messages. Tags: atp.Status=candidate |

Table A.37: IdsmSignatureSupportAp

| Class | IdsmSignatureSupportCp | | | |
|------------------|---|-------|------|--|
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class defines, for the Classic Platform, the cryptographic algorithm and key to be used by the IdsM instance for providing signature information in QSEv messages. Tags: atp.Status=candidate | | | |
| Base | ARObject | | | |
| Aggregated by | IdsmInstance.signatureSupportCp | | | |
| Attribute | Type | Mult. | Kind | Note |
| authentication | CryptoServicePrimitive | 0..1 | ref | This reference denotes the cryptographic primitives for providing authentication information in QSEv messages. Tags: atp.Status=candidate |
| cryptoServiceKey | CryptoServiceKey | 0..1 | ref | This reference denotes the cryptographic key to be used by the cryptographic algorithm for providing authentication information in QSEv messages. Tags: atp.Status=candidate |

Table A.38: IdsmSignatureSupportCp

| | | | | |
|----------------------|--|--------------|-------------|---|
| Class | IdsmTrafficLimitation | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class represents the configuration of a traffic limitation filter for Security Events. This means that security events are dropped if the size (in terms of bandwidth) of security events (of any type) processed within a configurable time window is greater than a configurable threshold. Tags: atp.Status=candidate | | | |
| Base | ARObject, AbstractSecurityIdsmInstanceFilter, <i>Identifiable</i> , MultilanguageReferrable, Referrable | | | |
| Aggregated by | IdsmProperties.trafficLimitationFilter | | | |
| Attribute | Type | Mult. | Kind | Note |
| maxBytesInInterval | PositiveInteger | 0..1 | attr | This attribute configures the threshold for dropping security events if the size of all processed security events exceeds the threshold in the respective time interval. Tags: atp.Status=candidate |
| timeInterval | Float | 0..1 | attr | This attribute configures the length of the time interval in seconds for dropping security events if the size of all processed security events exceeds the configurable threshold within the respective time interval. Tags: atp.Status=candidate |

Table A.39: IdsmTrafficLimitation

| | | | | |
|----------------------|---|--------------|-------------|-------------|
| Class | PortPrototype (abstract) | | | |
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Components | | | |
| Note | Base class for the ports of an AUTOSAR software component. The aggregation of PortPrototypes is subject to variability with the purpose to support the conditional existence of ports. | | | |
| Base | ARObject, AtpBlueprintable, AtpFeature, AtpPrototype, <i>Identifiable</i> , MultilanguageReferrable, Referrable | | | |
| Subclasses | AbstractProvidedPortPrototype, AbstractRequiredPortPrototype | | | |
| Aggregated by | AtpClassifier.atpFeature, SwComponentType.port | | | |
| Attribute | Type | Mult. | Kind | Note |
| – | – | – | – | – |

Table A.40: PortPrototype

| | | | | |
|----------------------|--|--------------|-------------|--|
| Class | PrivacyLevel | | | |
| Package | M2::AUTOSARTemplates::LogAndTraceExtract | | | |
| Note | This meta-class defines the Privacy Level for a Log and Trace content. | | | |
| Base | ARObject | | | |
| Aggregated by | DltMessage.privacyLevel | | | |
| Attribute | Type | Mult. | Kind | Note |
| compuMethod | CompuMethod | 0..1 | ref | Reference to CompuMethod of category TEXTTABLE that defines the supported user-defined privacy levels. |
| privacyLevel | PositiveInteger | 0..1 | attr | The value that represents the privacy level and is transported in the Extension Header. |

Table A.41: PrivacyLevel

| | | | | |
|------------------------|---|--------------|-------------|---|
| Class | SecurityEventAggregationFilter | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class represents the aggregation filter that aggregates all security events occurring within a configured time frame into one (i.e. the last reported) security event. Tags: atp.Status=candidate | | | |
| Base | ARObject, AbstractSecurityEventFilter, Identifiable, MultilanguageReferrable, Referrable | | | |
| Aggregated by | SecurityEventFilterChain.aggregation | | | |
| Attribute | Type | Mult. | Kind | Note |
| contextData Source | SecurityEventContext DataSourceEnum | 0..1 | attr | This attribute defines whether the context data of the first or last time-aggregated security event shall be used for the resulting qualified security event. |
| minimum IntervalLength | TimeValue | 0..1 | attr | This attribute represents the configuration of the minimum time window in seconds for the aggregation filter. Tags: atp.Status=candidate |

Table A.42: SecurityEventAggregationFilter

| | | | | |
|-------------------------------|--|--------------|-------------|--|
| Class | SecurityEventContextDataDefinition | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class represents the possibility to add context data to the referencing SecurityEventDefinition. Tags: atp.Status=candidate atp.recommendedPackage=SecurityEventContextDataDefinitions | | | |
| Base | ARElement, ARObject, CollectableElement, Identifiable, IdsCommonElement, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| contextData Element (ordered) | SecurityEventContext DataElement | * | aggr | Description of contained SecurityEventContextData Elements. If the SecurityEventContextDataDefinition has a primitive type then only one SecurityEventContextData Element shall be used. If the SecurityEventContextData Definition is structured into several elements then for each one a SecurityEventContextDataElement shall be aggregated. Stereotypes: atpSplittable; atpVariation Tags: atp.Splitkey=contextDataElement.shortName, context DataElement.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=systemDesignTime |
| version | PositiveInteger | 0..1 | attr | Version number of the context data. For more details see the IDSM protocol specification. Tags: atp.Status=candidate |

Table A.43: SecurityEventContextDataDefinition

| | | | | |
|----------------|---|--|--|--|
| Class | SecurityEventContextDataElement | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class represents one ContextDataElement in the context of the aggregating SecurityEvent ContextDataDefinition. Tags: atp.Status=candidate | | | |
| Base | ARObject, Identifiable, MultilanguageReferrable, Referrable | | | |





| Class | | | | |
|--|--|--------------|-------------|---|
| SecurityEventContextDataElement | | | | |
| Aggregated by | SecurityEventContextDataDefinition.contextDataElement, SecurityEventContextDataElement.nestedContextData | | | |
| Attribute | Type | Mult. | Kind | Note |
| maxLength | PositiveInteger | 0..1 | attr | Describes the maximal length of the context data in case of Arrays and Strings. Tags: atp.Status=candidate |
| nestedContextData (ordered) | SecurityEventContextDataElement | * | aggr | This self-aggregation supports the description of nested context data. Tags: atp.Status=candidate |
| networkRepresentation | SwDataDefProps | 0..1 | aggr | Definition of the networkRepresentation of the context data element. Stereotypes: atpSplitable Tags: atp.Splitkey=networkRepresentation atp.Status=candidate |
| securityEventReportInstanceDefinition | SecurityEventReportInstanceDefinition | 0..1 | ref | This reference identifies the definition of the report instance. Stereotypes: atpSplitable Tags: atp.Splitkey=securityEventReportInstanceDefinition atp.Status=candidate |

Table A.44: SecurityEventContextDataElement

| Class | | | | |
|---|---|--------------|-------------|--|
| SecurityEventContextMapping (abstract) | | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class represents the ability to create an association between a collection of security events, an IdsM instance which handles the security events and the filter chains applicable to the security events. Tags: atp.Status=candidate | | | |
| Base | ARElement, ARObject, CollectableElement, Identifiable, IdsCommonElement, IdsMapping, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement | | | |
| Subclasses | SecurityEventContextMappingApplication, SecurityEventContextMappingBswModule, SecurityEventContextMappingCommConnector, SecurityEventContextMappingFunctionalCluster | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| filterChain | SecurityEventFilterChain | 0..1 | ref | This reference defines the filter chain to be applied to each of the referenced security events (depending on the reporting mode). Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=filterChain.securityEventFilterChain, filterChain.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=preCompileTime |





| Class | | SecurityEventContextMapping (abstract) | | |
|---------------------|------------------------------|--|------|---|
| idsmInstance | IdsmInstance | 0..1 | ref | This reference defines the IdsmInstance onto which the security events are mapped. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=idsmInstance.idsmInstance, idsmInstance.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=systemDesignTime |
| mappedSecurityEvent | SecurityEventContextProps | * | aggr | This aggregation represents (through further references) the SecurityEventDefinitions to be mapped to an IdsmInstance with additional mapping-dependent properties. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=mappedSecurityEvent.shortName, mappedSecurityEvent.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=preCompileTime |

Table A.45: SecurityEventContextMapping

| Class | | SecurityEventDefinition | | |
|------------------------------------|--|-------------------------|------|--|
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This meta-class defines a security-related event as part of the intrusion detection system. Tags: atp.Status=candidate atp.recommendedPackage=SecurityEventDefinitions | | | |
| Base | <i>ARElement, ARObject, CollectableElement, Identifiable, IdsCommonElement, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| eventSymbolName | SymbolProps | 0..1 | aggr | This aggregation defines optionally an alternative Event Name for the SecurityEventDefinition in case there is a collision of shortNames. Stereotypes: atpSplitable Tags: atp.Splitkey=eventSymbolName.shortName atp.Status=candidate |
| id | PositiveInteger | 0..1 | attr | This attribute represents the numerical identification of the defined security event. The identification shall be unique within the scope of the IDS. Tags: atp.Status=candidate |
| securityEventContextDataDefinition | SecurityEventContextDataDefinition | * | ref | Definition of additional context data that is reported with the security event in order to better support the analysis of a possible security threat. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=securityEventContextDataDefinition.securityEventContextDataDefinition, securityEventContextDataDefinition.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=systemDesignTime |

Table A.46: SecurityEventDefinition

| | | | | |
|----------------------|---|--------------|-------------|---|
| Class | SecurityEventFilterChain | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | <p>This meta-class represents a configurable chain of filters used to qualify security events. The different filters of this filter chain are applied in the follow order: SecurityEventStateFilter, SecurityEventOneEveryNFilter, SecurityEventAggregationFilter, SecurityEventThresholdFilter.</p> <p>Tags: atp.Status=candidate atp.recommendedPackage=SecurityFilterChains</p> | | | |
| Base | ARElement, ARObject, CollectableElement, Identifiable, IdsCommonElement, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| aggregation | SecurityEventAggregationFilter | 0..1 | aggr | <p>This aggregation represents the aggregation filter in the filter chain.</p> <p>Tags: atp.Status=candidate</p> |
| oneEveryN | SecurityEventOneEveryNFilter | 0..1 | aggr | <p>This aggregation represents the sampling filter in the filter chain.</p> <p>Tags: atp.Status=candidate</p> |
| state | SecurityEventStateFilter | 0..1 | aggr | <p>This aggregation represents the state filter in the event chain.</p> <p>Tags: atp.Status=candidate</p> |
| threshold | SecurityEventThresholdFilter | 0..1 | aggr | <p>This aggregation represents the threshold filter in the filter chain.</p> <p>Tags: atp.Status=candidate</p> |

Table A.47: SecurityEventFilterChain

| | | | | |
|----------------------|---|--------------|-------------|--|
| Class | SecurityEventOneEveryNFilter | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | <p>This meta-class represents the configuration of a sampling (i.e. every n-th event is sampled) filter for security events.</p> <p>Tags: atp.Status=candidate</p> | | | |
| Base | ARObject, AbstractSecurityEventFilter, Identifiable, MultilanguageReferrable, Referrable | | | |
| Aggregated by | SecurityEventFilterChain.oneEveryN | | | |
| Attribute | Type | Mult. | Kind | Note |
| n | PositiveInteger | 0..1 | attr | <p>This attribute represents the configuration of the sampling filter, i.e. it configures the parameter "n" that controls how many events (n-1) shall be dropped after a sampled event until a new sample is created.</p> <p>Tags: atp.Status=candidate</p> |

Table A.48: SecurityEventOneEveryNFilter

| | | | | |
|----------------|---|--|--|--|
| Class | SecurityEventReportInstanceDefinition | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | <p>This class shall be used to provide definition-level information for the identification of security-event context data.</p> <p>Tags: atp.Status=candidate atp.recommendedPackage=SecurityEventReportInstanceDefinitions</p> | | | |





| | | | | |
|---------------------------|---|--------------|-------------|--|
| Class | SecurityEventReportInstanceDefinition | | | |
| Base | ARElement, ARObject, CollectableElement, <i>Identifiable</i> , IdsCommonElement, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| contextTypeList (ordered) | String | * | attr | This attribute shall only be used for the case that an instanceRef is required. The attribute identifies the ordered collection of the type of context elements within the instanceRef. Tags: atp.Status=candidate |
| targetType | String | 0..1 | attr | This attribute shall only be used for the case that an instanceRef is required. The attribute identifies the type of the target element within the instanceRef. Tags: atp.Status=candidate |

Table A.49: SecurityEventReportInstanceDefinition

| | | | | |
|------------------------------------|--|--------------|-------------|---|
| Class | SecurityEventReportInstanceValue | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | This class shall be used to provide information for the identification of security-event context data on the value side. Tags: atp.Status=candidate atp.recommendedPackage=SecurityEventReportInstanceValues | | | |
| Base | ARElement, ARObject, CollectableElement, <i>Identifiable</i> , IdsCommonElement, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| contextData Element Identification | SecurityEventContextDataElement | 0..1 | ref | This reference contributes to the identification of the context data element. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=contextDataElementIdentification.securityEventContextDataElement, contextDataElementIdentification.variationPoint.shortLabel atp.Status=candidate vh.latestBindingTime=systemDesignTime |
| flatObject | Referrable | 0..1 | ref | This reference shall be used if the referenced object can directly be referenced using a flat reference. Stereotypes: atpUriDef Tags: atp.Status=candidate |
| id | PositiveInteger | 0..1 | attr | This attribute represents the numerical value used for the identification of the context data element. Tags: atp.Status=candidate |
| object | AtpFeature | 0..1 | iref | This reference shall be used of the target of the reference can only be identified by an instanceRef. Stereotypes: atpUriDef Tags: atp.Status=candidate InstanceRef implemented by: AnyInstanceRef |

Table A.50: SecurityEventReportInstanceValue

| | | | | |
|--------------------------|---|--------------|-------------|---|
| Class | SecurityEventStateFilter | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | <p>This meta-class represents the configuration of a state filter for security events. The referenced states represent a block list, i.e. the security events are dropped if the referenced state is the active state in the relevant state machine (which depends on whether the IdsM instance runs on the Classic or the Adaptive Platform).</p> <p>Tags: atp.Status=candidate</p> | | | |
| Base | ARObject, AbstractSecurityEventFilter, Identifiable, MultilanguageReferrable, Referrable | | | |
| Aggregated by | SecurityEventFilterChain.state | | | |
| Attribute | Type | Mult. | Kind | Note |
| blockIfState ActiveAp | ModeDeclaration | * | iref | <p>For the AP, this reference defines the machine states of the block list. That means, if a security event (mapped to the filter chain to which the SecurityEventStateFilter belongs to) is reported when the machine is in one of the block listed states, the IdsM shall discard the reported security event.</p> <p>Tags: atp.Status=candidate InstanceRef implemented by: FunctionGroupStateIn FunctionGroupSetInstanceRef</p> |
| blockIfState ActiveCp | BlockState | * | ref | <p>For the CP, this reference defines the states of the block list. That means, if a security event (mapped to the filter chain to which the SecurityEventStateFilter belongs to) is reported when the currently active block state in the IdsM is one of the referenced block listed states, the IdsM shall discard the reported security event.</p> <p>Tags: atp.Status=candidate</p> |

Table A.51: SecurityEventStateFilter

| | | | | |
|----------------------|---|--------------|-------------|---|
| Class | SecurityEventThresholdFilter | | | |
| Package | M2::AUTOSARTemplates::SecurityExtractTemplate | | | |
| Note | <p>This meta-class represents the threshold filter that drops (repeatedly at each beginning of a configurable time interval) a configurable number of security events . All subsequently arriving security events (within the configured time interval) pass the filter.</p> <p>Tags: atp.Status=candidate</p> | | | |
| Base | ARObject, AbstractSecurityEventFilter, Identifiable, MultilanguageReferrable, Referrable | | | |
| Aggregated by | SecurityEventFilterChain.threshold | | | |
| Attribute | Type | Mult. | Kind | Note |
| intervalLength | TimeValue | 0..1 | attr | <p>This attribute configures the time interval in seconds for one threshold filter operation.</p> <p>Tags: atp.Status=candidate</p> |
| threshold Number | PositiveInteger | 0..1 | attr | <p>This attribute configures the threshold number, i.e. how many security events in the configured time frame are dropped before subsequent events start to pass the filter.</p> <p>Tags: atp.Status=candidate</p> |

Table A.52: SecurityEventThresholdFilter

| | | | | |
|----------------|--|--|--|--|
| Class | SwBaseType | | | |
| Package | M2::MSR::AsamHdo::BaseTypes | | | |
| Note | <p>This meta-class represents a base type used within ECU software.</p> <p>Tags: atp.recommendedPackage=BaseTypes</p> | | | |





| | | | | |
|----------------------|---|--------------|-------------|-------------|
| Class | SwBaseType | | | |
| Base | <i>ARElement, ARObject, AtpBlueprint, AtpBlueprintable, BaseType, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable</i> | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |
| – | – | – | – | – |

Table A.53: SwBaseType

| | | | | |
|----------------------|--|--------------|-------------|---|
| Class | SwComponentPrototype | | | |
| Package | M2::AUTOSARTemplates::SWComponentTemplate::Composition | | | |
| Note | Role of a software component within a composition. | | | |
| Base | <i>ARObject, AtpFeature, AtpPrototype, Identifiable, MultilanguageReferrable, Referrable</i> | | | |
| Aggregated by | <i>AtpClassifier.atpFeature, CompositionSwComponentType.component</i> | | | |
| Attribute | Type | Mult. | Kind | Note |
| type | SwComponentType | 0..1 | tref | Type of the instance. Stereotypes: isOfType |

Table A.54: SwComponentPrototype

| | | | | |
|----------------------|--|--------------|-------------|---|
| Class | «atpVariation» SwDataDefProps | | | |
| Package | M2::MSR::DataDictionary::DataDefProperties | | | |
| Note | This class is a collection of properties relevant for data objects under various aspects. One could consider this class as a "pattern of inheritance by aggregation". The properties can be applied to all objects of all classes in which SwDataDefProps is aggregated. Tags: vh.latestBindingTime=codeGenerationTime | | | |
| Base | <i>ARObject</i> | | | |
| Aggregated by | <i>AutosarDataType.swDataDefProps, CompositeNetworkRepresentation.networkRepresentation, CppImplementationDataTypeElement.swDataDefProps, DataPrototype.swDataDefProps, DataPrototypeTransformationProps.networkRepresentationProps, DiagnosticDataElement.swDataDefProps, DiagnosticEnvDataElementCondition.swDataDefProps, DltArgument.networkRepresentation, FlatInstanceDescriptor.swDataDefProps, ImplementationDataTypeElement.swDataDefProps, InstantiationDataDefProps.swDataDefProps, ISignal.networkRepresentationProps, McDataInstance.resultingProperties, ParameterAccess.swDataDefProps, PerInstanceMemory.swDataDefProps, ReceiverComSpec.networkRepresentation, SecurityEventContextDataElement.networkRepresentation, SenderComSpec.networkRepresentation, SomeipDataPrototypeTransformationProps.networkRepresentation, SwPointerTargetProps.swDataDefProps, SwServiceArg.swDataDefProps, SwSystemconst.swDataDefProps, SystemSignal.physicalProps</i> | | | |
| Attribute | Type | Mult. | Kind | Note |
| annotation | Annotation | * | aggr | This aggregation allows to add annotations (yellow pads ...) related to the current data object. Tags: xml.roleElement=true xml.roleWrapperElement=true xml.sequenceOffset=20 xml.typeElement=false xml.typeWrapperElement=false |
| baseType | SwBaseType | 0..1 | ref | Base type associated with the containing data object. Tags: xml.sequenceOffset=50 |





| Class | «atpVariation» SwDataDefProps | | | |
|----------------------|-------------------------------|------|------|---|
| compuMethod | CompuMethod | 0..1 | ref | Computation method associated with the semantics of this data object. Tags: xml.sequenceOffset=180 |
| dataConstr | DataConstr | 0..1 | ref | Data constraint for this data object. Tags: xml.sequenceOffset=190 |
| displayFormat | DisplayFormatString | 0..1 | attr | This property describes how a number is to be rendered e.g. in documents or in a measurement and calibration system. Tags: xml.sequenceOffset=210 |
| displayPresentation | DisplayPresentationEnum | 0..1 | attr | This attribute controls the presentation of the related data for measurement and calibration tools. |
| invalidValue | ValueSpecification | 0..1 | aggr | Optional value to express invalidity of the actual data element. Tags: xml.sequenceOffset=255 |
| swComparisonVariable | SwVariableRefProxy | * | aggr | Variables used for comparison in an MCD process. Tags: xml.sequenceOffset=170 xml.typeElement=false |
| swHostVariable | SwVariableRefProxy | 0..1 | aggr | Contains a reference to a variable which serves as a host-variable for a bit variable. Only applicable to bit objects. Tags: xml.sequenceOffset=220 xml.typeElement=false |
| swTextProps | SwTextProps | 0..1 | aggr | the specific properties if the data object is a text object. Tags: xml.sequenceOffset=120 |
| unit | Unit | 0..1 | ref | Physical unit associated with the semantics of this data object. This attribute applies if no compuMethod is specified. If both units (this as well as via compuMethod) are specified the units shall be compatible. Tags: xml.sequenceOffset=350 |

Table A.55: SwDataDefProps

| | | | | |
|----------------------|--|--------------|-------------|-------------|
| Class | SwSystemconst | | | |
| Package | M2::MSR::DataDictionary::SystemConstant | | | |
| Note | This element defines a system constant which serves an input to select a particular variation point. In particular a system constant serves as an operand of the binding function (swSyscond) in a Variation point. Note that the binding process can only happen if a value was assigned to to the referenced system constants. Tags: atp.recommendedPackage=SwSystemconst | | | |
| Base | ARElement, ARObject, AtpDefinition, CollectableElement, Identifiable , MultilanguageReferrable, PackageableElement, Referrable | | | |
| Aggregated by | ARPackage.element | | | |
| Attribute | Type | Mult. | Kind | Note |





| Class | SwSystemconst | | | |
|-----------------|--------------------------------|------|------|---|
| swDataDef Props | SwDataDefProps | 0..1 | aggr | <p>This denotes the data definition properties of the system constant. This supports to express the limits and optionally a conversion within the internal to physical values by a compu method.</p> <p>Stereotypes: atpSplitable Tags: atp.Splitkey=swDataDefProps xml.sequenceOffset=40</p> |

Table A.56: SwSystemconst

| Class | System | | | |
|--------------------------|--|-------|------|---|
| Package | M2::AUTOSARTemplates::SystemTemplate | | | |
| Note | The top level element of the Abstract Platform System Description. Tags: atp.recommendedPackage=Systems | | | |
| Base | <i>ARElement, ARObject, AtpClassifier, AtpFeature, AtpStructureElement, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable, UploadableDesignElement, UploadablePackageElement</i> | | | |
| Aggregated by | ARPackage.element, AtpClassifier.atpFeature | | | |
| Attribute | Type | Mult. | Kind | Note |
| mapping | SystemMapping | * | aggr | <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=mapping.shortName, mapping.variationPoint.shortLabel vh.latestBindingTime=postBuild</p> |
| rootSoftware Composition | RootSwComposition Prototype | 0..1 | aggr | <p>Aggregation of the root software composition, containing all software components in the System in a hierarchical structure.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=rootSoftwareComposition.shortName, rootSoftwareComposition.variationPoint.shortLabel vh.latestBindingTime=systemDesignTime</p> |
| systemVersion | RevisionLabelString | 0..1 | attr | Version number of the System Description. |

Table A.57: System

B Change history of AUTOSAR traceable items

Please note that the lists in this chapter also include traceable items that have been removed from the specification in a later version. These items do not appear as hyperlinks in the document.

B.1 Traceable item history of this document according to AUTOSAR Release R24-11

B.1.1 Added Constraints in R24-11

| Number | Heading |
|----------------------------------|--|
| [constr_12000] | Usage of references in the context of SecurityEventReportInstanceValue |
| [constr_12001] | Existence of attribute SecurityEventReportInstanceValue.id |
| [constr_12002] | Existence of attribute SecurityEventReportInstanceDefinition.targetType |
| [constr_12003] | Existence of reference SecurityEventReportInstanceValue.contextDataElementIdentification |
| [constr_9339] | SecurityEventContextDataElement.maxLength usage restriction |
| [constr_9340] | Datatype of an Array |
| [constr_9341] | CompuMethod in SecurityEventContextDataElement.networkRepresentation |
| [constr_9342] | Allowed range of SecurityEventContextDataDefinition.version |

Table B.1: Added Constraints in R24-11

B.1.2 Changed Constraints in R24-11

| Number | Heading |
|---------------------------------|---|
| [constr_5098] | Allowed SwDataDefProps attributes for DltArgument.networkRepresentation |
| [constr_5301] | Existence of DltMessage.messageId |
| [constr_5302] | Restriction in usage of DltArgument.optional attribute |
| [constr_5303] | Restriction of baseTypeSize of a DltArgument |
| [constr_5304] | Datatype of an Array |
| [constr_5305] | CompuMethod in DltArgument.networkRepresentation |
| [constr_5340] | Range of DltMessage.privacyLevel.privacyLevel |
| [constr_5341] | Range of PrivacyLevel.compuMethod |
| [constr_5363] | Allowed usage of attributes for description of payload data types |





| Number | Heading |
|-------------------------------|---|
| [constr_5364] | Allowed usage of attributes in case of a dltArgumentEntry |

Table B.2: Changed Constraints in R24-11

B.1.3 Deleted Constraints in R24-11

none