

Document Title	Collection of constraints on AUTOSAR M1 models
Document Owner	AUTOSAR
Document Responsibility	AUTOSAR
Document Identification No	635

Document Status	published
Part of AUTOSAR Standard	Foundation
Part of Standard Release	R20-11

Document Change History			
Date	Release	Changed by	Description
2020-11-30	R20-11	AUTOSAR Release Management	<ul style="list-style-type: none"> Updated constraints according to changes in TPS documents Removed all SWS constraints Split document into 3 documents, reflecting the standards CP, AP, FO
2019-11-28	R19-11	AUTOSAR Release Management	<ul style="list-style-type: none"> Updated constraints according to changes in SWS and TPS documents Changed Document Status from Final to published
2018-10-31	4.4.0	AUTOSAR Release Management	Completion of constraint context by adding tables and classtables referenced by model constraints to this document
2017-12-08	4.3.1	AUTOSAR Release Management	minor corrections / clarifications / editorial changes; For details please refer to the ChangeDocumentation
2016-11-30	4.3.0	AUTOSAR Release Management	minor corrections / clarifications / editorial changes; For details please refer to the ChangeDocumentation
2015-07-31	4.2.2	AUTOSAR Release Management	minor corrections / clarifications / editorial changes; For details please refer to the ChangeDocumentation
2014-10-31	4.2.1	AUTOSAR Release Management	Editorial changes

2013-10-31	4.1.2	AUTOSAR Release Management	Updated constraints according to changes in SWS and TPS documents
2013-03-15	4.1.1	AUTOSAR Administration	Initial Release

Disclaimer

This work (specification and/or software implementation) and the material contained in it, as released by AUTOSAR, is for the purpose of information only. AUTOSAR and the companies that have contributed to it shall not be liable for any use of the work.

The material contained in this work is protected by copyright and other types of intellectual property rights. The commercial exploitation of the material contained in this work requires a license to such intellectual property rights.

This work may be utilized or reproduced without any modification, in any form or by any means, for informational purposes only. For any other purpose, no part of the work may be utilized or reproduced, in any form or by any means, without permission in writing from the publisher.

The work has been developed for automotive applications only. It has neither been developed, nor tested for non-automotive applications.

The word AUTOSAR and the AUTOSAR logo are registered trademarks.

Table of Contents

1	Document Information and Content	6
2	Autosar Model Constraints	6
2.1	TPS_AbstractPlatformSpecification	6
2.2	TPS_FeatureModelExchangeFormat	8
2.3	TPS_GenericStructureTemplate	12
2.4	TPS_SecurityExtractTemplate	22
2.5	TPS_StandardizationTemplate	24
A	Mentioned Class Tables	32

References

- [1] Generic Structure Template
AUTOSAR_TPS_GenericStructureTemplate
- [2] Specification of Safety Extensions
AUTOSAR_TPS_SafetyExtensions
- [3] XML Path language (XPath)
<http://www.w3.org/TR/xpath/>

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 TPS_AbstractPlatformSpecification

[constr_6803] Standardized values of `CompositionSwComponentType.category`
 [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 `CompositeInterface.category` [The `category` of a `CompositeInterface` can be set to either:

- `XP_PORT_CTRL_SECURITY`
- `XP_PORT_CTRL_TIMESYNC`
- `XP_PORT_DATA_STORAGE`
- `XP_PORT_DATA_APPLICATION`

]()

[constr_6807] Exclusivity of a `CompositeInterface` to an Abstract Platform [A `CompositeInterface` shall not type a `PortPrototype` unless the `category` of the `System` is `ABSTRACT_PLATFORM_SYSTEM_DESCRIPTION`.

]()

[constr_6810] Applicable categories for data types in an abstract platform
 [Table 2.1 defines the applicable data type `category`s relating to applicable meta-model classes.

]()

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.

Table 2.1: Usage of [category](#) for Data Types

[constr_6812] [SwDataDefProps](#) applicable to [ApplicationDataTypes](#) exclusive to the abstract platform [A complete list of the allowed [SwDataDefProps](#) attributes and their multiplicities which are allowed for a given [category](#) is shown in table 2.2.

]()

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

Table 2.2: Allowed Attributes vs. **category** for **ApplicationDataTypes**

[constr_6814] **Restriction of ApplicationDeferredDataType.category** [The **category** of an **ApplicationDeferredDataType** shall be unassigned/undefined.

]()

2.2 TPS_FeatureModelExchangeFormat

[constr_5001] **FMFeatureRelation** shall not establish self-references [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** [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.

¹don't care

⌋()

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

$$\forall i, j \in \{1, 2, \dots, n\} : i \neq j \Rightarrow f_i \neq f_j$$

]()

[constr_5019] FMFeatureModel shall not contain the same FMFeature twice [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 [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. [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. [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` [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 [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 [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 `FMFeatureSelection` 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 `FMAttributeDef`

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

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

]()

[constr_5027] Semantics of attributes `max` and `min` of `FMAttributeDef` in class `FMAttributeValue`

[Let v be the attribute `value` of an `FMAttributeValue` V that refers to `FMAttributeDef` 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:

$$\min \leq v \leq \max$$

]()

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

$$\forall i \in \{1, \dots, n\} : i \neq j \Rightarrow f_i \neq f_j$$

]()

2.3 TPS_GenericStructureTemplate

[constr_2501] Blueprint of blueprints are not supported [Note that objects modeled particularly as a “blueprint” (e.g. `PortPrototypeBlueprint`) also live in a package of category `BLUEPRINT`. Strictly speaking this means that they can be “blueprints” of “blueprints”. This indirection is not intended and not supported.

]()

[constr_2502] Merged model shall be compliant to the meta-model [A model merged from `<<atpSplittable>>` elements shall adhere to the consistency rules of the *meta-model*. Note that the required lower multiplicities depend on the process phase therefore the AUTOSAR schema sets them mainly to 0. This also applies to the bound model.

]()

[constr_2503] Bound model shall be compliant to the pure meta-model [The *completely bound M1 model*² shall adhere to the *pure meta-model* with respect to consistency rules and semantic constraints defined in the related template specifications. Especially, the multiplicities in the bound model shall conform to the multiplicities and the constraints of the *pure meta-model*.

]()

[constr_2504] Constraint to `bindingTime` [The tag `vh.latestBindingTime` *constraints* the value of the attribute `bindingTime` from [TPS_GST_00190]. Hence, it defines the latest point in methodology which is allowed as value for `bindingTime` of this particular application of `<<atpVariation>>`.

]()

[constr_2505] Multiplicity after binding [if $\text{Phase} \geq \{\text{partRole}\}.\text{BindingTime}$ then number of $\{\text{partRole}\}$'s = n

]()

[constr_2506] Attributes in property set pattern [On M1 level, let C be the set of attributes (or aggregated elements³) that would have been in the original⁴ `{PropertySetClass}` object, and C_1, \dots, C_n be the respective sets of attributes in the `{PropertySetClass}Conditional` objects **for a given variant**. Also, let C' be the set of non-optional attributes, e.g., those with a lower multiplicity of 1.

We define the following constraints:

$$\begin{aligned} \forall C_i, C_j \text{ in the given variant : } C_i \cap C_j &= \emptyset \\ C' &\subseteq C_1 \cup C_2 \cup \dots C_n \subseteq C \end{aligned}$$

]()

[constr_2507] `EvaluatedVariantSet` shall not refer to itself [An `EvaluatedVariantSet` shall not refer to itself directly or via other `EvaluatedVariantSet`.

²Completely bound includes post build!

³The constraints defined in this section apply to attributes as well as aggregates elements, due to the close relationship of the two in the AUTOSAR meta-model. For simplicity, the rest of this section talks about “attributes” only.

⁴In this context, “original” means `{PropertySetClass}` without the stereotype `<<atpVariation>>`. In other words, “original” means “as in the pure meta-model”.

]()

[constr_2508] Name space of `shortName` [The content of `shortName` needs to be unique (case insensitive) within a given `Identifiable`. Note that the check for uniqueness of `shortName` shall be performed case insensitively. This supports the good practice that names should not differ in upper / lower case only which would cause a lot of confusion.

The term “case insensitive” indicates that the characters in the sets

```
{a b c d e f g h i j k l m n o p q r s t u v w x y z}  
{A B C D E F G H I J K L M N O P Q R S T U V W X Y Z}
```

are respectively considered to be the same. In other words case-insensitive check for uniqueness of `shortNames` results in the fact that e.g. elements with `shortName` "X" and "x" are considered the same and shall **not** exist in the same package.

]()

[constr_2509] Uniqueness of `ReferenceBase.shortLabel` in the scope of an `ARPackage` [The `shortLabel` of any given `ReferenceBase` defined in the scope of an `ARPackage` shall be unique within the scope of the enclosing `ARPackage`.

]()

[constr_2510] only one default `ReferenceBase` [Only one `ReferenceBase` per level can be marked as default (`default="true"`).

]()

[constr_2511] Named reference bases shall be available [If there is a relative references, then one of the containing packages shall have a `referenceBase` with a `shortLabel` equal to the `base` of the reference.

]()

[constr_2512] `shortName` uniqueness constraint for variants [`shortName` + `shortLabel` of a variant element shall be unique within the name space established by the surrounding `Identifiable`.

]()

[constr_2514] `shortLabel` in `VariationPoint` shall be unique [The combination of `shortName` and `shortLabel` shall be unique within the next enclosing `Identifiable` {WholeClass}. In case the `shortName` does not exist on the {PartClass} the `shortLabel` is unnecessary. In case the `shortName` of the {PartClass} is unique in the context of the {WholeClass} the `shortLabel` is unnecessary.

]()

[constr_2515] Categories of packages shall not conflict [If a non empty category is defined for a package, then all sub packages shall have empty category or the same

category. See table 2.4. Additionally, the "Rules for references between elements in packages with specific categories" shall apply. See table ??.

]()

	child + category (also indirect children)						
parent category	empty	BLUEPRINT	STANDARD	EXAMPLE	ICS	cus-tom1	cus-tom2
empty	ok	ok	ok	ok	ok	ok	ok
BLUEPRINT	ok	ok	conflict	conflict	conflict	conflict	conflict
STANDARD	ok	conflict	ok	conflict	conflict	conflict	conflict
EXAMPLE	ok	conflict	conflict	ok	conflict	conflict	conflict
ICS	ok	conflict	conflict	conflict	ok	conflict	conflict
custom1	ok	conflict	conflict	conflict	conflict	ok	conflict
custom2	ok	conflict	conflict	conflict	conflict	conflict	ok

Table 2.3: Rules for categories of sub packages

	target package category (if category is empty, then the parent category applies)						
category of package that contains reference source element (if category is empty, then the parent category applies)	empty	BLUEPRINT	STANDARD	EXAMPLE	ICS	cus-tom1	cus-tom2
empty	ok	ok	ok	ok	ok	ok	ok
BLUEPRINT	ok	ok	ok	conflict	ok	conflict	conflict
STANDARD	ok	conflict	ok	conflict	conflict	conflict	conflict
EXAMPLE	ok	ok	ok	ok	ok	conflict	conflict
ICS	ok	conflict	ok	conflict ⁵	ok	conflict	conflict
custom1	ok	ok	ok	ok	ok	ok	ok
custom2	ok	ok	ok	ok	ok	ok	ok

Table 2.4: Rules for references between elements in packages with specific categories

[constr_2516] Return type of an [AttributeValueVariationPoint](#) [When such a formula is evaluated by a software tool, and the return value of the formula is shall be compatible to the type of the attribute in the pure meta-model.

]()

⁵see [\[constr_2573\]](#) for details

[constr_2517] `postBuildVariantCondition` only for `PostBuild` [Aggregation of `PostBuildVariantCondition` in `VariationPoint` is only allowed if the annotated model states `vh.latestBindingTime` to `PostBuild`.

]()

[constr_2518] Binding time is constrained [Note that this binding time is again constrained by the value of the tag `vh.latestBindingTime`.

]()

[constr_2519] `PredefinedVariants` need to be consistent [If a `PredefinedVariant` plus its `includedVariants` references more than one `SwSystemconstantValueSet` all `value` attributes in `SwSystemconstValues` for a particular `SwSystemconst` shall be identical.

]()

[constr_2520] Nesting of lists shall be limited [The nesting of lists shall be limited to a reasonable depth such that it can safely be rendered on A4 pages. A reasonable approach is not to nest more than three levels.

]()

[constr_2521] The `shortLabel` in `AttributeValueVariationPoint` shall be unique [The `shortLabel` shall be unique (case insensitive) within the next enclosing `Identifiable` and is used to individually address variation points in the *variant-rich M1 model*.

Note that the check for uniqueness of `shortLabel` shall be performed case insensitively. This supports the good practice that `shortLabels` should not differ in upper / lower case only which would cause a lot of confusion.

The term 'case insensitive' indicates that the characters in the sets

```
{a b c d e f g h i j k l m n o p q r s t u v w x y z}
{A B C D E F G H I J K L M N O P Q R S T U V W X Y Z}
```

are respectively considered to be the same. In other words case-insensitive check for uniqueness of `shortLabel` results in the fact that e.g. elements with `shortLabel` 'X' and 'x' are considered the same and shall not exist in the same context.

]()

[constr_2522] Notes should not be nested [Note even if it is possible to nest notes it is not recommended to do so, since it might lead to problems with the rendering of the note icon.

]()

[constr_2523] Used languages need to be consistent [The used languages of an AUTOSAR file are specified in the top level `adminData`. All other elements shall be provided in the languages specified for the document.

]()

[constr_2524] Non splitable elements in one file [If the *aggregation/attribute* is **not** `«atpSplitable»`, then all aggregated element(s) shall be described in the same physical file as the aggregating element.

]()

[constr_2525] Non splitable elements shall not be repeated [Properties (namely aggregations, references and primitive attributes) which are not marked as `«atpSplitable»` shall be placed in one physical file. They shall not be repeated in the split files unless they are an attribute which is used as a part of the split key. Another special case is handling of `«atpStructuredComment»`, see [TPS_GST_00382].

]()

[constr_2533] Documentation context is either a feature or an identifiable [One particular `DocumentationContext` shall be either a feature or an identifiable but not both at the same time. If this is desired, one should create multiple `DocumentationContext`.

]()

[constr_2534] Limits of unlimited Integer [Practically `UnlimitedInteger` shall be limited such that it fits into 64 bit.

If a signed value is represented the min value can be down to -9223372036854775808 (0x800000000000000014) and the max value can be up to 9223372036854775807 (0x7fffffffffffffffffff).

If an unsigned value is represented the min value can be down to 0 and the max value can be up to 18446744073709551615 (0xffffffffffffffff).

]()

[constr_2537] Variation of `PackageableElement` is limited to components resp. modules [Variation of `ARElement` in `ARPackage` shall be applied only to elements on a kind of component level. In particular this is `BswModuleDescription`, `Documentation`, `Implementation`, `SwComponentType`, `TimingExtension`. This constraint only applies if the `PackageableElement` is not a blueprint.

]()

[constr_2538] Global reference is limited to certain elements [The ability to perform a global reference is limited to `Chapter`, `Topic1`, `Caption`, `Traceable`, `Xref-Target`, `Std`, `Xdoc`, `Xfile`

]()

[constr_2547] Ordered collections cannot be split into different partial models [Ordered collections cannot be split. In other words: Contrary to the semantics of unordered collections - which can be distributed between partial models - ordered col-

lections can only be placed as a whole in one of the partial models. Otherwise the merge approach would influence the semantics of the collections.

]()

[constr_2557] No `VariationPoints` where `vh.latestBindingTime` set to `BlueprintDerivationTime` in system configurations [Blueprints are **not** part of a system configuration. In consequence of this, in a system configuration there shall be no `VariationPoint` where `vh.latestBindingTime` is restricted to `BlueprintDerivationTime` by the meta-model.

]()

[constr_2558] If `vh.latestBindingTime` is `BlueprintDerivationTime` then there shall only be `blueprintCondition` or `formalBlueprintGenerator` respectively `blueprintValue` [`VariationPoints` with `vh.latestBindingTime` restricted to `BlueprintDerivation` shall not have `swSyscond` nor `postBuildVariantCondition`.

]()

[constr_2559] No nested `VariationPoint` [As `blueprintCondition` is a `DocumentationBlock` it could again contain `VariationPoints` and therefore would allow nesting of `VariationPoints`. This is not intended and shall not be used.

]()

[constr_2567] Undefined Value in Attribute Value Blueprints [If a `blueprintValue` is specified, then the `value` defined by the `AttributeValueVariationPoint` is not used and should therefore at least contain one term `undefined` which is to be refined when deriving objects from this blueprint.

]()

[constr_2572] Unique Control of Document Languages [The settings for multiple languages are specified in the top-Level `AdminData` only

]()

[constr_2573] ICS shall not reference examples [ICS is like a productive Model and therefore shall not reference to an `EXAMPLE`. Such a reference would be useless since the target needs to be ignored in the ICS.

]()

[constr_2574] `globalInPackage` for global elements only [`ReferenceBase.globalInPackage` is allowed only if `isGlobal` is set to true.

]()

[constr_2575] `blueprintValue` in blueprints only [`blueprintValue` is only allowed in blueprints and may not be present in a system description.

]()

[constr_2577] Binding Time in Aggregation Pattern [Within `VariationPoint`, the class `ConditionByFormula` has an attribute `bindingTime` which defines the *latest* binding time for this variation point. This binding time is further constrained by the UML tag `vh.latestBindingTime` that is attached to the aggregation see [TPS_GST_00190], [TPS_GST_00220], [TPS_GST_00221]]:

```
ConditionByFormula.bindingTime ≤ aggregation.vh.latestBindingTime
|()
```

[constr_2578] Binding Time in Association Pattern [Within `VariationPoint`, the class `ConditionByFormula` has an attribute `bindingTime` which defines the *latest* binding time for this variation point. This binding time is further constrained by the UML tag `vh.latestBindingTime` that is attached to the association (see [TPS_GST_00190], [TPS_GST_00220], [TPS_GST_00221]]:

```
ConditionByFormula.bindingTime ≤ association.vh.latestBindingTime
|()
```

[constr_2579] Binding Time in Attribute Value Pattern [The meta-class `AttributeValueVariationPoint` has an attribute `bindingTime` which defines the *latest* binding time for this variation point. This binding time is further constrained by the UML tag `vh.latestBindingTime` that is attached to the attribute (see [TPS_GST_00190], [TPS_GST_00220], [TPS_GST_00221]]:

```
AttributeValueVariationPoint.bindingTime ≤ attribute.vh.latestBindingTime
|()
```

[constr_2580] Binding Time in Property Set Pattern [The meta-class `VariationPoint` has an attribute `bindingTime` which defines the *latest* binding time for this variation point. This binding time is further constrained by the UML tag `vh.latestBindingTime` that is attached to the meta-class which is marked as `<<atp Variation>>` (see [TPS_GST_00190], [TPS_GST_00220], [TPS_GST_00221]]:

```
VariationPoint.bindingTime ≤ meta class.vh.latestBindingTime
|()
```

[constr_2581] Default life cycle state shall be defined properly [`defaultLcState` in `LifeCycleInfoSet` shall reference to a `lcState` defined in the `LifeCycleStateDefinitionGroup` referenced by `usedLifeCycleStateDefinitionGroup`.

```
|()
```

[constr_2583] Used life cycle state shall be defined properly [`defaultLcState` in `LifeCycleInfo` shall reference to a `lcState` defined in the `LifeCycleStateDefinitionGroup` referenced by `usedLifeCycleStateDefinitionGroup` of the containing `LifeCycleInfoSet`.

]()

[constr_2585] LifeCycleInfo shall be unambiguous [Within one particular `LifeCycleInfoSet` `lifeCycleInfo.lcObject` shall be unique. This ensures that the association of a `LifeCycleState` to a `Referrable` is unambiguous.

This constraint applies for a particular point in time under consideration of the period of viability according to [TPS_GST_00244].

]()

[constr_2586] Constraints on LifeCyclePeriod [The attributes `date`, `arReleaseVersion`, `productRelease` in `LifeCyclePeriod` are mutually exclusive.

]()

[constr_2587] No System in AnyInstanceRef [In consequence of [TPS_GST_00387] `System` shall not be `contextElement` nor `target` of an `AnyInstanceRef`. Otherwise `atpBase` would not be determined.

]()

[constr_2594] Cyclic value assignments to SwSystemconst is not allowed [It is explicitly forbidden to assign values to `SwSystemconst` which in turn depend directly or indirectly on this value assignment.

]()

[constr_2595] Footnotes should not be nested [Note that even if supported by the meta-model, footnotes shall not be nested. Nested footnotes might lead to problems with the processing of the footnote link. In other words `LParagraph` shall not be aggregated with role `ft` within a `LParagraph` which already has the role `ft`.

]()

[constr_2596] Used colors of attributes color and bgcolor [The used colors of the attributes `color` and `bgcolor` shall base on the 6 digits RGB hex-code following

```
|#([a-fA-F0-9]{6})|
```

.

]()

[constr_2599] Maximum one VariationPoints in <<atpMixed>> [In case an <<atpMixed>> meta-class is aggregated as <<atpVariation>> there shall not be more than one `VariationPoint` and the `VariationPoint` shall be the last aggregated element.

]()

[constr_2601] Value of AbstractEnumerationValueVariationPoint [The formula of an `AbstractEnumerationValueVariationPoint` shall evaluate to a

value for which a mapping is defined in the `EnumerationMappingTable` which is referenced by the attributes `base` and `enumTable`.

]()

[constr_2602] Completeness of `AnyInstanceRef` referencing `ImplementationDataTypeElement` [If the `target` references an `ImplementationDataTypeElement` the `AnyInstanceRef` shall define a `contextElement` reference for

1. each leaf `ImplementationDataTypeElement` in a chain of referencing `ImplementationDataTypes` which is not the `target`
2. and each `ImplementationDataTypeElement` of category ARRAY in a chain of referencing `ImplementationDataTypes`

Thereby the contexts are created according [TPS_GST_00162] from the root to the leaf `ImplementationDataTypeElement` which is either typed (directly or indirectly via `ImplementationDataType` of category TYPE_REFERENCE) or owns the `target`.

]()

[constr_2606] Existence of `upperMultiplicityInfinite` and `upperMultiplicity` of `AbstractMultiplicityRestriction` is mutually exclusive [The existence of the elements `upperMultiplicityInfinite` and `upperMultiplicity` of `AbstractMultiplicityRestriction` shall be mutually exclusive.

]()

[constr_2607] `lowerMultiplicity` of `AbstractMultiplicityRestriction` shall be smaller or equal to `upperMultiplicity` [`lowerMultiplicity` of `AbstractMultiplicityRestriction` shall be smaller or equal to `upperMultiplicity`.

]()

[constr_2626] `atpTarget` of `InstanceRefs` shall be consistent [The `atpTarget` of an instance ref shall be an `atpFeature` of the `atpType` of the last `atpContextElement`.

]()

[constr_2627] No reassigning of the same name within one LET Block [Within one LET block one name shall be assigned to an value at most once.

]()

[constr_2628] Representation of `xml.xsd.type=double` data types [All data types with `xml.xsd.type=double` shall comply with IEEE 754 and are limited to what can be expressed by a 64 bit binary representation.

]()

[constr_2629] Defined identity up to the root [If an element in the M1 model aggregates splittable elements on deeper levels, it shall have a defined identity, i.e. the identifying attributes (e.g. `shortName` or `shortLabel`); see [TPS_GST_00047]; shall be set in the M1 model.

]()

[constr_2630] M1 elements with same identity but different type are not allowed [Splittable M1 elements with the same identity but different type shall not exist.

]()

[constr_2631] Usage of value ANY for `AnyServiceInstanceId` [The value of a given `AnyServiceInstanceId` shall not be set to ANY.

]()

[constr_2632] No postbuild variation for attribute values [The tag `vh.latestBindingTime` is limited to `preCompileTime` and earlier binding times, i.e. (`blueprintDerivationTime`, `systemDesignTime` and `codeGenerationTime`) in the Attribute Value pattern.

]()

[constr_4055] ICS may not contain blueprints [Since an Implementation Conformance Statement always describes a set of one or more fully configured software modules, a package with category `ICS` it is not allowed to contain sub-packages at any level which have the category `BLUEPRINT`.

]()

2.4 TPS_SecurityExtractTemplate

[constr_5600] Valid interval for attribute `SecurityEventDefinition.id` [The valid interval for attribute `SecurityEventDefinition.id` is 0..65535.

]()

[constr_5601] Uniqueness of `SecurityEventDefinition.id` [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` [The valid interval for attribute `SecurityEventOneEveryNFilter.n` is 1..65535.

]()

[constr_5603] Valid interval for attribute `SecurityEventAggregationFilter.minimumIntervalLength` [The valid interval for attribute `SecurityEventAggregationFilter.minimumIntervalLength` is]0..INF[seconds.

]()

[constr_5604] Valid interval for attribute `SecurityEventThresholdFilter.intervalLength` [The valid interval for attribute `SecurityEventThresholdFilter.intervalLength` is]0..INF[seconds.

]()

[constr_5605] Valid interval for attribute `SecurityEventThresholdFilter.thresholdNumber` [The valid interval for attribute `SecurityEventThresholdFilter.thresholdNumber` is 1..INF[.

]()

[constr_5606] Valid interval for attribute `IdsmRateLimitation.timeInterval` [The valid interval for attribute `IdsmRateLimitation.timeInterval` is 0..65535 seconds.

]()

[constr_5607] Valid interval for attribute `IdsmRateLimitation.maxEventsInInterval` [The valid interval for attribute `IdsmRateLimitation.maxEventsInInterval` is 0.. $(2^{64} - 1)$.

]()

[constr_5608] Valid interval for attribute `IdsmTrafficLimitation.timeInterval` [The valid interval for attribute `IdsmTrafficLimitation.timeInterval` is 0..65535 seconds.

]()

[constr_5609] Valid interval for attribute `IdsmTrafficLimitation.maxBytesInInterval` [The valid interval for attribute `IdsmTrafficLimitation.maxBytesInInterval` is 0.. $(2^{64} - 1)$.

]()

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

]()

2.5 TPS_StandardizationTemplate

[constr_2500] `PortInterfaces` shall be of same kind [Both objects (`PortInterfaces`) referenced by a blueprint mapping for port interfaces (represented by `BlueprintMapping`) shall be of the same kind (e.g. both shall be `SenderReceiverInterfaces`). In other words both interfaces shall be instances of the same meta class.

]()

[constr_2526] `PortInterface` need to be compatible to the blueprints [`PortInterface` shall be compatible to their respective blueprints according to the compatibility rules.

]()

[constr_2527] Blueprints shall live in package of a proper category [As explained in detail in the [1], model artifacts (in this case `PortPrototypeBlueprint` and incompletely specified `PortInterfaces`) created for the purpose of becoming blueprints shall reside in an `ARPackage` of category `BLUEPRINT`.

]()

[constr_2528] `PortPrototypes` shall not refer to blueprints of a `PortInterface` [A port `PortPrototype` shall not reference a `PortInterface` which lives in a package of category `BLUEPRINT`.

]()

[constr_2529] `PortPrototypeBlueprints` and derived `PortPrototypes` shall reference proper `PortInterfaces` [A `PortPrototypeBlueprint` may reference a blueprint of `PortInterface`. According to [constr_2570], a system description shall not contain blueprints. Therefore the reference to the `PortInterface` may need to be rewritten when a `PortPrototype` is derived from the blueprint.

In this case the `PortInterface` referenced by the derived `PortPrototype` shall be compatible to the `PortInterface` (which is a blueprint) referenced by the `PortPrototypeBlueprint`.

According to [constr_2526] this can be ensured if the `PortInterface` referenced by the `PortPrototypeBlueprint` is the blueprint of the `PortInterface` referenced by the respective `PortPrototype`.

]()

[constr_2540] Tagged text category [The `category` of `TraceableText` shall be one of

ADVISORY_ITEM The text represents a particular advisory. Such an item is applicable primarily in template specifications. It is similar to a constraint item but represents the characteristic of a `WARNING` rather than an `ERROR`.

CONSTRAINT_ITEM The text represents a particular constraint. Such an item is applicable primarily in template specifications. It is similar to a specification item but represents issues that may be validated automatically e.g. by a tool.

IMPLEMENTATION_ITEM The text represents a short description of an implementation. It is applicable primarily within the `introduction` of a model element.

REQUIREMENT_ITEM The text represents a particular requirement. Such an item is applicable primarily in requirement specifications.

SAFETY_* The text represents the type of safety requirements. The allowed values (*) are defined in [TPS_SAFEX_00102] in [2].

SPECIFICATION_ITEM The text represents a particular item in the specification. Such an item is a requirement for the implementation of the software specification.

SRC The text represents the source code content.

TEST_ITEM The text represents a short description of a test. Such an item is applicable primarily in test specifications.

]()

[constr_2546] References in derived model elements [Model elements derived from blueprints shall never refer to model elements that are blueprints.

]()

[constr_2553] `shortName` shall follow the pattern defined in the Blueprint [The `shortName` respectively `symbol` of the derived objects shall follow the pattern defined in `namePattern` or `blueprintValue` of the blueprint according to [TPS_STDT_00086]

]()

[constr_2554] Derived objects shall match the blueprints [Unless specified explicitly otherwise, the attributes of the blueprint shall appear in the derived objects. As an exception `namePattern` and `blueprintValue` may **not** be copied.

]()

[constr_2556] No Blueprint Motivated `VariationPoints` in AUTOSAR Descriptions [AUTOSAR descriptions which are not blueprints shall not have `blueprintCondition`, `formalBlueprintGenerator` nor `blueprintValue`.

]()

[constr_2563] `BswModuleDescription` blueprints should not have a `BswInternalBehavior` [A `BswModuleDescription` blueprint should not have a `BswInternalBehavior` since this is a matter of implementation and not subject to standardization. Exceptions might exist in vendor internal applications.

]()

[constr_2564] `VariationPoint` in Blueprints of `PackageableElement` [To support standardization, constraint [constr_2537] in [1] is relaxed for blueprints. This means in particular, that all `PackageableElements` which inherit from `AtpBlueprint` and live in a package of category BLUEPRINT may have a `VariationPoint`. In this case `vh.latestBindingTime` is considered as `blueprintDerivationTime` even if the meta model still states `systemDesignTime` for `PackageableElement`.

]()

[constr_2565] Trace shall not be nested [Due to the intended atomicity of requirements respectively specification items, [Traceable](#) shall not be nested.

]()

[constr_2566] Blueprintmapping shall map appropriate elements [[BlueprintMapping](#) shall map elements which represent a valid pair of blueprint / derived object. In most of the cases this means that [blueprint](#) and [derivedObject](#) shall refer to objects of the same meta-class.

]()

[constr_2568] SwComponentTypes shall be of same kind [Both objects ([SwComponentTypes](#)) referenced by a blueprint mapping for port interfaces (represented by [BlueprintMapping](#)) shall be of the same kind (e.g. both shall be [AtomicSwComponentTypes](#)). In other words both components shall be instances of the same meta class.

]()

[constr_2569] Purely Blueprint Motivated VariationPoints [[VariationPoints](#) with `vh.latestBindingTime` set to `blueprintDerivationTime` shall have only [blueprintCondition](#) or [formalBlueprintGenerator](#) respectively [blueprintValue](#).

]()

[constr_2570] No Blueprints in system descriptions [There shall be no blueprints in system descriptions. In consequence of this blueprint elements shall be referenced only from blueprints and [AtpBlueprintMappings](#). Due to `<<atpUriDef>>`, the references from [AtpBlueprintMapping](#) do not need to be resolved in system descriptions.

]()

[constr_2571] Outgoing references from Blueprints [Note that outgoing references from Blueprints are basically not limited. Practically, references to objects living in a package of category EXAMPLE should not occur.

]()

[constr_2589] In VFB Timing Blueprint TDEventVfbPort shall reference Port-PrototypeBlueprint [In a VFB Timing Blueprint [TDEventVfbPort](#) shall reference [PortPrototypeBlueprint](#). In other words, a VFB Timing Description Event specified in a VFB Timing Blueprint shall always reference a Port Prototype Blueprint.

]()

[constr_2590] One BlueprintPolicy is allowed [For each attribute of a blueprint, at most one [BlueprintPolicy](#) is allowed.

]()

[constr_2591] BlueprintPolicyNotModifiable [If [BlueprintPolicyNotModifiable](#) is assigned to an attribute, then during blueprinting it is not allowed to modify the value of the attribute and all its contained content.

]()

[constr_2592] No BlueprintPolicy [If no [BlueprintPolicy](#) is assigned to an attribute, then arbitrary modifications are allowed while deriving from the blueprint.

]()

[constr_2593] Expression for identifying the attribute a BlueprintPolicy relates to [The expression language for identifying the related attribute of a [BlueprintPolicy](#) is a subset version of xpath, see [3]. For navigation over the model we use the names as they are used in XML.

]()

[constr_2597] ClientServerOperationBlueprintMapping constraints number of arguments [The number of arguments of the [BswModuleEntry](#) referenced by a [bswModuleEntry](#) shall be identical to the number of [portDefinedArgumentBlueprints](#) of the owning [ClientServerInterfaceToBswModuleEntryBlueprintMapping](#) plus the number of [ArgumentDataPrototypes](#) aggregated in the role argument of the [clientServerOperation](#)

]()

[constr_2598] ClientServerOperationBlueprintMapping constraints the types of arguments [The arguments in the ordered lists [bswModuleEntry](#) and the matching arguments in the set union of the ordered lists [portDefinedArgumentBlueprint](#) plus [clientServerOperation](#) shall result in the identical C data type definitions.

]()

[constr_2603] Use of "applies to" in context of the specification level [On specification level 1 and 2 only the requirements table including the [appliesTo](#) attribute shall be used. On the specification levels 3 and 4 only the requirements table without the [appliesTo](#) attribute shall be used. Exception: Documents of the foundation which are handled on specification level 3.

]()

[constr_2604] Allowed uptraces in context of "applies to" values [Traces to documents of upper specification levels shall be conform to the values assigned to [appliesTo](#).

]()

[constr_2608] Custom extensions shall be part of the Documentation that is referenced by the Baseline [If a [SpecElementReference](#) references a custom

defined specification element, then this specification element shall be part of a [Documentation](#) that is referenced by the [Baseline](#) of this [Profile](#).

]()

[constr_2609] Single revision per AUTOSAR standard [

The [standardRevision](#) may only contain a single revision per AUTOSAR standard. E.g. it is allowed to combine the AUTOSAR standards "Foundation" in revision 1.0.0 with the "Classic Platform" in revision 4.3.0. However, it is not allowed to reference the revisions 4.2.2 and 4.3.0 of the "Classic Platform" in the same [Baseline](#).

]()

[constr_2610] No alternativeName if matching via shortName [The [alternativeName](#) shall not be set if the referenced AUTOSAR Specification Element matches the rules of [Identifier](#).

]()

[constr_2611] Referenced AUTOSAR Specification Elements shall be part of the AUTOSAR Specification Baseline [If the [SpecElementReference](#) references an AUTOSAR specification element then the [shortName](#) or [alternativeName](#) shall match the name of the AUTOSAR specification element in a specification that is part of the revision of the standard that is specified in [Baseline](#).

]()

[constr_2612] [shortName](#) of [ConcreteClassTailoring](#) shall match the name of an AUTOSAR specified concrete meta-class [[shortName](#) of [ConcreteClassTailoring](#) shall match the name of an AUTOSAR specified concrete meta-class).

]()

[constr_2613] [shortName](#) of [AbstractClassTailoring](#) shall match the name of an AUTOSAR specified abstract meta-class [[shortName](#) of [AbstractClassTailoring](#) shall match the name of an AUTOSAR specified abstract meta-class).

]()

[constr_2614] [PrimitiveAttributeCondition.attribute](#) shall reference invariant owned [PrimitiveAttributeTailoring](#), only [The following conditions need to evaluate to true for [PrimitiveAttributeCondition.attribute](#):

- The referenced [PrimitiveAttributeTailoring](#) is owned by an [ClassContentConditional](#) that has no [condition](#) (invariant class content) **AND**
- The [ClassContentConditional](#) that owns the referenced [PrimitiveAttributeTailoring](#) and the [ClassContentConditional](#) that owns this [PrimitiveAttributeCondition](#) are owned by the same [ClassTailoring](#).

]()

[constr_2615] `AggregationCondition.aggregation` shall reference invariant owned `AggregationTailoring`, only [The following conditions need to evaluate to true for `AggregationCondition.aggregation`:

- The referenced `AggregationTailoring` is owned by an `ClassContentConditional` that has no `condition` (invariant class content) **AND**
- The `ClassContentConditional` that owns the referenced `AggregationTailoring` and the `ClassContentConditional` that owns this `AggregationCondition` are owned by the same `ClassTailoring`.

]()

[constr_2616] `ReferenceCondition.reference` shall reference invariant owned `ReferenceTailoring`, only [The following conditions need to evaluate to true for `ReferenceCondition.reference`:

- The referenced `ReferenceTailoring` is owned by an `ClassContentConditional` that has no `condition` (invariant class content) **AND**
- The `ClassContentConditional` that owns the referenced `ReferenceTailoring` and the `ClassContentConditional` that owns this `ReferenceCondition` are owned by the same `ClassTailoring`.

]()

[constr_2617] `ClassTailoring.variationRestriction` only applicable for <<atpVariation>> classes [If the tailored meta class is not marked with stereotype <<atpVariation>> then `ClassTailoring.variationRestriction` shall not be defined.

]()

[constr_2618] `ShortName` of `AttributeTailoring` shall match owned or inherited attributes [The `shortName` shall match the name of an attribute that is owned or inherited by the AUTOSAR meta-class which is identified by the `ClassTailoring` that owns this `AttributeTailoring`.

]()

[constr_2619] No `AttributeTailoring` for Derived or Abstract Attributes [No `AttributeTailorings` are allowed for `Attributes` that are marked with stereotypes <<atpDerived>> or <<atpAbstract>>.

]()

[constr_2620] `shortName` of `PrimitiveAttributeTailoring` shall be a primitive attribute in the referenced Baseline [The `shortName` of `PrimitiveAttributeTailoring` shall match the name of an AUTOSAR specified primitive attribute of the Meta-Class in the referenced Baseline.

]()

[constr_2621] The `shortName` of `AggregationTailoring` shall match the name of an AUTOSAR specified aggregation of the meta-class [The `shortName` of `AggregationTailoring` shall match the name of an AUTOSAR specified aggregation of the meta-class).

]()

[constr_2622] The `shortName` of `ReferenceTailoring` shall match the name of an AUTOSAR specified reference of the meta-class [The `shortName` of `ReferenceTailoring` shall match the name of an AUTOSAR specified reference of the meta-class).

]()

[constr_2623] Referenced `SdgClass` shall be part of a `SdgDef` that is referenced by the `Baseline` [Referenced `SdgClass` shall be part of a `SdgDef` that is referenced by the `Baseline` of this Profile of Data Exchange Point.

]()

[constr_2624] `AttributeTailoring.variationRestriction` only applicable for <<atpVariation>> attributes [If the tailored attribute is not marked with stereotype <<atpVariation>> then `AttributeTailoring.variationRestriction` shall not be defined.

]()

[constr_2625] Allowed uptraces wrt. life cycles [Table 2.5 defines the allowed combinations of uptraces with respect to life cycle states [TPS_STDT_00064].

]()

Trace from	Trace to					
	draft	valid	obsolete	preliminary	removed	shall Become Mandatory
draft	1	1	0	1	0	1
valid	0	1	0	0	0	0
obsolete	1	1	1	1	0	1
preliminary	1	1	0	1	0	1
removed	1	1	1	1	1	1
shallBecomeMandatory	0	1	0	0	0	1

Table 2.5: Matrix of allowed uptraces wrt. life cycles

A Mentioned Class Tables

Class	ARElement (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::ARPackage			
Note	An element that can be defined stand-alone, i.e. without being part of another element (except for packages of course).			
Base	<i>ARObject</i> , <i>CollectableElement</i> , <i>Identifiable</i> , <i>MultilanguageReferrable</i> , <i>PackageableElement</i> , <i>Referrable</i>			
Subclasses	AclObjectSet, AclOperation, AclPermission, AclRole, AliasNameSet, <i>AutosarDataType</i> , <i>BaseType</i> , BlueprintMappingSet, BuildActionManifest, CalibrationParameterValueSet, ClientIdDefinitionSet, Collection, CompuMethod, ConsistencyNeedsBlueprintSet, ConstantSpecification, ConstantSpecification MappingSet, CryptoServiceKey, CryptoServicePrimitive, CryptoServiceQueue, DataConstr, Data ExchangePoint, DataTransformationSet, DataTypeMappingSet, <i>DiagnosticCommonElement</i> , Diagnostic Connection, DiagnosticContributionSet, <i>Documentation</i> , E2EProfileCompatibilityProps, EndToEnd ProtectionSet, EthIpProps, EthTcplplcmpProps, EthTcplpProps, <i>EvaluatedVariantSet</i> , <i>FMFeature</i> , FM FeatureMap, <i>FMFeatureModel</i> , <i>FMFeatureSelectionSet</i> , FunctionGroupSet, GeneralPurposeConnection, HwCategory, HwElement, HwType, IPsecConfigProps, <i>IdsCommonElement</i> , <i>IdsDesign</i> , Interpolation RoutineMappingSet, KeywordSet, <i>LifeCycleInfoSet</i> , <i>LifeCycleStateDefinitionGroup</i> , McFunction, Mc Group, ModeDeclarationGroup, ModeDeclarationMappingSet, PhysicalDimension, PhysicalDimension MappingSet, <i>PlatformModuleEndpointConfiguration</i> , <i>PortInterface</i> , PortInterfaceMappingSet, <i>Port PrototypeBlueprint</i> , PostBuildVariantCriterion, PostBuildVariantCriterionValueSet, <i>PredefinedVariant</i> , RapidPrototypingScenario, <i>SdgDef</i> , SignalServiceTranslationPropsSet, SoftwareCluster, SomeipSd ClientEventGroupTimingConfig, SomeipSdClientServiceInstanceConfig, SomeipSdServerEventGroup TimingConfig, SomeipSdServerServiceInstanceConfig, SwAddrMethod, SwAxisType, <i>SwComponent Type</i> , SwRecordLayout, <i>SwSystemconst</i> , <i>SwSystemconstantValueSet</i> , <i>System</i> , SystemSignal, System SignalGroup, <i>TimingExtension</i> , TlvDataIdDefinitionSet, TransformationPropsSet, Unit, UnitGroup, View MapSet			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.1: ARElement

Class	ARPackage			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::ARPackage			
Note	AUTOSAR package, allowing to create top level packages to structure the contained ARElements. ARPackages are open sets. This means that in a file based description system multiple files can be used to partially describe the contents of a package. This is an extended version of MSR's SW-SYSTEM.			
Base	<i>ARObject</i> , <i>AtpBlueprint</i> , <i>AtpBlueprintable</i> , <i>CollectableElement</i> , <i>Identifiable</i> , <i>MultilanguageReferrable</i> , <i>Referrable</i>			
Attribute	Type	Mult.	Kind	Note
arPackage	<i>ARPackage</i>	*	aggr	This represents a sub package within an ARPackage, thus allowing for an unlimited package hierarchy. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=arPackage.shortName, arPackage.variation Point.shortLabel vh.latestBindingTime=blueprintDerivationTime xml.sequenceOffset=30
element	<i>PackageableElement</i>	*	aggr	Elements that are part of this package Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=element.shortName, element.variation Point.shortLabel vh.latestBindingTime=systemDesignTime xml.sequenceOffset=20





Class	ARPackage			
referenceBase	ReferenceBase	*	aggr	<p>This denotes the reference bases for the package. This is the basis for all relative references within the package. The base needs to be selected according to the base attribute within the references.</p> <p>Stereotypes: atpSplitable Tags: atp.Splitkey=referenceBase.shortLabel xml.sequenceOffset=10</p>

Table A.2: ARPackage

Class	AUTOSAR			
Package	M2::AUTOSARTemplates::AutosarTopLevelStructure			
Note	<p>Root element of an AUTOSAR description, also the root element in corresponding XML documents.</p> <p>Tags:xml.globalElement=true</p>			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
adminData	AdminData	0..1	aggr	<p>This represents the administrative data of an Autosar file.</p> <p>Tags:xml.sequenceOffset=10</p>
arPackage	ARPackage	*	aggr	<p>This is the top level package in an AUTOSAR model.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=arPackage.shortName, arPackage.variationPoint.shortLabel vh.latestBindingTime=blueprintDerivationTime xml.sequenceOffset=30</p>
fileInfo Comment	FileInfoComment	0..1	aggr	<p>This represents a possibility to provide a structured comment in an AUTOSAR file.</p> <p>Stereotypes: atpStructuredComment Tags: xml.roleElement=true xml.sequenceOffset=-10 xml.typeElement=false</p>
introduction	DocumentationBlock	0..1	aggr	<p>This represents an introduction on the Autosar file. It is intended for example to represent disclaimers and legal notes.</p> <p>Tags:xml.sequenceOffset=20</p>

Table A.3: AUTOSAR

Class	AbstractClassTailoring			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring			
Note	Tailoring of abstract classes in the AUTOSAR meta-model			
Base	ARObject, ClassTailoring , DataFormatElementReference , Identifiable , MultilanguageReferrable , Referrable , SpecElementReference			
Attribute	Type	Mult.	Kind	Note
—	—	—	—	—

Table A.4: AbstractClassTailoring

Class	<<atpMixedString>> AbstractEnumerationValueVariationPoint (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling::AttributeValueVariationPoints			
Note	This is an abstract EnumerationValueVariationPoint. It is introduced to support the case that additional attributes are required for particular purposes.			
Base	ARObject, AttributeValueVariationPoint , FormulaExpression , SwSystemconstDependentFormula			
Subclasses				
Attribute	Type	Mult.	Kind	Note
base	Identifier	0..1	attr	This attribute reflects the base to be used in context of EnumerationMappingTable for this reference. Tags: xml.attribute=true
enumTable	Ref	0..1	attr	This represents the assigned enumeration table. Tags: xml.attribute=true

Table A.5: AbstractEnumerationValueVariationPoint

Class	AbstractMultiplicityRestriction (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::ModelRestrictionTypes			
Note	Restriction that specifies the valid number of occurrences of an element in the current context.			
Base	ARObject			
Subclasses	AttributeCondition , MultiplicityRestrictionWithSeverity , SdgAttribute			
Attribute	Type	Mult.	Kind	Note
lowerMultiplicity	PositiveInteger	0..1	attr	Specifies the minimal number of times an object shall occur. If this primitive attribute is not set, then the object is optional.
upperMultiplicity	PositiveInteger	0..1	attr	Specifies the maximum number of times an object may occur. If this primitive attribute is not set, then there is no limit with respect to the maximum occurrence.
upperMultiplicity Infinite	Boolean	0..1	attr	This explicitly specifies, that the upper multiplicity is NOT restricted. Note: The use of 'upperMultiplicityInfinite' and 'upperMultiplicity' is mutual exclusive.

Table A.6: AbstractMultiplicityRestriction

Class	AdminData			
Package	M2::MSR::AsamHdo::AdminData			
Note	AdminData represents the ability to express administrative information for an element. This administration information is to be treated as meta-data such as revision id or state of the file. There are basically four kinds of meta-data <ul style="list-style-type: none"> • The language and/or used languages. • Revision information covering e.g. revision number, state, release date, changes. Note that this information can be given in general as well as related to a particular company. • Document meta-data specific for a company 			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
docRevision (ordered)	DocRevision	*	aggr	This allows to denote information about the current revision of the object. Note that information about previous revisions can also be logged here. The entries shall be sorted descendant by date in order to reflect the history. Therefore the most





Class	AdminData			
				<p>recent entry representing the current version is denoted first.</p> <p>Tags: xml.roleElement=true xml.roleWrapperElement=true xml.sequenceOffset=50 xml.typeElement=false xml.typeWrapperElement=false</p>
language	LEnum	0..1	attr	<p>This attribute specifies the master language of the document or the document fragment. The master language is the one in which the document is maintained and from which the other languages are derived from. In particular in case of inconsistencies, the information in the master language is priority.</p> <p>Tags:xml.sequenceOffset=20</p>
sdg	Sdg	*	aggr	<p>This property allows to keep special data which is not represented by the standard model. It can be utilized to keep e.g. tool specific data.</p> <p>Stereotypes: atpSplitable Tags: atp.Splitkey=sdg, sdg.variationPoint.shortLabel xml.roleElement=true xml.roleWrapperElement=true xml.sequenceOffset=60 xml.typeElement=false xml.typeWrapperElement=false</p>
usedLanguages	MultiLanguagePlainText	0..1	aggr	<p>This property specifies the languages which are provided in the document. Therefore it should only be specified in the top level admin data. For each language provided in the document there is one entry in MultiLanguagePlainText. The content of each entry can be used for illustration of the language. The used language itself depends on the language attribute in the entry.</p> <p>Tags:xml.sequenceOffset=30</p>

Table A.7: AdminData

Class	AggregationCondition			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring			
Note	The AggregationCondition evaluates to true, if the referenced aggregation is accepted by all rules of this condition.			
Base	ARObject, AbstractCondition, AbstractMultiplicityRestriction , AttributeCondition			
Attribute	Type	Mult.	Kind	Note
aggregation	AggregationTailoring	1	ref	The aggregation that has to be accepted by the restrictions of this AggregationCondition

Table A.8: AggregationCondition

Class	AggregationTailoring
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring
Note	Tailoring of aggregations in the AUTOSAR meta-model





Class	AggregationTailoring			
Base	ARObject, AttributeTailoring , DataFormatElementReference , DataFormatElementScope , Identifiable , MultilanguageReferrable , Referrable , SpecElementReference , SpecElementScope			
Attribute	Type	Mult.	Kind	Note
typeTailoring	ClassTailoring	*	aggr	Local class tailoring which is applied if the content is contained by this aggregation.

Table A.9: AggregationTailoring

Class	AnyInstanceRef			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::AnyInstanceRef			
Note	Describes a reference to any instance in an AUTOSAR model. This is the most generic form of an instance ref. Refer to the superclass notes for more details.			
Base	ARObject, AtpInstanceRef			
Attribute	Type	Mult.	Kind	Note
base	AtpClassifier	1	ref	This is the base from which navigation path begins. Stereotypes: atpDerived
contextElement	AtpFeature	*	ref	This is one step in the navigation path specified by the instance ref.
target	AtpFeature	1	ref	This is the target of the instance ref.

Table A.10: AnyInstanceRef

Primitive	AnyServiceInstanceld			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::PrimitiveTypes			
Note	This is a positive integer or the literal ALL (the value ANY is technically supported but deprecated) which can be denoted in decimal, octal and hexadecimal. The value is between 0 and 4294967295. Tags: xml.xsd.customType=ANY-SERVICE-INSTANCE-ID xml.xsd.pattern=[1-9][0-9]*[0xX][0-9a-fA-F]+[0[0-7]*[0[bB][0-1]+ ANY ALL xml.xsd.type=string			

Table A.11: AnyServiceInstanceld

Class	ApplicationDataType (abstract)			
Package	M2::AUTOSARTemplates::SWComponentTemplate::Datatype::Datatypes			
Note	ApplicationDataType defines a data type from the application point of view. Especially it should be used whenever something "physical" is at stake. 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. It should be possible to model the application level aspects of a VFB system by using ApplicationData Types only.			
Base	ARElement , ARObject, AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpType , AutosarDataType , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Subclasses	ApplicationCompositeDataType , ApplicationDeferredDataType , ApplicationPrimitiveDataType			
Attribute	Type	Mult.	Kind	Note
—	—	—	—	—

Table A.12: ApplicationDataType

Class	ApplicationDeferredDataType			
Package	M2::AUTOSARTemplates::AbstractPlatform			
Note	An abstract placeholder data type in which the precise application data type is deferred to a later stage. Tags: atp.Status=draft atp.recommendedPackage=ApplicationDataTypes			
Base	ARElement , ARObject , ApplicationDataType , AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpType , AutosarDataType , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.13: ApplicationDeferredDataType

Class	ArgumentDataPrototype			
Package	M2::AUTOSARTemplates::SWComponentTemplate::PortInterface			
Note	An argument of an operation, much like a data element, but also carries direction information and is owned by a particular ClientServerOperation.			
Base	ARObject , AtpFeature , AtpPrototype , AutosarDataPrototype , DataPrototype , Identifiable , MultilanguageReferrable , Referrable			
Attribute	Type	Mult.	Kind	Note
direction	ArgumentDirection Enum	0..1	attr	This attribute specifies the direction of the argument prototype.

Table A.14: ArgumentDataPrototype

Class	AtomicSwComponentType (abstract)			
Package	M2::AUTOSARTemplates::SWComponentTemplate::Components			
Note	An atomic software component is atomic in the sense that it cannot be further decomposed and distributed across multiple ECUs.			
Base	ARElement , ARObject , AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpType , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable , SwComponentType			
Subclasses	ApplicationSwComponentType, ComplexDeviceDriverSwComponentType, EcuAbstractionSwComponentType, NvBlockSwComponentType, SensorActuatorSwComponentType, ServiceProxySwComponentType, ServiceSwComponentType			
Attribute	Type	Mult.	Kind	Note
internalBehavior	SwcInternalBehavior	0..1	aggr	The SwcInternalBehaviors owned by an AtomicSwComponentType can be located in a different physical file. Therefore the aggregation is <<atpSplitable>>. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=internalBehavior.shortName, internalBehavior.variationPoint.shortLabel vh.latestBindingTime=preCompileTime
symbolProps	SymbolProps	0..1	aggr	This represents the SymbolProps for the AtomicSwComponentType. Stereotypes: atpSplitable Tags: atp.Splitkey=symbolProps.shortName

Table A.15: AtomicSwComponentType

Class	AtpBlueprint (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::AbstractBlueprintStructure			
Note	This meta-class represents the ability to act as a Blueprint. As this class is an abstract one, particular blueprint meta-classes inherit from this one.			
Base	ARObject, Identifiable , MultilanguageReferrable , Referrable			
Subclasses	ARPackage, AbstractImplementationDataType , AclObjectSet, AclOperation, AclPermission, AclRole, AliasNameSet, ApplicationDataType , BuildActionEntity , BuildActionEnvironment, BuildActionManifest, CompuMethod, ConsistencyNeeds, DataConstr, DataTypeMappingSet, KeywordSet, LifeCycleState , LifeCycleStateDefinitionGroup , ModeDeclarationGroup, PortInterface , PortInterfaceMapping , PortInterfaceMappingSet, PortPrototypeBlueprint , SwAddrMethod, SwBaseType, SwComponentType , VfbTiming			
Attribute	Type	Mult.	Kind	Note
blueprintPolicy	BlueprintPolicy	*	aggr	This role indicates whether the blueprintable element will be modifiable or not motifiable.

Table A.16: AtpBlueprint

Class	AtpBlueprintMapping (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::AbstractBlueprintStructure			
Note	This meta-class represents the ability to express a particular mapping between a blueprint and an element derived from this blueprint. Particular mappings are defined by specializations of this meta-class.			
Base	ARObject			
Subclasses	BlueprintMapping			
Attribute	Type	Mult.	Kind	Note
atpBlueprint	AtpBlueprint	1	ref	This represents the blueprint. Stereotypes: atpAbstract; atpUriDef Tags: xml.sequenceOffset=50
atpBlueprinted Element	AtpBlueprintable	1	ref	This represents the blueprinted elements which shall be mapped to the blueprint. Stereotypes: atpAbstract Tags: xml.sequenceOffset=60

Table A.17: AtpBlueprintMapping

Class	AtpClassifier (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::AbstractStructure			
Note	A classifier classifies M0 instances according to their features. Or: a classifier is something that has instances - an M1 classifier has M0 instances.			
Base	ARObject, Identifiable , MultilanguageReferrable , Referrable			
Subclasses	AtpStructureElement, AtpType, FunctionGroupSet			
Attribute	Type	Mult.	Kind	Note
atpFeature	AtpFeature	*	aggr	This is a feature of the classifier. Stereotypes: atpDerived

Table A.18: AtpClassifier

Class	AtpInstanceRef (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::AbstractStructure			





Class	AtpInstanceRef (abstract)			
Note	<p>An M0 instance of a classifier may be represented as a tree rooted at that instance, where under each node come the sub-trees representing the instances which act as features under that node.</p> <p>An instance ref specifies a navigation path from any M0 tree-instance of the base (which is a classifier) to a leaf (which is an instance of the target).</p>			
Base	ARObject			
Subclasses	AnyInstanceRef, ApplicationCompositeElementInPortInterfaceInstanceRef, ComponentInCompositionInstanceRef, ComponentInSystemInstanceRef, DataPrototypeInPortInterfaceInstanceRef, DataPrototypeInSystemInstanceRef, FunctionGroupStateInFunctionGroupSetInstanceRef, InnerDataPrototypeGroupInCompositionInstanceRef, InnerPortGroupInCompositionInstanceRef, InnerRunnableEntityGroupInCompositionInstanceRef, InstanceEventInCompositionInstanceRef, ModeDeclarationGroupPrototypeInSystemInstanceRef, ModeGroupInAtomicSwcInstanceRef, ModelInBswModuleDescriptionInstanceRef, ModelInSwcInstanceRef, OperationArgumentInComponentInstanceRef, OperationInAtomicSwcInstanceRef, OperationInSystemInstanceRef, PModelInSystemInstanceRef, ParameterDataPrototypeInSystemInstanceRef, ParameterInAtomicSWCTypeInstanceRef, PortGroupInSystemInstanceRef, PortInCompositionTypeInstanceRef, RModelInAtomicSwcInstanceRef, RteEventInEcuInstanceRef, RunnableEntityInCompositionInstanceRef, SwcServiceDependencyInSystemInstanceRef, TriggerInAtomicSwcInstanceRef, TriggerInSystemInstanceRef, VariableAccessInEcuInstanceRef, VariableDataPrototypeInCompositionInstanceRef, VariableDataPrototypeInSystemInstanceRef, VariableInAtomicSWCTypeInstanceRef, VariableInAtomicSwcInstanceRef, VariableInComponentInstanceRef			
Attribute	Type	Mult.	Kind	Note
atpBase	AtpClassifier	1	ref	This is the base from which the navigation path starts. Stereotypes: atpAbstract; atpDerived
atpContext Element (ordered)	AtpPrototype	*	ref	This is one particular step in the navigation path. Stereotypes: atpAbstract
atpTarget	AtpFeature	1	ref	This is the target of the instance ref. In other words it is the terminal of the navigation path. Stereotypes: atpAbstract

Table A.19: AtpInstanceRef

Class	AtpPrototype (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::AbstractStructure			
Note	<p>A prototype is a typed feature. A prototype in a classifier indicates that instances of that classifier will have a feature, and the structure of that feature is given by the its type. An instance of that type will play the role indicated by the feature in the owning classifier.</p> <p>A feature is not an instance but an indication of an instance-to-be.</p>			
Base	ARObject, AtpFeature, Identifiable, MultilanguageReferrable, Referrable			
Subclasses	DataPrototype, ModeDeclarationGroupPrototype, PortPrototype, RootSwCompositionPrototype, SwComponentPrototype			
Attribute	Type	Mult.	Kind	Note
atpType	AtpType	1	ref	This is the type of the feature. Stereotypes: atpAbstract

Table A.20: AtpPrototype

Class	AttributeTailoring (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring			
Note	Tailoring of Attributes			
Base	ARObject, DataFormatElementReference, DataFormatElementScope, Identifiable, MultilanguageReferrable, Referrable, SpecElementReference, SpecElementScope			





Class	AttributeTailoring (abstract)			
Subclasses	AggregationTailoring , PrimitiveAttributeTailoring , ReferenceTailoring			
Attribute	Type	Mult.	Kind	Note
multiplicity Restriction	MultiplicityRestrictionWithSeverity	0..1	aggr	Multiplicity restriction of the attribute Tags: xml.sequenceOffset=10
variation Restriction	VariationRestrictionWithSeverity	0..1	aggr	Restrictions on the usage of variant handling. Tags: xml.sequenceOffset=20

Table A.21: AttributeTailoring

Class	<<atpMixedString>> AttributeValueVariationPoint (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling::AttributeValueVariationPoints			
Note	This class represents the ability to derive the value of the Attribute from a system constant (by Sw SystemconstDependentFormula). It also provides a bindingTime.			
Base	ARObject, FormulaExpression, SwSystemconstDependentFormula			
Subclasses	AbstractEnumerationValueVariationPoint , AbstractNumericalVariationPoint , BooleanValueVariationPoint, FloatValueVariationPoint, IntegerValueVariationPoint, PositiveIntegerValueVariationPoint, TimeValueVariationPoint, UnlimitedIntegerValueVariationPoint			
Attribute	Type	Mult.	Kind	Note
bindingTime	BindingTimeEnum	0..1	attr	This is the binding time in which the attribute value needs to be bound. If this attribute is missing, the attribute is not a variation point. In particular this means that It needs to be a single value according to the type specified in the pure model. It is an error if it is still a formula. Tags: xml.attribute=true
blueprintValue	String	0..1	attr	This represents a description that documents how the value shall be defined when deriving objects from the blueprint. Tags: xml.attribute=true
sd	String	0..1	attr	This special data is provided to allow synchronization of Attribute value variation points with variant management systems. The usage is subject of agreement between the involved parties. Tags: xml.attribute=true
shortLabel	PrimitiveIdentifier	0..1	attr	This allows to identify the variation point. It is also intended to allow RTE support for CompileTime Variation points. Tags: xml.attribute=true

Table A.22: AttributeValueVariationPoint

Class	Baseline			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint			
Note	Specification of the baseline of the AUTOSAR standard this Data Exchange Point relates to. The baseline is specified by listing the AUTOSAR products and their revisions. Custom defined functionality and deviations to the standard can be provided as well. All references to specification elements in this Data Exchange Point refer to specification elements that are part of this specification baseline.			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note





Class	Baseline			
customSdgDef	SdgDef	*	ref	Reference to custom SdgDefs that extend the data format of this baseline, Tags: xml.sequenceOffset=30
custom Specification	Documentation	*	ref	Reference to custom specifications that extend this baseline, Tags: xml.sequenceOffset=20
standard Revision	String	*	attr	Specifies a combination of revisions of AUTOSAR standards that are used as the specification baseline of this Data Exchange Point. All standard specification elements that are referenced by this Profile of Data Exchange Point have to be part of specifications that belong to the defined AUTOSAR standards. Tags: xml.sequenceOffset=10

Table A.23: Baseline

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=draft			
Base	ARObject, Identifiable , MultilanguageReferrable , Referrable			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.24: BlockState

Class	BlueprintMapping			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::BlueprintDedicated::Generic Blueprint			
Note	This meta-class represents the ability to map two an object and its blueprint.			
Base	ARObject, AtpBlueprintMapping			
Attribute	Type	Mult.	Kind	Note
blueprint	AtpBlueprint	1	ref	This represents the mapped blueprint.
derivedObject	AtpBlueprintable	1	ref	This represents the object which was derived from the blueprint.

Table A.25: BlueprintMapping

Class	BlueprintPolicy (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::AbstractBlueprintStructure			
Note	This meta-class represents the ability to indicate whether blueprintable elements will be modifiable or not modifiable.			
Base	ARObject			
Subclasses	BlueprintPolicyModifiable , BlueprintPolicyNotModifiable			
Attribute	Type	Mult.	Kind	Note
attributeName	String	1	attr	This identifies the related attribute of a BlueprintPolicy. For navigation over the model a subset of xpath expressions is used.

Table A.26: BlueprintPolicy

Class	BlueprintPolicyNotModifiable			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::AbstractBlueprintStructure			
Note	The class represents that the related attribute is not modifiable during the blueprinting.			
Base	ARObject, BlueprintPolicy			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.27: BlueprintPolicyNotModifiable

Class	BswInternalBehavior			
Package	M2::AUTOSARTemplates::BswModuleTemplate::BswBehavior			
Note	Specifies the behavior of a BSW module or a BSW cluster w.r.t. the code entities visible by the BSW Scheduler. It is possible to have several different BswInternalBehaviors referring to the same BswModule Description.			
Base	ARObject, AtpClassifier , AtpFeature , AtpStructureElement , Identifiable , InternalBehavior , Multilanguage , Referrable , Referrable			
Attribute	Type	Mult.	Kind	Note
bswPerInstanceMemoryPolicy	BswPerInstanceMemoryPolicy	*	aggr	Policy for a arTypedPerInstanceMemory The policy selects the options of the Schedule Manager API generation. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=bswPerInstanceMemoryPolicy, bswPerInstanceMemoryPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime
clientPolicy	BswClientPolicy	*	aggr	Policy for a requiredClientServerEntry. The policy selects the options of the Schedule Manager API generation. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=clientPolicy, clientPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime
distinguishedPartition	BswDistinguishedPartition	*	aggr	Indicates an abstract partition context in which the enclosing BswModuleEntity can be executed. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=distinguishedPartition.shortName, distinguishedPartition.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=60
entity	BswModuleEntity	*	aggr	A code entity for which the behavior is described Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=entity.shortName, entity.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=5
event	BswEvent	*	aggr	An event required by this module behavior. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=event.shortName, event.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=10





Class	BswInternalBehavior			
exclusiveAreaPolicy	BswExclusiveAreaPolicy	*	aggr	<p>Policy for an ExclusiveArea in this BswInternalBehavior. The policy selects the options of the Schedule Manager API generation.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=exclusiveAreaPolicy, exclusiveAreaPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime</p>
includedDataTypeSet	IncludedDataTypeSet	*	aggr	<p>The includedDataTypeSet is used by a basic software module for its implementation.</p> <p>Stereotypes: atpSplitable</p> <p>Tags: atp.Splitkey=includedDataTypeSet</p>
internalTriggeringPointPolicy	BswInternalTriggeringPointPolicy	*	aggr	<p>Policy for an internalTriggeringPoint in this BswInternalBehavior.. The policy selects the options of the Schedule Manager API generation.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=internalTriggeringPointPolicy, internalTriggeringPointPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime</p>
modeReceiverPolicy	BswModeReceiverPolicy	*	aggr	<p>Implementation policy for the reception of mode switches.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=modeReceiverPolicy, modeReceiverPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=25</p>
modeSenderPolicy	BswModeSenderPolicy	*	aggr	<p>Implementation policy for providing a mode group.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=modeSenderPolicy, modeSenderPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=20</p>
parameterPolicy	BswParameterPolicy	*	aggr	<p>Policy for a perInstanceParameter in this BswInternalBehavior. The policy selects the options of the Schedule Manager API generation.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=parameterPolicy, parameterPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime</p>
perInstanceParameter	ParameterDataPrototype	*	aggr	<p>Describes a read only memory object containing characteristic value(s) needed by this BswInternalBehavior. The role name perInstanceParameter is chosen in analogy to the similar role in the context of SwcInternalBehavior.</p> <p>In contrast to constantMemory, this object is not allocated locally by the module's code, but by the BSW Scheduler and it is accessed from the BSW module via the BSW Scheduler API. The main use case is the support of software emulation of calibration data.</p> <p>The aggregation is subject to variability with the purpose to support implementation variants.</p>





Class	BswInternalBehavior			
				<p>△</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=perInstanceParameter.shortName, perInstanceParameter.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=45</p>
receptionPolicy	BswDataReception Policy	*	aggr	<p>Data reception policy for inter-partition and/or inter-core communication.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=receptionPolicy, receptionPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=55</p>
releasedTrigger Policy	BswReleasedTrigger Policy	*	aggr	<p>Policy for a releasedTrigger. The policy selects the options of the Schedule Manager API generation.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=releasedTriggerPolicy, releasedTriggerPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime</p>
schedulerName Prefix	BswSchedulerName Prefix	*	aggr	<p>Optional definition of one or more prefixes to be used for the BswScheduler.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=schedulerNamePrefix.shortName, schedulerNamePrefix.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=50</p>
sendPolicy	BswDataSendPolicy	*	aggr	<p>Policy for a providedData. The policy selects the options of the Schedule Manager API generation.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=sendPolicy, sendPolicy.variationPoint.shortLabel vh.latestBindingTime=preCompileTime</p>
service Dependency	BswService Dependency	*	aggr	<p>Defines the requirements on AUTOSAR Services for a particular item.</p> <p>The aggregation is subject to variability with the purpose to support the conditional existence of ServiceNeeds.</p> <p>The aggregation is splitable in order to support that ServiceNeeds might be provided in later development steps.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=serviceDependency.ident.shortName, serviceDependency.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=40</p>





Class	BswInternalBehavior			
triggerDirect Implementation	BswTriggerDirect Implementation	*	aggr	Specifies a trigger to be directly implemented via OS calls. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=triggerDirectImplementation, triggerDirectImplementation.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=15
variationPoint Proxy	VariationPointProxy	*	aggr	Proxy of a variation points in the C/C++ implementation. Stereotypes: atpSplitable Tags: atp.Splitkey=variationPointProxy.shortName

Table A.28: BswInternalBehavior

Class	BswModuleDescription			
Package	M2::AUTOSARTemplates::BswModuleTemplate::BswOverview			
Note	Root element for the description of a single BSW module or BSW cluster. In case it describes a BSW module, the short name of this element equals the name of the BSW module. Tags: atp.recommendedPackage=BswModuleDescriptions			
Base	ARElement , ARObject , AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpFeature , AtpStructureElement , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
bswModule Dependency	BswModuleDependency	*	aggr	Describes the dependency to another BSW module. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=bswModuleDependency.shortName, bswModuleDependency.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=20
bswModule Documentation	SwComponent Documentation	0..1	aggr	This adds a documentation to the BSW module. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=bswModuleDocumentation, bswModuleDocumentation.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=6
expectedEntry	BswModuleEntry	*	ref	Indicates an entry which is required by this module. Replacement of outgoingCallback / requiredEntry. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=expectedEntry.bswModuleEntry, expectedEntry.variationPoint.shortLabel vh.latestBindingTime=preCompileTime
implemented Entry	BswModuleEntry	*	ref	Specifies an entry provided by this module which can be called by other modules. This includes "main" functions, interrupt routines, and callbacks. Replacement of providedEntry / expectedCallback. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=implementedEntry.bswModuleEntry, implementedEntry.variationPoint.shortLabel vh.latestBindingTime=preCompileTime





Class	BswModuleDescription			
internalBehavior	BswInternalBehavior	*	aggr	<p>The various BswInternalBehaviors associated with a Bsw ModuleDescription can be distributed over several physical files. Therefore the aggregation is <<atp Splitable>>.</p> <p>Stereotypes: atpSplitable Tags: atp.Splitkey=internalBehavior.shortName xml.sequenceOffset=65</p>
moduleId	PositiveInteger	0..1	attr	<p>Refers to the BSW Module Identifier defined by the AUTOSAR standard. For non-standardized modules, a proprietary identifier can be optionally chosen.</p> <p>Tags:xml.sequenceOffset=5</p>
providedClientServerEntry	BswModuleClientServerEntry	*	aggr	<p>Specifies that this module provides a client server entry which can be called from another partition or core. This entry is declared locally to this context and will be connected to the requiredClientServerEntry of another or the same module via the configuration of the BSW Scheduler.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=providedClientServerEntry.shortName, providedClientServerEntry.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=45</p>
providedData	VariableDataPrototype	*	aggr	<p>Specifies a data prototype provided by this module in order to be read from another partition or core. The providedData is declared locally to this context and will be connected to the requiredData of another or the same module via the configuration of the BSW Scheduler.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=providedData.shortName, providedData.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=55</p>
providedModeGroup	ModeDeclarationGroupPrototype	*	aggr	<p>A set of modes which is owned and provided by this module or cluster. It can be connected to the required ModeGroups of other modules or clusters via the configuration of the BswScheduler. It can also be synchronized with modes provided via ports by an associated ServiceSwComponentType, EcuAbstractionSwComponentType or ComplexDeviceDriverSwComponentType.</p> <p>Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=providedModeGroup.shortName, providedModeGroup.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=25</p>
releasedTrigger	Trigger	*	aggr	<p>A Trigger released by this module or cluster. It can be connected to the requiredTriggers of other modules or clusters via the configuration of the BswScheduler. It can also be synchronized with Triggers provided via ports by an associated ServiceSwComponentType, EcuAbstractionSwComponentType or ComplexDeviceDriverSwComponentType.</p>





Class	BswModuleDescription			
				<div>△</div> Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=releasedTrigger.shortName, released Trigger.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=35
requiredClient ServerEntry	BswModuleClientServer Entry	*	aggr	<p>Specifies that this module requires a client server entry which can be implemented on another partition or core. This entry is declared locally to this context and will be connected to the providedClientServerEntry of another or the same module via the configuration of the BSW Scheduler.</p> Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=requiredClientServerEntry.shortName, requiredClientServerEntry.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=50
requiredData	VariableDataPrototype	*	aggr	<p>Specifies a data prototype required by this module in order to be provided from another partition or core. The required Data is declared locally to this context and will be connected to the providedData of another or the same module via the configuration of the BswScheduler.</p> Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=requiredData.shortName, required Data.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=60
requiredMode Group	ModeDeclarationGroup Prototype	*	aggr	<p>Specifies that this module or cluster depends on a certain mode group. The requiredModeGroup is local to this context and will be connected to the providedModeGroup of another module or cluster via the configuration of the BswScheduler.</p> Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=requiredModeGroup.shortName, required ModeGroup.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=30
requiredTrigger	Trigger	*	aggr	<p>Specifies that this module or cluster reacts upon an external trigger. This requiredTrigger is declared locally to this context and will be connected to the providedTrigger of another module or cluster via the configuration of the BswScheduler.</p> Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=requiredTrigger.shortName, required Trigger.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=40

Table A.29: BswModuleDescription

Class	BswModuleEntry			
Package	M2::AUTOSARTemplates::BswModuleTemplate::BswInterfaces			
Note	<p>This class represents a single API entry (C-function prototype) into the BSW module or cluster.</p> <p>The name of the C-function is equal to the short name of this element with one exception: In case of multiple instances of a module on the same CPU, special rules for "infixes" apply, see description of class BswImplementation.</p> <p>Tags:atp.recommendedPackage=BswModuleEntries</p>			
Base	ARElement , ARObject , AtpBlueprint , AtpBlueprintable , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
argument (ordered)	SwServiceArg	*	aggr	<p>An argument belonging to this BswModuleEntry.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=blueprintDerivationTime xml.sequenceOffset=45</p>
bswEntryKind	BswEntryKindEnum	0..1	attr	<p>This describes whether the entry is concrete or abstract. If the attribute is missing the entry is considered as concrete.</p> <p>Tags:xml.sequenceOffset=40</p>
callType	BswCallType	1	attr	<p>The type of call associated with this service.</p> <p>Tags:xml.sequenceOffset=25</p>
execution Context	BswExecutionContext	1	attr	<p>Specifies the execution context which is required (in case of entries into this module) or guaranteed (in case of entries called from this module) for this service.</p> <p>Tags:xml.sequenceOffset=30</p>
function Prototype Emitter	NameToken	0..1	attr	<p>This attribute is used to control the generation of function prototypes. If set to "RTE", the RTE generates the function prototypes in the Module Interlink Header File.</p>
isReentrant	Boolean	1	attr	<p>Reentrancy from the viewpoint of function callers:</p> <ul style="list-style-type: none"> • True: Enables the service to be invoked again, before the service has finished. • False: It is prohibited to invoke the service again before it has finished. <p>Tags:xml.sequenceOffset=15</p>
isSynchronous	Boolean	1	attr	<p>Synchronicity from the viewpoint of function callers:</p> <ul style="list-style-type: none"> • True: This calls a synchronous service, i.e. the service is completed when the call returns. • False: The service (on semantical level) may not be complete when the call returns. <p>Tags:xml.sequenceOffset=20</p>
returnType	SwServiceArg	0..1	aggr	<p>The return type belonging to this bswModuleEntry.</p> <p>Tags:xml.sequenceOffset=40</p>
role	Identifier	0..1	attr	<p>Specifies the role of the entry in the given context. It shall be equal to the standardized name of the service call, especially in cases where no ServiceIdentifier is specified, e.g. for callbacks. Note that the ShortName is not always sufficient because it maybe vendor specific (e.g. for callbacks which can have more than one instance).</p> <p>Tags:xml.sequenceOffset=10</p>





Class	BswModuleEntry			
serviceId	PositiveInteger	0..1	attr	Refers to the service identifier of the Standardized Interfaces of AUTOSAR basic software. For non-standardized interfaces, it can optionally be used for proprietary identification. Tags: xml.sequenceOffset=5
swServiceImplPolicy	SwServiceImplPolicyEnum	1	attr	Denotes the implementation policy as a standard function call, inline function or macro. This has to be specified on interface level because it determines the signature of the call. Tags: xml.sequenceOffset=35

Table A.30: BswModuleEntry

Class	Caption			
Package	M2::MSR::Documentation::BlockElements			
Note	This meta-class represents the ability to express a caption which is a title, and a shortName.			
Base	ARObject, MultilanguageReferrable, Referrable			
Attribute	Type	Mult.	Kind	Note
desc	MultiLanguageOverviewParagraph	0..1	aggr	This represents a general but brief (one paragraph) description what the object in question is about. It is only one paragraph! This property helps a human reader to identify the object in question. Tags: xml.sequenceOffset=10

Table A.31: Caption

Class	Chapter			
Package	M2::MSR::Documentation::Chapters			
Note	This meta-class represents a chapter of a document. Chapters are the primary structuring element in documentation.			
Base	ARObject, DocumentViewSelectable, Identifiable , MultilanguageReferrable, Paginateable, Referrable			
Attribute	Type	Mult.	Kind	Note
chapterModel	ChapterModel	1	aggr	This represents the overall contents of the chapter. Tags: xml.roleElement=false xml.roleWrapperElement=false xml.typeElement=false xml.typeWrapperElement=false
helpEntry	String	0..1	attr	This specifies an entry point in an online help system to be linked with the parent class. The syntax shall be defined by the applied help system respectively help system generator. Maybe it is a concatenated Identifier, but as of now we leave it as an arbitrary string. Tags: xml.attribute=true

Table A.32: Chapter

Class	ClassContentConditional			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring			
Note	Specifies the valid content of the class. The content can optionally depend on a condition. (E.g. value of attribute 'category')			
Base	ARObject, Identifiable , MultilanguageReferrable , Referrable			
Attribute	Type	Mult.	Kind	Note
attribute Tailoring	AttributeTailoring	*	aggr	Tailorings of the owned and inherited attributes of this Meta Classes Tags: xml.sequenceOffset=20
condition	AbstractCondition	0..1	aggr	The rules on the content of this class are enabled if the condition validates to true. Tags: xml.sequenceOffset=10
constraint Tailoring	ConstraintTailoring	*	aggr	Specification of tailorings of Constraints of that are owned by this Meta Classes Tags: xml.sequenceOffset=30
sdgTailoring	SdgTailoring	*	aggr	Specification of the applicable Special Data Group Tags: xml.sequenceOffset=40

Table A.33: ClassContentConditional

Class	ClassTailoring (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring			
Note	The ClassTailoring is an abstract class that allows the tailoring of its attributes, applicable constraints and Sdgs.			
Base	ARObject			
Subclasses	AbstractClassTailoring , ConcreteClassTailoring			
Attribute	Type	Mult.	Kind	Note
classContent	ClassContentConditional	*	aggr	Specifies the accepted / not accepted content of the class. All rules apply that fulfill the condition of the ClassContentConditional Tags: xml.sequenceOffset=30
multiplicity Restriction	MultiplicityRestrictionWithSeverity	0..1	aggr	Specifies the multiplicity of the class in the current context. Tags: xml.sequenceOffset=10
variation Restriction	VariationRestrictionWithSeverity	0..1	aggr	Specifies restrictions on the usage of variant handling. Tags: xml.sequenceOffset=20

Table A.34: ClassTailoring

Class	ClientServerInterfaceToBswModuleEntryBlueprintMapping			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::ClientServerInterfaceToBswModuleEntryMapping			
Note	This represents a mapping between one ClientServerInterface blueprint and BswModuleEntry blueprint in order to express the intended implementation of ClientServerOperations by specific BswModuleEntries under consideration of PortDefinedArguments. Such a mapping enables the formal check whether the number of arguments and the data types of arguments of the operation + additional PortDefined Arguments matches the signature of the BswModuleEntry. Tags: atp.recommendedPackage=BlueprintMappingSets			





Class	ClientServerInterfaceToBswModuleEntryBlueprintMapping			
Base	ARElement , ARObject , AtpBlueprint , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
clientServerInterface	ClientServerInterface	1	ref	The referenced ClientServerInterface represents the client server interface the mapping is dedicated to.
operationMapping	ClientServerOperationBlueprintMapping	1..*	aggr	This specifies the operations used in the mapping between the ClientServerInterface and the BswModuleEntry. Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime
portDefinedArgumentBlueprint (ordered)	PortDefinedArgumentBlueprint	*	aggr	This specifies the PortDefinedArguments used in the mapping between the ClientServerInterface and the BswModuleEntry. Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime

Table A.35: ClientServerInterfaceToBswModuleEntryBlueprintMapping

Class	ClientServerOperationBlueprintMapping			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::ClientServerInterfaceToBswModuleEntryMapping			
Note	This class describes a specific mapping between a ClientServerOperation in a ClientServerInterface blueprint and a BswModuleEntry blueprint.			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
blueprintMappingGuide	DocumentationBlock	0..1	aggr	This attribute offers the possibility to provide additional information with respect to the mapping.
clientServerOperation	ClientServerOperation	1	ref	The referenced ClientServerOperation represents the client server operation the mapping is dedicated to.

Table A.36: ClientServerOperationBlueprintMapping

Class	CompositeInterface			
Package	M2::AUTOSARTemplates::AbstractPlatform			
Note	This represents the ability to define a PortInterface that consists of a composition of commands and indications. Tags: atp.Status=draft atp.recommendedPackage=CompositeInterfaces			
Base	ARElement , ARObject , AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpType , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , PortInterface , Referrable			
Attribute	Type	Mult.	Kind	Note
command	ClientServerOperation	*	aggr	This represents the collection of commands or function calls (with optional data arguments) defined in the context of an ApplicationInterface. Stereotypes: atpVariation Tags: atp.Status=draft vh.latestBindingTime=blueprintDerivationTime





Class	CompositeInterface			
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: atpVariation</p> <p>Tags: atp.Status=draft vh.latestBindingTime=blueprintDerivationTime</p>

Table A.37: CompositeInterface

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 hierarchical structures of software-components can be created.</p> <p>Tags:atp.recommendedPackage=SwComponentTypes</p>			
Base	ARElement , ARObject , AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpType , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable , SwComponentType			
Attribute	Type	Mult.	Kind	Note
component	SwComponentPrototype	*	aggr	<p>Stereotypes: atpSplittable; atpVariation</p> <p>Tags: atp.Splitkey=component.shortName, component.variationPoint.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.variationPoint.shortLabel vh.latestBindingTime=postBuild</p>

Table A.38: CompositionSwComponentType

Class	ConcreteClassTailoring			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring			
Note	Tailoring of concrete meta classes.			
Base	ARObject , ClassTailoring , DataFormatElementReference , DataFormatElementScope , Identifiable , MultilanguageReferrable , Referrable , SpecElementReference , SpecElementScope			
Attribute	Type	Mult.	Kind	Note
validationRoot	Boolean	0..1	attr	<p>Specification if this concrete Meta-Class is a root element for validation. I.e.: The validation starts at an object of this concrete Meta-Class and continues by following all aggregations and references that are in scope of this Data Exchange Point.</p> <p>Tags:xml.sequenceOffset=10</p>

Table A.39: ConcreteClassTailoring

Class	<<atpMixedString>> ConditionByFormula			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling			
Note	<p>This class represents a condition which is computed based on system constants according to the specified expression. The expected result is considered as boolean value.</p> <p>The result of the expression is interpreted as a condition.</p> <ul style="list-style-type: none"> • "0" represents "false"; • a value other than zero is considered "true" 			
Base	ARObject, FormulaExpression, SwSystemconstDependentFormula			
Attribute	Type	Mult.	Kind	Note
bindingTime	BindingTimeEnum	1	attr	<p>This attribute specifies the point in time when condition may be evaluated at earliest. At this point in time all referenced system constants shall have a value.</p> <p>Tags:xml.attribute=true</p>

Table A.40: ConditionByFormula

Class	Documentation			
Package	M2::AUTOSARTemplates::GenericStructure::DocumentationOnM1			
Note	<p>This meta-class represents the ability to handle a so called standalone documentation. Standalone means, that such a documentation is not embedded in another ARElement or identifiable object. The standalone documentation is an entity of its own which denotes its context by reference to other objects and instances.</p> <p>Tags:atp.recommendedPackage=Documentations</p>			
Base	ARElement, ARObject, CollectableElement, Identifiable , MultilanguageReferrable, PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
context	DocumentationContext	*	aggr	This is the context of the particular documentation.
documentationContent	PredefinedChapter	0..1	aggr	<p>This is the content of the documentation related to the specified contexts.</p> <p>Tags:xml.sequenceOffset=200</p>

Table A.41: Documentation

Class	<<atpMixed>> DocumentationBlock			
Package	M2::MSR::Documentation::BlockElements			
Note	This class represents a documentation block. It is made of basic text structure elements which can be displayed in a table cell.			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
defList	DefList	0..1	aggr	<p>This represents a definition list in the documentation block.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=40</p>
figure	MIFigure	0..1	aggr	<p>This represents a figure in the documentation block.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=70</p>





Class	<<atpMixed>> DocumentationBlock			
formula	MlFormula	0..1	aggr	<p>This is a formula in the definition block.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=60</p>
labeledList	LabeledList	0..1	aggr	<p>This represents a labeled list.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=50</p>
list	List	0..1	aggr	<p>This represents numbered or unnumbered list.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=30</p>
msrQueryP2	MsrQueryP2	0..1	aggr	<p>This represents automatically contributed contents provided by an msrquery in the context of Documentation Block.</p>
note	Note	0..1	aggr	<p>This represents a note in the text flow.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=80</p>
p	MultiLanguage Paragraph	0..1	aggr	<p>This is one particular paragraph.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=10</p>
structuredReq	StructuredReq	0..1	aggr	<p>This aggregation supports structured requirements embedded in a documentation block.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=100</p>
trace	TraceableText	0..1	aggr	<p>This represents traceable text in the documentation block. This allows to specify requirements/constraints in any documentation block.</p> <p>The kind of the trace is specified in the category.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=90</p>
verbatim	MultiLanguageVerbatim	0..1	aggr	<p>This represents one particular verbatim text.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=postBuild xml.sequenceOffset=20</p>

Table A.42: DocumentationBlock

Class	DocumentationContext			
Package	M2::AUTOSARTemplates::GenericStructure::DocumentationOnM1			
Note	This class represents the ability to denote a context of a so called standalone documentation. Note that this is an <<atpMixed>>. The contents needs to be considered as ordered.			
Base	ARObject, MultilanguageReferrable, Referrable			
Attribute	Type	Mult.	Kind	Note
feature	AtpFeature	0..1	iref	This refers to a particular feature (instance in the M0 model) to which is the context of the documentation. InstanceRef implemented by: AnyInstanceRef
identifiable	Identifiable	0..1	ref	This is an identifiable object which is part of the context of the documentation.

Table A.43: DocumentationContext

Class	EnumerationMappingTable			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling::AttributeValueVariationPoints			
Note	This class represents an attribute value variation point for Enumeration attributes. Note that this class might be used in the extended meta-model only. Tags: atp.recommendedPackage=EnumerationMappingTables			
Base	ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable			
Attribute	Type	Mult.	Kind	Note
entry	EnumerationMappingEntry	*	aggr	Key-value pair mapping enumeration values to unique integers. Tags: xml.roleElement=true xml.roleWrapperElement=true xml.typeElement=false xml.typeWrapperElement=false

Table A.44: EnumerationMappingTable

Class	EvaluatedVariantSet			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling			
Note	<p>This meta class represents the ability to express if a set of ARElements is able to support one or more particular variants.</p> <p>In other words, for a given set of evaluatedElements this meta class represents a table of evaluated variants, where each PredefinedVariant represents one column. In this column each descendant sw SystemconstantValue resp. postbuildVariantCriterionValue represents one entry.</p> <p>In a graphical representation each swSystemconstantValueSet / postBuildVariantCriterionValueSet could be used as an intermediate headline in the table column.</p> <p>If the approvalStatus is "APPROVED" it expresses that the collection of CollectableElements is known be valid for the given evaluatedVariants.</p> <p>Note that the EvaluatedVariantSet is a CollectableElement. This allows to establish a hierarchy of EvaluatedVariantSets.</p> <p>Tags:atp.recommendedPackage=EvaluatedVariantSets</p>			
Base	ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable			
Attribute	Type	Mult.	Kind	Note





Class	EvaluatedVariantSet			
approvalStatus	NameToken	1	attr	<p>Defines the approval status of a predefined variant. Two values are predefined: "APPROVED" and "REJECTED":</p> <ul style="list-style-type: none"> Approved variants are known to work. Rejected variants are known NOT to work. <p>Further values can be approved on a per-company basis; within AUTOSAR only "APPROVED" and "REJECTED" should be recognized.</p>
evaluated Element	CollectableElement	*	ref	<p>This represents a particular element which is evaluated in context of the EvaluatedVariants. The approvalStatus applies to this element (and all of its descendants). In other words, the referenced elements are those that were considered when the predefined variant was evaluated.</p>
evaluated Variant	PredefinedVariant	*	ref	<p>This metaclass represents one particular variant which was evaluated. LowerMultiplicity is set to 0 to support a stepwise approach.</p>

Table A.45: EvaluatedVariantSet

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

Table A.46: 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			
Attribute	Type	Mult.	Kind	Note
definition	FMAttributeDef	1	ref	<p>This refers to the definition of this attribute.</p> <p>Stereotypes: atpIdentityContributor</p>
value	Numerical	1	attr	This represents the value of this attribute.

Table A.47: FMAttributeValue

Class	FMFeature			
Package	M2::AUTOSARTemplates::FeatureModelTemplate			
Note	<p>A FMFeature describes an essential characteristic of a product. Each FMFeature is contained in exactly one FMFeatureModel.</p> <p>Tags: atp.recommendedPackage=FMFeatureModels</p>			
Base	ARElement , ARObject , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
attributeDef	FMAttributeDef	*	aggr	This defines the attributes of the given feature.





Class	FMFeature			
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.48: 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			
Attribute	Type	Mult.	Kind	Note
category	CategoryString	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	1..*	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.49: 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			
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





Class	FMFeatureModel			
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.50: 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			
Attribute	Type	Mult.	Kind	Note
feature	FMFeature	1..*	ref	The FMFeature that is targeted by this FMFeature Relation.
restriction	FMConditionByFeatures AndAttributes	0..1	aggr	If given, the condition shall evaluate to true, in order for the FMFeatureRelation to be active.

Table A.51: 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			
Attribute	Type	Mult.	Kind	Note
attributeValue	FMAttributeValue	*	aggr	This defines a value for the attribute that is referred to in the role definition. Note that a FMFeatureSelection cannot include two FMAttributeValues that refer to the same FMAttributeDef in the role definition. Tags: xml.sequenceOffset=50
feature	FMFeature	1	ref	The FMFeature whose state is defined by this FMFeature Selection. Tags: xml.sequenceOffset=10
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	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.52: 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			
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 FMFeatureSelectionSet.

Table A.53: FMFeatureSelectionSet

Enumeration	FMFeatureSelectionState
Package	M2::AUTOSARTemplates::FeatureModelTemplate
Note	Defines how a particular FMFeature contributes to a FMFSelectionSet.
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.54: 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	ARObject , FormulaExpression			
Subclasses	FMConditionByFeaturesAndAttributes			
Attribute	Type	Mult.	Kind	Note
attribute	FMAttributeDef	1	ref	An expression of type FMFormulaByFeaturesAndAttributes may refer to attributes of FMFeatures.
feature	FMFeature	1	ref	An expression of type FMFormulaByFeaturesAndAttributes may refer to FMFeatures.

Table A.55: FMFormulaByFeaturesAndAttributes

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





Class	GeneralPurposeIPdu			
Base	ARObject, CollectableElement, IPdu, Identifiable , MultilanguageReferrable, PackageableElement , Pdu, Referrable			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.56: 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	ARObject, MultilanguageReferrable, Referrable			
Subclasses	ARPackage , AbstractDolpLogicAddressProps , AbstractEvent , AbstractImplementationDataTypeElement , AbstractSecurityEventFilter , AbstractSecurityIdsmInstanceFilter , AbstractServiceInstance , Application Endpoint, ApplicationError, AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpFeature , AutosarOperation ArgumentInstance, AutosarVariableInstance, BlockState , BuildActionEntity , BuildActionEnvironment, Chapter , ClassContentConditional , ClientIdDefinition, ClientServerOperation, Code, CollectableElement , ComManagementMapping, CommConnectorPort , CommunicationConnector , CommunicationController , Compiler, ConsistencyNeeds, ConsumedEventGroup, CouplingPort, CouplingPortStructuralElement , CryptoKeySlot, CryptoServiceMapping , DataPrototypeGroup, DataTransformation, DependencyOn Artifact, DiagEventDebounceAlgorithm , DiagnosticConnectedIndicator, DiagnosticDataElement, DiagnosticFunctionInhibitSource, DiagnosticRoutineSubfunction , DltArgument, DltLogChannel, Dlt Message, DolpInterface, DolpLogicAddress, DolpRoutingActivation, EndToEndProtection, Ethernet WakeupSleepOnDataLineConfig, ExclusiveArea, ExecutableEntity , ExecutionTime , FMAttributeDef , FM FeatureMapAssertion, FMFeatureMapCondition, FMFeatureMapElement, FMFeatureRelation , FM FeatureRestriction, FMFeatureSelection , FrameTriggering , GeneralParameter, GlobalTimeGateway, GlobalTimeMaster , GlobalTimeSlave , HeapUsage , HwAttributeDef, HwAttributeLiteralDef, HwPin, Hw PinGroup, IPSecRule, IPv6ExtHeaderFilterList, ISignalToIPduMapping, ISignalTriggering, IdentCaption , InternalTriggeringPoint, Keyword, LifeCycleState , Linker, MacMulticastGroup, McDataInstance, Memory Section, ModeDeclaration, ModeDeclarationMapping, ModeSwitchPoint, NetworkEndpoint, NmCluster , NmNode , PackageableElement , ParameterAccess, PduToFrameMapping, PduTriggering, Physical Channel , PortGroup, PortInterfaceMapping , PossibleErrorReaction, ResourceConsumption, RootSw CompositionPrototype, RptComponent, RptContainer, RptExecutableEntity, RptExecutableEntityEvent, RptExecutionContext, RptProfile, RptServicePoint, SdgAttribute , SdgClass , SecureCommunication AuthenticationProps, SecureCommunicationFreshnessProps, SecurityEventContextProps, Service Needs , SignalServiceTranslationEventProps, SignalServiceTranslationProps, SocketAddress, SomeIpTp Channel, SpecElementReference , StackUsage , StaticSocketConnection, StructuredReq, SwGenericAxis ParamType, SwServiceArg, SwcServiceDependency, SystemMapping, TimeBaseResource , Timing Condition, TimingConstraint , TimingDescription , TimingExtensionResource, TimingModelInstance, Topic1 , TpAddress, TraceableTable, TraceableText , TracedFailure , TransformationProps , Transformation Technology, Trigger, VariableAccess, VariationPointProxy, ViewMap, VlanConfig			
Attribute	Type	Mult.	Kind	Note
adminData	AdminData	0..1	aggr	This represents the administrative data for the identifiable object. Tags: xml.sequenceOffset=-40
annotation	Annotation	*	aggr	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. Tags: xml.sequenceOffset=-25
category	CategoryString	0..1	attr	The category is a keyword that specializes the semantics of the Identifiable. It affects the expected existence of attributes and the applicability of constraints. Tags: xml.sequenceOffset=-50





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.57: Identifiable

Primitive	Identifier			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::PrimitiveTypes			
Note	<p>An Identifier is a string with a number of constraints on its appearance, satisfying the requirements typical programming languages define for their Identifiers.</p> <p>This datatype represents a string, that can be used as a c-Identifier.</p> <p>It shall start with a letter, may consist of letters, digits and underscores.</p> <p>Tags: xml.xsd.customType=IDENTIFIER xml.xsd.maxLength=128 xml.xsd.pattern=[a-zA-Z][a-zA-Z0-9_]* xml.xsd.type=string</p>			
Attribute	Type	Mult.	Kind	Note
blueprintValue	String	0..1	attr	<p>This represents a description that documents how the value shall be defined when deriving objects from the blueprint.</p> <p>Tags: atp.Status=draft xml.attribute=true</p>





Primitive	Identifier			
namePattern	String	0..1	attr	<p>This attribute represents a pattern which shall be used to define the value of the identifier if the identifier in question is part of a blueprint.</p> <p>For more details refer to TPS_StandardizationTemplate.</p> <p>Tags:xml.attribute=true</p>

Table A.58: Identifier

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=draft atp.recommendedPackage=IdsDesigns</p>			
Base	ARElement , ARObject , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
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=draft vh.latestBindingTime=systemDesignTime</p>

Table A.59: 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=draft atp.recommendedPackage=IdsmInstanceToEcuInstanceMappings</p>			
Base	ARElement , ARObject , CollectableElement , Identifiable , IdsCommonElement , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
blockState	BlockState	*	aggr	<p>This reference defines the BlockState in the collection BlockStateSet.</p> <p>Tags:atp.Status=draft</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: atpVariation Tags: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>





Class	IdsmInstance			
idsmModule Instantiation	IdsmModule Instantiation	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=draft</p>
rateLimitation Filter	IdsmRateLimitation	0..1	ref	<p>This reference identifies the applicable rate limitation filter for all security events on the related EcuInstance.</p> <p>Stereotypes: atpVariation Tags: atp.Status=draft vh.latestBindingTime=preCompileTime</p>
signature SupportAp	IdsmSignatureSupport Ap	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=draft</p>
signature SupportCp	IdsmSignatureSupport Cp	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=draft</p>
timestamp Format	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>
trafficLimitation Filter	IdsmTrafficLimitation	0..1	ref	<p>This reference identifies the applicable traffic limitation filter for all security events on the related EcuInstance.</p> <p>Stereotypes: atpVariation Tags: atp.Status=draft vh.latestBindingTime=preCompileTime</p>

Table A.60: 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=draft</p>			
Base	ARObject, AbstractSecurityIdsmInstanceFilter, Identifiable , MultilanguageReferrable , Referrable			
Attribute	Type	Mult.	Kind	Note
maxEventsInInterval	PositiveInteger	1	attr	<p>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.</p> <p>Tags:atp.Status=draft</p>
timeInterval	Float	1	attr	<p>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.</p> <p>Tags:atp.Status=draft</p>

Table A.61: IdsmRateLimitation

Class	IdsmSignatureSupportAp			
Package	M2::AUTOSARTemplates::SecurityExtractTemplate			
Note	<p>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.</p> <p>Tags:atp.Status=draft</p>			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
cryptoPrimitive	String	1	attr	<p>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".</p>
keySlot	CryptoKeySlot	0..1	ref	<p>This reference denotes the cryptographic key to be used by the cryptographic algorithm for providing authentication information in QSEv messages.</p>

Table A.62: IdsmSignatureSupportAp

Class	IdsmSignatureSupportCp			
Package	M2::AUTOSARTemplates::SecurityExtractTemplate			
Note	<p>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.</p> <p>Tags:atp.Status=draft</p>			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
authentication	CryptoServicePrimitive	1	ref	<p>This reference denotes the cryptographic primitives for providing authentication information in QSEv messages.</p>
cryptoServiceKey	CryptoServiceKey	0..1	ref	<p>This reference denotes the cryptographic key to be used by the cryptographic algorithm for providing authentication information in QSEv messages.</p>

Table A.63: IdsmSignatureSupportCp

Class	IdsmTrafficLimitation			
Package	M2::AUTOSARTemplates::SecurityExtractTemplate			
Note	<p>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.</p> <p>Tags:atp.Status=draft</p>			
Base	ARObject, AbstractSecurityIdsmInstanceFilter, Identifiable , MultilanguageReferrable , Referrable			
Attribute	Type	Mult.	Kind	Note
maxBytesInInterval	PositiveInteger	0..1	attr	<p>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.</p> <p>Tags:atp.Status=draft</p>
timeInterval	Float	0..1	attr	<p>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.</p> <p>Tags:atp.Status=draft</p>

Table A.64: IdsmTrafficLimitation

Class	Implementation (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::Implementation			
Note	Description of an implementation a single software component or module.			
Base	ARElement , ARObject, CollectableElement, Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Subclasses	BswImplementation, SwcImplementation			
Attribute	Type	Mult.	Kind	Note
buildActionManifest	BuildActionManifest	0..1	ref	<p>A manifest specifying the intended build actions for the software delivered with this implementation.</p> <p>Stereotypes: atpVariation Tags:vh.latestBindingTime=codeGenerationTime</p>
codeDescriptor	Code	*	aggr	Specifies the provided implementation code.
compiler	Compiler	*	aggr	Specifies the compiler for which this implementation has been released
generatedArtifact	DependencyOnArtifact	*	aggr	<p>Relates to an artifact that will be generated during the integration of this Implementation by an associated generator tool. Note that this is an optional information since it might not always be in the scope of a single module or component to provide this information.</p> <p>Stereotypes: atpVariation Tags:vh.latestBindingTime=preCompileTime</p>
hwElement	HwElement	*	ref	The hardware elements (e.g. the processor) required for this implementation.
linker	Linker	*	aggr	Specifies the linker for which this implementation has been released.
mcSupport	McSupportData	0..1	aggr	<p>The measurement & calibration support data belonging to this implementation. The aggregation is <<atpSplitable>> because in case of an already existing BSW Implementation model, this description will be added later in the process, namely at code generation time.</p> <p>Stereotypes: atpSplitable Tags:atp.Splitkey=mcSupport</p>





Class	Implementation (abstract)			
programming Language	Programminglanguage Enum	0..1	attr	Programming language the implementation was created in.
requiredArtifact	DependencyOnArtifact	*	aggr	Specifies that this Implementation depends on the existence of another artifact (e.g. a library). This aggregation of DependencyOnArtifact is subject to variability with the purpose to support variability in the implementations. Different algorithms in the implementation might cause different dependencies, e.g. the number of used libraries. Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime
required GeneratorTool	DependencyOnArtifact	*	aggr	Relates this Implementation to a generator tool in order to generate additional artifacts during integration. Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime
resource Consumption	ResourceConsumption	0..1	aggr	All static and dynamic resources for each implementation are described within the ResourceConsumption class. Stereotypes: atpSplitable Tags: atp.Splitkey=resourceConsumption.shortName
swcBsw Mapping	SwcBswMapping	0..1	ref	This allows a mapping between an SWC and a BSW behavior to be attached to an implementation description (for AUTOSAR Service, ECU Abstraction and Complex Driver Components). It is up to the methodology to define whether this reference has to be set for the Swc- or Bsw Implementation or for both.
swVersion	RevisionLabelString	0..1	attr	Software version of this implementation. The numbering contains three levels (like major, minor, patch), its values are vendor specific.
usedCode Generator	String	0..1	attr	Optional: code generator used.
vendorId	PositiveInteger	0..1	attr	Vendor ID of this Implementation according to the AUTOSAR vendor list

Table A.65: Implementation

Class	ImplementationDataType			
Package	M2::AUTOSARTemplates::CommonStructure::ImplementationDataTypes			
Note	Describes a reusable data type on the implementation level. This will typically correspond to a typedef in C-code. Tags: atp.recommendedPackage=ImplementationDataTypes			
Base	ARElement , ARObject , AbstractImplementationDataType , AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpType , AutosarDataType , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
dynamicArray SizeProfile	String	0..1	attr	Specifies the profile which the array will follow in case this data type is a variable size array.
isStructWith Optional Element	Boolean	0..1	attr	This attribute is only valid if the attribute category is set to STRUCTURE. If set to True, this attribute indicates that the ImplementationDataType has been created with the intention to define at least one element of the structure as optional.





Class	ImplementationDataType			
subElement (ordered)	ImplementationDataTypeElement	*	aggr	Specifies an element of an array, struct, or union data type. The aggregation of ImplementationDataTypeElement is subject to variability with the purpose to support the conditional existence of elements inside a ImplementationDataType representing a structure. Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime
symbolProps	SymbolProps	0..1	aggr	This represents the SymbolProps for the ImplementationDataType. Stereotypes: atpSplittable Tags: atp.Splitkey=symbolProps.shortName
typeEmitter	NameToken	0..1	attr	This attribute is used to control which part of the AUTOSAR toolchain is supposed to trigger data type definitions.

Table A.66: ImplementationDataType

Class	ImplementationDataTypeElement			
Package	M2::AUTOSARTemplates::CommonStructure::ImplementationDataTypes			
Note	<p>Declares a data object which is locally aggregated. Such an element can only be used within the scope where it is aggregated.</p> <p>This element either consists of further subElements or it is further defined via its swDataDefProps.</p> <p>There are several use cases within the system of ImplementationDataTypes for such a local declaration:</p> <ul style="list-style-type: none"> It can represent the elements of an array, defining the element type and array size It can represent an element of a struct, defining its type It can be the local declaration of a debug element. 			
Base	ARObject, AbstractImplementationDataTypeElement, AtpClassifier , AtpFeature, AtpStructureElement, Identifiable , MultilanguageReferrable, Referrable			
Attribute	Type	Mult.	Kind	Note
arrayImplPolicy	ArrayImplPolicyEnum	0..1	attr	This attribute controls the implementation of the payload of an array. It shall only be used if the enclosing ImplementationDataType constitutes an array.
arraySize	PositiveInteger	0..1	attr	<p>The existence of this attributes (if bigger than 0) defines the size of an array and declares that this ImplementationDataTypeElement represents the type of each single array element.</p> <p>Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime</p>
arraySizeHandling	ArraySizeHandlingEnum	0..1	attr	The way how the size of the array is handled in case of a variable size array.
arraySizeSemantics	ArraySizeSemanticsEnum	0..1	attr	This attribute controls the meaning of the value of the array size.
isOptional	Boolean	0..1	attr	<p>This attribute represents the ability to declare the enclosing ImplementationDataTypeElement as optional. This means that, at runtime, the ImplementationDataTypeElement may or may not have a valid value and shall therefore be ignored.</p> <p>The underlying runtime software provides means to set the CppImplementationDataTypeElement as not valid at the sending end of a communication and determine its validity at the receiving end.</p>





Class	ImplementationDataTypeElement			
subElement (ordered)	ImplementationDataTypeElement	*	aggr	<p>Element of an array, struct, or union in case of a nested declaration (i.e. without using "typedefs").</p> <p>The aggregation of ImplementationDataTypeElement is subject to variability with the purpose to support the conditional existence of elements inside a ImplementationDataType representing a structure.</p> <p>Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime</p>
swDataDef Props	SwDataDefProps	0..1	aggr	The properties of this ImplementationDataTypeElement.

Table A.67: ImplementationDataTypeElement

Class	<<atpMixedString>> LParagraph			
Package	M2::MSR::Documentation::TextModel::LanguageDataModel			
Note	This is the text for a paragraph in one particular language. The language is denoted in the attribute l.			
Base	ARObject, LanguageSpecific, MixedContentForParagraph			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.68: LParagraph

Class	LifeCycleInfo			
Package	M2::AUTOSARTemplates::GenericStructure::LifeCycles			
Note	LifeCycleInfo describes the life cycle state of an element together with additional information like what to use instead			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
lcObject	Referrable	1	ref	Element(s) have the life cycle as described in lcState.
lcState	LifeCycleState	0..1	ref	This denotes the particular state assigned to the object. If no lcState is given then the default life cycle state of LifeCycleInfoSet is assumed.
periodBegin	LifeCyclePeriod	0..1	aggr	Starting point of period in which the element has the denoted life cycle state lcState. If no periodBegin is given then the default period begin of LifeCycleInfoSet is assumed.
periodEnd	LifeCyclePeriod	0..1	aggr	Expiry date, i.e. end point of period the element does not have the denoted life cycle state lcState any more. If no periodEnd is given then the default period begin of LifeCycleInfoSet is assumed.
remark	DocumentationBlock	0..1	aggr	<p>Remark describing for example</p> <ul style="list-style-type: none"> • why the element was given the specified life cycle • the semantics of useInstead
useInstead	Referrable	*	ref	<p>Element(s) that should be used instead of the one denoted in referrable.</p> <p>Only relevant in case of life cycle states lcState unlike "valid". In case there are multiple references the exact semantics shall be individually described in the remark.</p>

Table A.69: LifeCycleInfo

Class	LifeCycleInfoSet			
Package	M2::AUTOSARTemplates::GenericStructure::LifeCycles			
Note	<p>This meta class represents the ability to attach a life cycle information to a particular set of elements. The information can be defined for a particular period. This supports the definition of transition plans. If no period is specified, the life cycle state applies forever.</p> <p>Tags:atp.recommendedPackage=LifeCycleInfoSets</p>			
Base	ARElement, ARObject, CollectableElement, Identifiable, MultilanguageReferrable, PackageableElement, Referrable			
Attribute	Type	Mult.	Kind	Note
defaultLcState	LifeCycleState	1	ref	This denotes the default life cycle state. To be used in all LifeCycleInfo elements within the LifeCycleInfoSet if no life cycle state is stated there explicitly. I.e. the defaultLc State can be overwritten in LifeCycleInfo elements.
defaultPeriod Begin	LifeCyclePeriod	0..1	aggr	Default starting point of period in which all the specified lifeCycleInfo apply. Note that the default period can be overridden for each lifeCycleInfo individually.
defaultPeriod End	LifeCyclePeriod	0..1	aggr	Default expiry date, i.e. default end point of period for which all specified lifeCycleInfo apply. Note that the default period can be overridden for each lifeCycleInfo individually.
lifeCycleInfo	LifeCycleInfo	*	aggr	This represents one particular life cycle information.
usedLifeCycle StateDefinition Group	LifeCycleStateDefinition Group	1	ref	This denotes the life cycle states applicable to the current life cycle info set.

Table A.70: LifeCycleInfoSet

Class	LifeCyclePeriod			
Package	M2::AUTOSARTemplates::GenericStructure::LifeCycles			
Note	This meta class represents the ability to specify a point of time within a specified period, e.g. the starting or end point, in which a specific life cycle state is valid/applies to.			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
arRelease Version	RevisionLabelString	0..1	attr	Version of the AUTOSAR Release the element referred to is part of. The numbering contains three levels (major, minor, revision) which are defined by AUTOSAR. Tags: xml.sequenceOffset=20
date	DateTime	0..1	attr	Date within period. Tags: xml.sequenceOffset=10
productRelease	RevisionLabelString	0..1	attr	Version of the product within the period. Tags: xml.sequenceOffset=30

Table A.71: LifeCyclePeriod

Class	LifeCycleState			
Package	M2::AUTOSARTemplates::GenericStructure::LifeCycles			
Note	This meta class represents one particular state in the LifeCycle.			
Base	ARObject, AtpBlueprint, AtpBlueprintable, Identifiable, MultilanguageReferrable, Referrable			
Attribute	Type	Mult.	Kind	Note





Class	LifeCycleState			
–	–	–	–	–

Table A.72: LifeCycleState

Class	LifeCycleStateDefinitionGroup			
Package	M2::AUTOSARTemplates::GenericStructure::LifeCycles			
Note	This meta class represents the ability to define the states and properties of one particular life cycle. Tags: atp.recommendedPackage=LifeCycleStateDefintionGroups			
Base	ARElement , ARObject , AtpBlueprint , AtpBlueprintable , CollectableElement , Identifiable , Multilanguage , Referrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
lcState	LifeCycleState	*	aggr	Describes a single life cycle state of this life cycle state definition group.

Table A.73: LifeCycleStateDefinitionGroup

Class	<<atpMixedString>> MixedContentForParagraph (abstract)			
Package	M2::MSR::Documentation::TextModel::InlineTextModel			
Note	This mainly represents the text model of a full blown paragraph within a documentation.			
Base	ARObject			
Subclasses	LParagraph , SIParagraph			
Attribute	Type	Mult.	Kind	Note
br	Br	1	aggr	This element is the same as function here as in a HTML document i.e. it forces a line break. Tags: xml.sequenceOffset=40
e	EmphasisText	1	aggr	This is emphasized text. Tags: xml.sequenceOffset=70
ft	SIParagraph	1	aggr	This is a foot note within a paragraph.
ie	IndexEntry	1	aggr	This is an index entry. Tags: xml.sequenceOffset=110
std	Std	1	aggr	This is a referrence to a standard. Tags: xml.sequenceOffset=120
sub	Superscript	1	attr	This is subscript text. Tags: xml.sequenceOffset=100
sup	Superscript	1	attr	This is superscript text. Tags: xml.sequenceOffset=90
trace	Traceable	1	ref	This allows to place an arbitrary reference to a traceable object in documentation.
tt	Tt	1	aggr	This is a technical term. Tags: xml.sequenceOffset=30
xdoc	Xdoc	1	aggr	This is a reference to a printable external document. Tags: xml.sequenceOffset=130
xfile	Xfile	1	aggr	This represents a reference to an external file which usually cannot be printed. Tags: xml.sequenceOffset=140





Class	<<atpMixedString>> MixedContentForParagraph (abstract)			
xref	Xref	1	aggr	This is a cross reference. Tags: xml.sequenceOffset=50
xrefTarget	XrefTarget	1	aggr	This element specifies a reference target which can be scattered throughout the text. Tags: xml.sequenceOffset=60

Table A.74: MixedContentForParagraph

Class	PackageableElement (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::ARPackage			
Note	This meta-class specifies the ability to be a member of an AUTOSAR package.			
Base	ARObject, CollectableElement, Identifiable , MultilanguageReferrable, Referrable			
Subclasses	ARElement , EnumerationMappingTable			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.75: PackageableElement

Class	PortInterface (abstract)			
Package	M2::AUTOSARTemplates::SWComponentTemplate::PortInterface			
Note	Abstract base class for an interface that is either provided or required by a port of a software component.			
Base	ARElement , ARObject, AtpBlueprint , AtpBlueprintable, AtpClassifier , AtpType, CollectableElement, Identifiable , MultilanguageReferrable, PackageableElement , Referrable			
Subclasses	ClientServerInterface, CompositeInterface , DataInterface , ModeSwitchInterface, TriggerInterface			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.76: PortInterface

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 , Identifiable , MultilanguageReferrable, Referrable			
Subclasses	AbstractProvidedPortPrototype, AbstractRequiredPortPrototype			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.77: PortPrototype

Class	PortPrototypeBlueprint			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::BlueprintDedicated::PortPrototypeBlueprint			





Class	PortPrototypeBlueprint			
Note	<p>This meta-class represents the ability to express a blueprint of a PortPrototype by referring to a particular PortInterface. This blueprint can then be used as a guidance to create particular PortPrototypes which are defined according to this blueprint. By this it is possible to standardize application interfaces without the need to also standardize software-components with PortPrototypes typed by the standardized Port Interfaces.</p> <p>Tags:atp.recommendedPackage=PortPrototypeBlueprints</p>			
Base	ARElement , ARObject , AtpBlueprint , AtpClassifier , AtpFeature , AtpStructureElement , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
initValue	PortPrototypeBlueprint InitValue	*	aggr	This specifies the init values for the dataElements in the particular PortPrototypeBlueprint.
interface	PortInterface	1	ref	This is the interface for which the blueprint is defined. It may be a blueprint itself or a standardized PortInterface
providedCom Spec	PPortComSpec	*	aggr	Provided communication attributes per interface element (data element or operation).
requiredCom Spec	RPortComSpec	*	aggr	Required communication attributes, one for each interface element.

Table A.78: PortPrototypeBlueprint

Class	PostBuildVariantCondition			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling			
Note	<p>This class specifies the value which shall be assigned to a particular variant criterion in order to bind the variation point. If multiple criterion/value pairs are specified, they shall all match to bind the variation point.</p> <p>In other words binding can be represented by (criterion1 == value1) && (condition2 == value2) ...</p>			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
matching Criterion	PostBuildVariant Criterion	1	ref	This is the criterion which needs to match the value in order to make the PostbuildVariantCondition to be true.
value	Integer	1	attr	<p>This is the particular value of the post-build variant criterion.</p> <p>Stereotypes: atpVariation Tags:vh.latestBindingTime=preCompileTime</p>

Table A.79: PostBuildVariantCondition

Class	PredefinedVariant			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling			
Note	<p>This specifies one predefined variant. It is characterized by the union of all system constant values and post-build variant criterion values aggregated within all referenced system constant value sets and post build variant criterion value sets plus the value sets of the included variants.</p> <p>Tags:atp.recommendedPackage=PredefinedVariants</p>			
Base	ARElement , ARObject , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note





Class	PredefinedVariant			
includedVariant	PredefinedVariant	*	ref	The associated variants are considered part of this PredefinedVariant. This means the settings of the included variants are included in the settings of the referencing PredefinedVariant. Nevertheless the included variants might be included in several predefined variants.
postBuildVariant CriterionValue Set	PostBuildVariant CriterionValueSet	*	ref	This is the postBuildVariantCriterionValueSet contributing to the predefined variant.
sw Systemconstant ValueSet	SwSystemconstant ValueSet	*	ref	This ist the set of Systemconstant Values contributing to the predefined variant.

Table A.80: PredefinedVariant

Class	PrimitiveAttributeCondition			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::Data FormatTailoring			
Note	The PrimitiveAttributeCondition evaluates to true, if the referenced primitive attribute is accepted by all rules of this condition.			
Base	ARObject, AbstractCondition, AbstractMultiplicityRestriction , AbstractValueRestriction , AttributeCondition			
Attribute	Type	Mult.	Kind	Note
attribute	PrimitiveAttribute Tailoring	1	ref	The primitive attribute that has to be accepted by the restrictions of this PrimitiveAttributeCondition

Table A.81: PrimitiveAttributeCondition

Class	PrimitiveAttributeTailoring			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::Data FormatTailoring			
Note	Tailoring of primitive attributes. Primitive attributes are attributes that have a type which is marked by the stereotype <<primitive>> or <<enumeration>>			
Base	ARObject, AttributeTailoring , DataFormatElementReference , DataFormatElementScope , Identifiable , MultilanguageReferrable , Referrable , SpecElementReference , SpecElementScope			
Attribute	Type	Mult.	Kind	Note
defaultValue Handling	DefaultValueApplication StrategyEnum	0..1	attr	Specification of how to handle AUTOSAR defined default values.
subAttribute Tailoring	PrimitiveAttribute Tailoring	*	aggr	Tailors the attribute of a <<primitive>> data type.
valueRestriction	ValueRestrictionWith Severity	0..1	aggr	The restriction of the attribute value.

Table A.82: PrimitiveAttributeTailoring

Primitive	Ref
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::PrimitiveTypes
Note	<p>This primitive denotes a name based reference. For detailed syntax see the xsd.pattern.</p> <ul style="list-style-type: none"> • first slash (relative or absolute reference) [optional] • Identifier [required] • a sequence of slashes and Identifiers [optional] <p>This primitive is used by the meta-model tools to create the references.</p>





Primitive	Ref			
	<div>△</div> Tags: xml.xsd.customType=REF xml.xsd.pattern=/^[a-zA-Z][a-zA-Z0-9_]{0,127}/([a-zA-Z][a-zA-Z0-9_]{0,127})* xml.xsd.type=string			
Attribute	Type	Mult.	Kind	Note
base	Identifier	0..1	attr	This attribute reflects the base to be used for this reference. Tags: xml.attribute=true
blueprintValue	String	0..1	attr	This represents a description that documents how the value shall be defined when deriving objects from the blueprint. Tags: atp.Status=draft xml.attribute=true
index	PositiveInteger	0..1	attr	This attribute supports the use case to point on specific elements in an array. This is in particular required if arrays are used to implement particular data objects. Tags: xml.attribute=true

Table A.83: Ref

Class	ReferenceBase			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::ARPackage			
Note	This meta-class establishes a basis for relative references. Reference bases are identified by the short Label which shall be unique in the current package.			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
baseIsThisPackage	Boolean	1	attr	This indicates that this base is established by the current package. In this case the association "package" can be derived as the qualified shortName of the enclosing package. If the value of baseIsThisPackage is set to true then one of the following shall be true: <ul style="list-style-type: none"> target of the association "package" shall be the enclosing package. association "package" is omitted. Tags: xml.sequenceOffset=28
globalElement	ReferrableSubtypes Enum	*	attr	This attribute represents a meta-class for which the global referencing is supported via this reference base. Tags: xml.sequenceOffset=29
globalInPackage	ARPackage	*	ref	This represents the ability to express that global elements live in various packages which do not have a common ancestor package. Packages mentioned by ReferenceBase.globalInPackage are used in addition to the one in ReferenceBase.package. Tags: xml.sequenceOffset=28
isDefault	Boolean	1	attr	This attribute denotes if the current ReferenceBase is the default. Note that there can only be one default reference base within a package. Tags: xml.sequenceOffset=20





Class	ReferenceBase			
isGlobal	Boolean	1	attr	<p>This indicates that the target of the applicable reference can be resolved via the non-qualified shortName. This requires that the shortName of the target is unique within the package referenced in the reference base.</p> <p>The default is false.</p> <p>Note that the reference base also maintains a list of elements which may be referenced using a "global Reference".</p> <p>Tags:xml.sequenceOffset=25</p>
package	ARPackage	0..1	ref	<p>This association specifies the basis of all relative references with the base equals shortLabel.</p> <p>This association shall exist unless the value of baselsThis Package is set to true.</p> <p>Tags:xml.sequenceOffset=30</p>
shortLabel	Identifier	1	attr	<p>This is the name of the reference base. By this name, particular references can denote the applicable base.</p> <p>Stereotypes: atpIdentityContributor</p> <p>Tags:xml.sequenceOffset=10</p>

Table A.84: ReferenceBase

Class	ReferenceCondition			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring			
Note	The ReferenceCondition evaluates to true, if the referenced reference is accepted by all rules of this condition.			
Base	ARObject, AbstractCondition, AbstractMultiplicityRestriction , AttributeCondition			
Attribute	Type	Mult.	Kind	Note
reference	ReferenceTailoring	1	ref	The reference that has to be accepted by the restrictions of this ReferenceCondition

Table A.85: ReferenceCondition

Class	ReferenceTailoring			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::DataFormatTailoring			
Note	Tailoring of Non-Containment References.			
Base	ARObject, AttributeTailoring , DataFormatElementReference, DataFormatElementScope, Identifiable , MultilanguageReferrable, Referrable , SpecElementReference , SpecElementScope			
Attribute	Type	Mult.	Kind	Note
typeTailoring	ClassTailoring	*	aggr	Local class tailoring for content that is referenced by this reference.
unresolved Reference Restriction	UnresolvedReferenceRestrictionWithSeverity	0..1	aggr	Specifies the severity of unresolved references.

Table A.86: ReferenceTailoring

Class	Referrable (abstract)			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::Identifiable			
Note	Instances of this class can be referred to by their identifier (while adhering to namespace borders).			
Base	ARObject			
Subclasses	AtpDefinition, BswDistinguishedPartition, BswModuleCallPoint, BswModuleClientServerEntry, BswVariableAccess, CouplingPortTrafficClassAssignment, DiagnosticDebounceAlgorithmProps, <i>DiagnosticEnvModeElement</i> , EthernetPriorityRegeneration, EventHandler, ExclusiveAreaNestingOrder, <i>HwDescriptionEntity</i> , <i>ImplementationProps</i> , LinSlaveConfigIdent, ModeTransition, <i>MultilanguageReferrable</i> , PduActivationRoutingGroup, PncMappingIdent, <i>SingleLanguageReferrable</i> , SoConIPduIdentifier, SocketConnectionBundle, TimeSyncServerConfiguration, TpConnectionIdent			
Attribute	Type	Mult.	Kind	Note
shortName	Identifier	1	attr	This specifies an identifying shortName for the object. It needs to be unique within its context and is intended for humans but even more for technical reference. Stereotypes: atpIdentityContributor Tags: xml.enforceMinMultiplicity=true xml.sequenceOffset=-100
shortName Fragment	ShortNameFragment	*	aggr	This specifies how the Referrable.shortName is composed of several shortNameFragments. Tags: xml.sequenceOffset=-90

Table A.87: Referrable

Class	SdgClass			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::SpecialDataDef			
Note	An SdgClass specifies the name and structure of the SDG that may be used to store proprietary data in an AUTOSAR model. The SdgClass is similar to an UML stereotype.			
Base	ARObject, <i>Identifiable</i> , <i>MultilanguageReferrable</i> , <i>Referrable</i> , <i>SdgElementWithGid</i>			
Attribute	Type	Mult.	Kind	Note
attribute (ordered)	SdgAttribute	*	aggr	Defintion of the structure of the Sdg Tags: xml.sequenceOffset=30
caption	Boolean	0..1	attr	Specifies if a caption is required. Note: only Sdgs that have a caption can be referenced Tags: xml.sequenceOffset=20
extendsMeta Class	MetaClassName	0..1	attr	The AUTOSAR Meta-Class that may be extended by this SdgClass. Tags: xml.sequenceOffset=10
sdgConstraint	TraceableText	*	ref	Semantic constraints that restrict the structure of the special data group. Tags: xml.sequenceOffset=40

Table A.88: SdgClass

Class	SdgDef			
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::SpecialDataDef			
Note	A SdgDef groups several SdgClasses which belong to the same extension. The concept of an SdgDef is similiar to an UML Profile. Tags: atp.recommendedPackage=SdgDefs			





Class	SdgDef			
Base	ARElement , ARObject , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
sdgClass	SdgClass	*	aggr	The owned sdgClasses which define the structure of the Sdgs Tags: xml.namePlural=SDG-CLASSES

Table A.89: SdgDef

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=draft			
Base	ARObject , AbstractSecurityEventFilter , Identifiable , MultilanguageReferrable , Referrable			
Attribute	Type	Mult.	Kind	Note
contextData Source	SecurityEventContext DataSourceEnum	0..1	attr	This attributes 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=draft

Table A.90: SecurityEventAggregationFilter

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=draft			
Base	ARElement , ARObject , CollectableElement , Identifiable , IdsCommonElement , IdsMapping , MultilanguageReferrable , PackageableElement , Referrable			
Subclasses	SecurityEventContextMappingApplication, SecurityEventContextMappingBswModule, SecurityEventContextMappingCommConnector, SecurityEventContextMappingFunctionalCluster			
Attribute	Type	Mult.	Kind	Note
filterChain	SecurityEventFilter Chain	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: atpVariation Tags: atp.Status=draft vh.latestBindingTime=preCompileTime
idsmInstance	IdsmInstance	0..1	ref	This reference defines the IdsmInstance onto which the security events are mapped. Stereotypes: atpVariation Tags: atp.Status=draft vh.latestBindingTime=systemDesignTime





Class	SecurityEventContextMapping (abstract)			
mappedSecurityEvent	SecurityEventContextProps	*	aggr	<p>This aggregation represents (through further references) the SecurityEventDefinitions to be mapped to an Idsm Instance with additional mapping-dependent properties.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=mappedSecurityEvent.shortName, mappedSecurityEvent.variationPoint.shortLabel atp.Status=draft vh.latestBindingTime=preCompileTime</p>

Table A.91: SecurityEventContextMapping

Class	SecurityEventDefinition			
Package	M2::AUTOSARTemplates::SecurityExtractTemplate			
Note	<p>This meta-class defines a security-related event as part of the intrusion detection system.</p> <p>Tags: atp.Status=draft atp.recommendedPackage=SecurityEventDefinitions</p>			
Base	ARElement , ARObject , CollectableElement , Identifiable , IdsCommonElement , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
eventSymbolName	SymbolProps	0..1	aggr	<p>This aggregation defines optionally an alternative Event Name for the SecurityEventDefinition in case there is a collision of shortNames.</p> <p>Stereotypes: atpSplitable</p> <p>Tags: atp.Splitkey=eventSymbolName.shortName atp.Status=draft</p>
id	PositiveInteger	0..1	attr	<p>This attribute represents the numerical identification of the defined security event. The identification shall be unique within the scope of the IDS.</p> <p>Tags:atp.Status=draft</p>

Table A.92: 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=draft atp.recommendedPackage=SecurityFilterChains</p>			
Base	ARElement , ARObject , CollectableElement , Identifiable , IdsCommonElement , MultilanguageReferrable , PackageableElement , Referrable			
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=draft</p>
oneEveryN	SecurityEventOneEveryNFilter	0..1	aggr	<p>This aggregation represents the sampling filter in the filter chain.</p> <p>Tags:atp.Status=draft</p>





Class	SecurityEventFilterChain			
state	SecurityEventStateFilter	0..1	aggr	This aggregation represents the state filter in the event chain. Tags: atp.Status=draft
threshold	SecurityEventThresholdFilter	0..1	aggr	This aggregation represents the threshold filter in the filter chain. Tags: atp.Status=draft

Table A.93: SecurityEventFilterChain

Class	SecurityEventOneEveryNFilter			
Package	M2::AUTOSARTemplates::SecurityExtractTemplate			
Note	This meta-class represents the configuration of a sampling (i.e. every n-th event is sampled) filter for security events. Tags: atp.Status=draft			
Base	ARObject, AbstractSecurityEventFilter, Identifiable , MultilanguageReferrable, Referrable			
Attribute	Type	Mult.	Kind	Note
n	PositiveInteger	0..1	attr	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. Tags: atp.Status=draft

Table A.94: SecurityEventOneEveryNFilter

Class	SecurityEventStateFilter			
Package	M2::AUTOSARTemplates::SecurityExtractTemplate			
Note	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). Tags: atp.Status=draft			
Base	ARObject, AbstractSecurityEventFilter, Identifiable , MultilanguageReferrable, Referrable			
Attribute	Type	Mult.	Kind	Note
blockIfState ActiveAp	ModeDeclaration	*	iref	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. Tags: atp.Status=draft InstanceRef implemented by: FunctionGroupStateInFunctionGroupSetInstanceRef
blockIfState ActiveCp	BlockState	*	ref	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.

Table A.95: SecurityEventStateFilter

Class	SecurityEventThresholdFilter			
Package	M2::AUTOSARTemplates::SecurityExtractTemplate			
Note	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. Tags: atp.Status=draft			
Base	ARObject, AbstractSecurityEventFilter, Identifiable , MultilanguageReferrable, Referrable			
Attribute	Type	Mult.	Kind	Note
intervalLength	TimeValue	0..1	attr	This attribute configures the time interval in seconds for one threshold filter operation. Tags: atp.Status=draft
threshold Number	PositiveInteger	0..1	attr	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. Tags: atp.Status=draft

Table A.96: SecurityEventThresholdFilter

Class	SenderReceiverInterface			
Package	M2::AUTOSARTemplates::SWComponentTemplate::PortInterface			
Note	A sender/receiver interface declares a number of data elements to be sent and received. Tags: atp.recommendedPackage=PortInterfaces			
Base	ARElement , ARObject, AtpBlueprint , AtpBlueprintable, AtpClassifier , AtpType, CollectableElement, DataInterface, Identifiable , MultilanguageReferrable, PackageableElement , PortInterface , Referrable			
Attribute	Type	Mult.	Kind	Note
invalidation Policy	InvalidationPolicy	*	aggr	InvalidationPolicy for a particular dataElement
metaDataItem Set	MetaDataItemSet	*	aggr	This aggregation defines fixed sets of meta-data items associated with dataElements of the enclosing Sender ReceiverInterface

Table A.97: SenderReceiverInterface

Class	SpecElementReference (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::StandardizationTemplate::DataExchangePoint::Common Patterns			
Note	This is a reference to a specification element in the Autosar standard.			
Base	ARObject, Identifiable , MultilanguageReferrable, Referrable			
Subclasses	DataFormatElementReference , SpecElementScope			
Attribute	Type	Mult.	Kind	Note
alternative Name	String	0..1	attr	Alternative name of a specification element if its name doesn't fit into the shortName. E.g. because the name contains spaces.

Table A.98: SpecElementReference

Class	Std			
Package	M2::MSR::Documentation::TextModel::InlineTextElements			
Note	This represents a reference to external standards.			
Base	ARObject, Referrable , SingleLanguageReferrable			





Class	Std			
Attribute	Type	Mult.	Kind	Note
date	DateTime	0..1	attr	This element specifies the release date of the external standard if applicable. Tags: xml.sequenceOffset=50
position	String	0..1	attr	This represents the reference to the relevant positions of a standard. Kept as a string. Tags: xml.sequenceOffset=70
state	String	0..1	attr	This represents version and state of a standard. Kept as a string. Tags: xml.sequenceOffset=40
subtitle	String	0..1	attr	This represents the subtitle of the standard. Tags: xml.sequenceOffset=30
url	Url	0..1	aggr	This represents the URL of the standard. Tags: xml.sequenceOffset=60

Table A.99: Std

Class	SwComponentPrototype			
Package	M2::AUTOSARTemplates::SWComponentTemplate::Composition			
Note	Role of a software component within a composition.			
Base	ARObject, AtpFeature, AtpPrototype , Identifiable , MultilanguageReferrable , Referrable			
Attribute	Type	Mult.	Kind	Note
type	SwComponentType	0..1	tref	Type of the instance. Stereotypes: isOfType

Table A.100: SwComponentPrototype

Class	SwComponentType (abstract)			
Package	M2::AUTOSARTemplates::SWComponentTemplate::Components			
Note	Base class for AUTOSAR software components.			
Base	ARElement , ARObject , AtpBlueprint , AtpBlueprintable , AtpClassifier , AtpType , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Subclasses	AtomicSwComponentType , CompositionSwComponentType , ParameterSwComponentType			
Attribute	Type	Mult.	Kind	Note
port	PortPrototype	*	aggr	The PortPrototypes through which this SwComponent Type can communicate. The aggregation of PortPrototype is subject to variability with the purpose to support the conditional existence of PortPrototypes. Stereotypes: atpSplitable; atpVariation Tags: atp.Splitkey=port.shortName, port.variationPoint.shortLabel vh.latestBindingTime=preCompileTime
portGroup	PortGroup	*	aggr	A port group being part of this component. Stereotypes: atpVariation Tags: vh.latestBindingTime=preCompileTime





Class	SwComponentType (abstract)			
swComponentDocumentation	SwComponentDocumentation	0..1	aggr	<p>This adds a documentation to the SwComponentType.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=swComponentDocumentation, swComponentDocumentation.variationPoint.shortLabel vh.latestBindingTime=preCompileTime xml.sequenceOffset=-10</p>

Table A.101: SwComponentType

Class	<<atpVariation>> SwDataDefProps			
Package	M2::MSR::DataDictionary::DataDefProperties			
Note	<p>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.</p> <p>Tags:vh.latestBindingTime=codeGenerationTime</p>			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
annotation	Annotation	*	aggr	<p>This aggregation allows to add annotations (yellow pads ...) related to the current data object.</p> <p>Tags: xml.roleElement=true xml.roleWrapperElement=true xml.sequenceOffset=20 xml.typeElement=false xml.typeWrapperElement=false</p>
compuMethod	CompuMethod	0..1	ref	<p>Computation method associated with the semantics of this data object.</p> <p>Tags:xml.sequenceOffset=180</p>
dataConstr	DataConstr	0..1	ref	<p>Data constraint for this data object.</p> <p>Tags:xml.sequenceOffset=190</p>
displayFormat	DisplayFormatString	0..1	attr	<p>This property describes how a number is to be rendered e.g. in documents or in a measurement and calibration system.</p> <p>Tags:xml.sequenceOffset=210</p>
invalidValue	ValueSpecification	0..1	aggr	<p>Optional value to express invalidity of the actual data element.</p> <p>Tags:xml.sequenceOffset=255</p>
swTextProps	SwTextProps	0..1	aggr	<p>the specific properties if the data object is a text object.</p> <p>Tags:xml.sequenceOffset=120</p>
unit	Unit	0..1	ref	<p>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.</p> <p>Tags:xml.sequenceOffset=350</p>

Table A.102: SwDataDefProps

Class	SwSystemconst			
Package	M2::MSR::DataDictionary::SystemConstant			
Note	<p>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.</p> <p>Note that the binding process can only happen if a value was assigned to to the referenced system constants.</p> <p>Tags:atp.recommendedPackage=SwSystemconsts</p>			
Base	ARElement , ARObject , AtpDefinition , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
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>Tags:xml.sequenceOffset=40</p>

Table A.103: SwSystemconst

Class	SwSystemconstValue			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling			
Note	This meta-class assigns a particular value to a system constant.			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
annotation	Annotation	*	aggr	<p>This provides the ability to add information why the value is set like it is.</p> <p>Tags:xml.sequenceOffset=30</p>
swSystemconst	SwSystemconst	1	ref	<p>This is the system constant to which the value applies.</p> <p>Tags:xml.sequenceOffset=10</p>
value	Numerical	1	attr	<p>This is the particular value of a system constant. It is specified as Numerical. Further restrictions may apply by the definition of the system constant.</p> <p>The value attribute defines the internal value of the Sw Systemconst as it is processed in the Formula Language.</p> <p>Stereotypes: atpVariation</p> <p>Tags: vh.latestBindingTime=preCompileTime xml.sequenceOffset=20</p>

Table A.104: SwSystemconstValue

Class	SwSystemconstantValueSet			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling			
Note	<p>This meta-class represents the ability to specify a set of system constant values.</p> <p>Tags:atp.recommendedPackage=SwSystemconstantValueSets</p>			
Base	ARElement , ARObject , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Attribute	Type	Mult.	Kind	Note
sw Systemconstant Value	SwSystemconstValue	*	aggr	This is one particular value of a system constant.

Table A.105: SwSystemconstantValueSet

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

Table A.106: System

Class	TDEventVfbPort (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::Timing::TimingDescription::TimingDescriptionEvents::TDEventVfb			
Note	This is the abstract parent class to describe specific timing event types at Virtual Functional Bus (VFB) level.			
Base	ARObject , Identifiable , MultilanguageReferrable , Referrable , TDEventVfb , TimingDescription , TimingDescriptionEvent			
Subclasses	TDEventModeDeclaration, TDEventOperation, TDEventTrigger, TDEventVariableDataPrototype			
Attribute	Type	Mult.	Kind	Note
isExternal	Boolean	1	attr	This attribute is used to refer to external events that are related to hardware I/O, like physical sensors and actuators, at Virtual Functional Bus (VFB) level.
port	PortPrototype	0..1	ref	The port scope of the timing event.
portPrototypeBlueprint	PortPrototypeBlueprint	0..1	ref	The PortPrototypeBlueprint is the scope of the timing event.

Table A.107: TDEventVfbPort

Class	TimingExtension (abstract)			
Package	M2::AUTOSARTemplates::CommonStructure::Timing			
Note	The abstract parent class of the different template specific timing extensions. Depending on the specific timing extension the timing descriptions and timing constraints, that can be used to specify the timing behavior, are restricted.			
Base	ARElement , ARObject , CollectableElement , Identifiable , MultilanguageReferrable , PackageableElement , Referrable			
Subclasses	SystemTiming, VfbTiming			
Attribute	Type	Mult.	Kind	Note





Class	TimingExtension (abstract)			
timingCondition	TimingCondition	*	aggr	<p>The timing condition specifies a specific condition.</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=timingCondition.shortName, timingCondition.variationPoint.shortLabel vh.latestBindingTime=postBuild</p>
timingDescription	TimingDescription	*	aggr	<p>The timing descriptions that belong to a specific timing specification.</p> <p>In order to support different timing description variants within a timing specification, the aggregation is marked with the stereotype "atpVariation".</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=timingDescription.shortName, timingDescription.variationPoint.shortLabel vh.latestBindingTime=postBuild</p>
timingGuarantee	TimingConstraint	*	aggr	<p>The timing constraints that belong to a specific timing specification in the role of a timing guarantee.</p> <p>In order to support different timing constraint variants within a timing specification, the aggregation is marked with the stereotype "atpVariation".</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=timingGuarantee.shortName, timingGuarantee.variationPoint.shortLabel vh.latestBindingTime=postBuild</p>
timingRequirement	TimingConstraint	*	aggr	<p>The timing constraints that belong to a specific timing specification in the role of a timing requirement.</p> <p>In order to support different timing constraint variants within a timing specification, the aggregation is marked with the stereotype "atpVariation".</p> <p>Stereotypes: atpSplitable; atpVariation</p> <p>Tags: atp.Splitkey=timingRequirement.shortName, timingRequirement.variationPoint.shortLabel vh.latestBindingTime=postBuild</p>
timingResource	TimingExtensionResource	0..1	aggr	<p>The timing resource contains all instance references referred from within a timing condition formula of a timing view.</p> <p>Stereotypes: atpSplitable</p> <p>Tags:atp.Splitkey=timingResource.shortName</p>

Table A.108: TimingExtension

Class	Topic1			
Package	M2::MSR::Documentation::Chapters			
Note	<p>This meta-class represents a topic of a documentation. Topics are similar to chapters but they cannot be nested.</p> <p>They also do not appear in the table of content. Topics can be used to produce intermediate headlines thus structuring a chapter internally.</p>			
Base	ARObject, DocumentViewSelectable, Identifiable , MultilanguageReferrable , Paginateable , Referrable			
Attribute	Type	Mult.	Kind	Note





Class	Topic1			
helpEntry	String	0..1	attr	This specifies an entry point in an online help system to be linked with the parent class. The syntax shall be defined by the applied help system respectively help system generator. Tags: xml.attribute=true
topicContent	TopicContentOrMsrQuery	0..1	aggr	This is the content of the topic. Tags: xml.roleElement=false xml.roleWrapperElement=false xml.sequenceOffset=20 xml.typeElement=false xml.typeWrapperElement=false

Table A.109: Topic1

Class	Traceable (abstract)			
Package	M2::MSR::Documentation::BlockElements::RequirementsTracing			
Note	This meta class represents the ability to be subject to tracing within an AUTOSAR model. Note that it is expected that its subclasses inherit either from MultilanguageReferrable or from Identifiable. Nevertheless it also inherits from MultilanguageReferrable in order to provide a common reference target for all Traceables.			
Base	ARObject, MultilanguageReferrable, Referrable			
Subclasses	StructuredReq, TimingConstraint, TraceableTable, TraceableText			
Attribute	Type	Mult.	Kind	Note
trace	Traceable	*	ref	This association represents the ability to trace to upstream requirements / constraints. This supports for example the bottom up tracing ProjectObjectives <- MainRequirements <- Features <- RequirementSpecs <- BSW/AI Tags: xml.sequenceOffset=20

Table A.110: Traceable

Class	TraceableText			
Package	M2::MSR::Documentation::BlockElements::RequirementsTracing			
Note	This meta-class represents the ability to denote a traceable text item such as requirements etc. The following approach applies: <ul style="list-style-type: none"> • shortName represents the tag for tracing • longName represents the head line • category represents the kind of the tagged text 			
Base	ARObject, DocumentViewSelectable, Identifiable, MultilanguageReferrable, Paginateable, Referrable, Traceable			
Attribute	Type	Mult.	Kind	Note
text	DocumentationBlock	1	aggr	This represents the text to which the tag applies. Tags: xml.roleElement=false xml.roleWrapperElement=false xml.sequenceOffset=30 xml.typeElement=false xml.typeWrapperElement=false

Table A.111: TraceableText

Primitive	UnlimitedInteger
Package	M2::AUTOSARTemplates::GenericStructure::GeneralTemplateClasses::PrimitiveTypes
Note	<p>An instance of UnlimitedInteger is an element in the set of integer numbers (..., -2, -1, 0, 1, 2, ...).</p> <p>The range is limited by constraint 2534.</p> <p>The value can be expressed in decimal, octal, hexadecimal and binary representation. Negative numbers can only be expressed in decimal notation.</p> <p>Tags: xml.xsd.customType=UNLIMITED-INTEGER xml.xsd.pattern=0 [\+ -]?[1-9][0-9]* 0[xX][0-9a-fA-F]+ 0[bB][0-1]+ 0[0-7]+ xml.xsd.type=string</p>

Table A.112: UnlimitedInteger

Class	VariationPoint			
Package	M2::AUTOSARTemplates::GenericStructure::VariantHandling			
Note	This meta-class represents the ability to express a "structural variation point". The container of the variation point is part of the selected variant if swSyscond evaluates to true and each postBuildVariant Criterion is fulfilled.			
Base	ARObject			
Attribute	Type	Mult.	Kind	Note
blueprint Condition	DocumentationBlock	0..1	aggr	<p>This represents a description that documents how the variation point shall be resolved when deriving objects from the blueprint.</p> <p>Note that variationPoints are not allowed within a blueprintCondition.</p> <p>Tags:xml.sequenceOffset=28</p>
desc	MultiLanguageOverview Paragraph	0..1	aggr	<p>This allows to describe shortly the purpose of the variation point.</p> <p>Tags:xml.sequenceOffset=20</p>
formalBlueprint Generator	BlueprintGenerator	0..1	aggr	<p>This represents a description that documents how the variation point shall be resolved when deriving objects from the blueprint by using ARMQL.</p> <p>Note that variationPoints are not allowed within a formal BlueprintGenerator.</p> <p>Tags: atp.Status=draft xml.sequenceOffset=30</p>
postBuildVariant Condition	PostBuildVariant Condition	*	aggr	<p>This is the set of post build variant conditions which all shall be fulfilled in order to (postbuild) bind the variation point.</p> <p>Tags:xml.sequenceOffset=40</p>
sdg	Sdg	0..1	aggr	<p>An optional special data group is attached to every variation point. These data can be used by external software systems to attach application specific data. For example, a variant management system might add an identifier, an URL or a specific classifier.</p> <p>Tags:xml.sequenceOffset=50</p>





Class	VariationPoint			
shortLabel	Identifier	0..1	attr	<p>This provides a name to the particular variation point to support the RTE generator. It is necessary for supporting splittable aggregations and if binding time is later than codeGenerationTime, as well as some RTE conditions. It needs to be unique with in the enclosing Identifiables with the same ShortName.</p> <p>Stereotypes: atpIdentityContributor Tags:xml.sequenceOffset=10</p>
swSyscond	ConditionByFormula	0..1	aggr	<p>This condition acts as Binding Function for the Variation Point. Note that the multiplicity is 0..1 in order to support pure postBuild variants.</p> <p>Tags:xml.sequenceOffset=30</p>

Table A.113: VariationPoint

Class	Xdoc			
Package	M2::MSR::Documentation::TextModel::InlineTextElements			
Note	This meta-class represents the ability to refer to an external document which can be rendered as printed matter.			
Base	ARObject, Referrable, SingleLanguageReferrable			
Attribute	Type	Mult.	Kind	Note
date	DateTime	0..1	attr	<p>This element specifies the release date of the external document if applicable.</p> <p>Tags:xml.sequenceOffset=50</p>
number	String	0..1	attr	<p>This represents document number of an external document that is referenced. Kept as a string.</p> <p>Tags:xml.sequenceOffset=30</p>
position	String	0..1	attr	<p>This represents the reference to the relevant positions of a standard. Kept as a string.</p> <p>Tags:xml.sequenceOffset=80</p>
publisher	String	0..1	attr	<p>This represents the publisher of an external document that is being referenced. Kept as a string.</p> <p>Tags:xml.sequenceOffset=60</p>
state	String	0..1	attr	<p>This represents version and state of the external document. Kept as a string.</p> <p>Tags:xml.sequenceOffset=40</p>
url	Url	0..1	aggr	<p>This specifies the URL of the external document.</p> <p>Tags:xml.sequenceOffset=70</p>

Table A.114: Xdoc

Class	Xfile			
Package	M2::MSR::Documentation::TextModel::InlineTextElements			
Note	This represents to reference an external file within a documentation.			
Base	ARObject, Referrable, SingleLanguageReferrable			
Attribute	Type	Mult.	Kind	Note
tool	String	0..1	attr	<p>This element describes the tool which was used to generate the corresponding Xfile . Kept as a string since no specific syntax can be provided to denote a tool.</p> <p>Tags:xml.sequenceOffset=50</p>





Class	Xfile			
toolVersion	String	0..1	attr	This element describes the tool version which was used to generate the corresponding xfile. Kept as a string, since no specific syntax can be specified. Tags: xml.sequenceOffset=60
url	Url	0..1	aggr	This represents the URL of the external file. Tags: xml.sequenceOffset=30

Table A.115: Xfile

Class	XrefTarget			
Package	M2::MSR::Documentation::TextModel::InlineTextElements			
Note	This element specifies a reference target which can be scattered throughout the text.			
Base	ARObject, Referrable , SingleLanguageReferrable			
Attribute	Type	Mult.	Kind	Note
–	–	–	–	–

Table A.116: XrefTarget