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* Robert Lario
* Angelique J. Cortez
* Harold Solbrig
* Dave Carlson
* Deepak K. Sharma

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* Mayo Clinic
* Second Organization name
* Third Organization name

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| Deepak K. Sharma | Mayo Clinic |

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# Preface

**OMG**

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**Helvetica/Arial - 10 pt. Bold: OMG Interface Definition Language (OMG IDL) and syntax elements.**

Courier - 10 pt. Bold: Programming language elements.

Helvetica/Arial - 10 pt : Exceptions

NOTE: Terms that appear in italics are defined in the glossary. Italic text also represents the name of a document, specification, or other publication.

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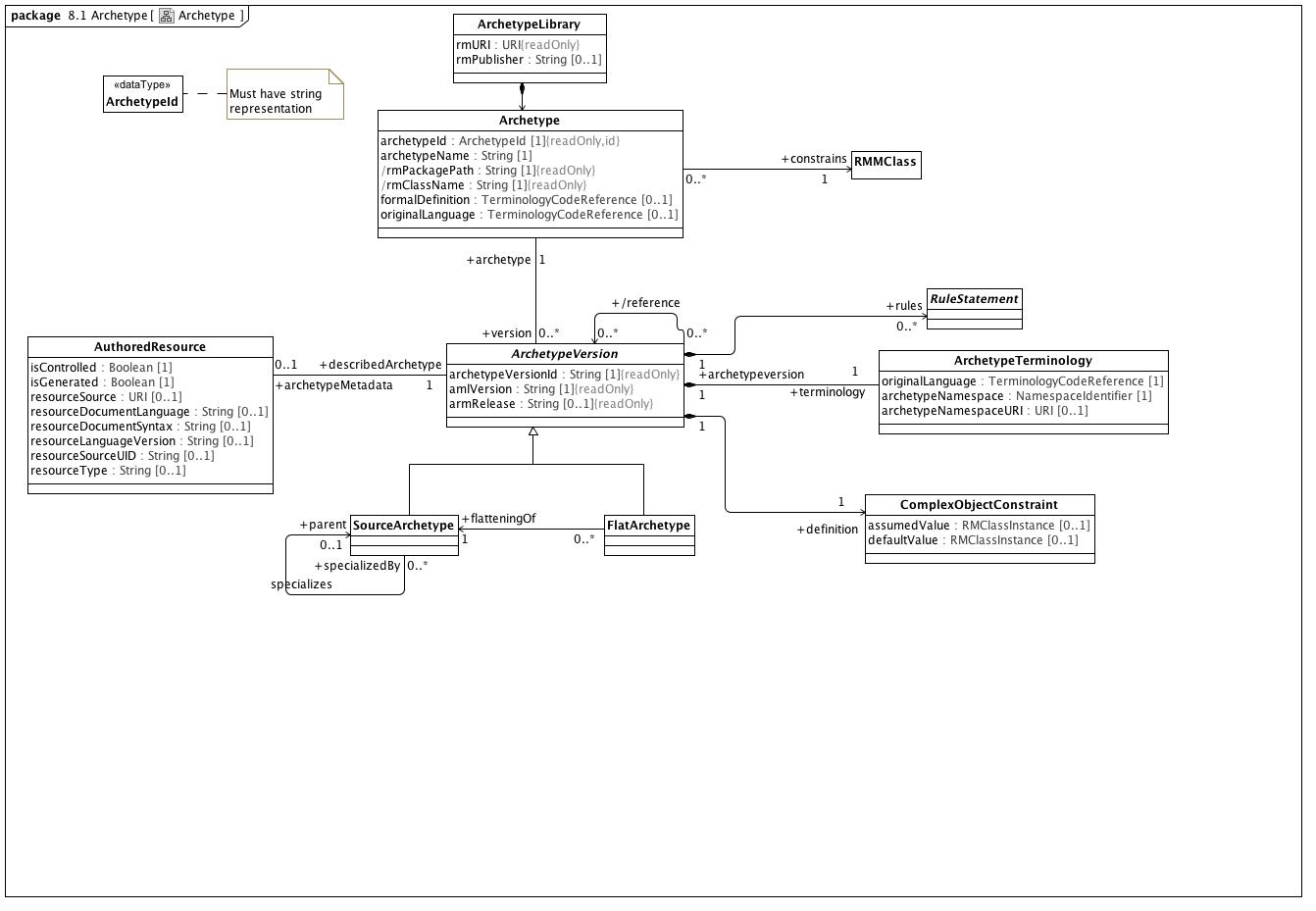
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# AML Object Model

# 

# 

## <Package> Archetype



**Archetype**

The Archetype package, showing the compositions rules, definition, archetypeId, and terminology; the concrete kinds of archetypes; and lineage by the recursive parent relationship.

### <Class> Archetype

#### Attributes

* public archetypeId : [ArchetypeId](#_abe68de6d7b599f5e4ea361caee12c81) [1]

The unique archetype identifier. However constructed, this uniquely identifies the archetype across its entire life cycle. No other archetype can have this identifier and a different identifier designates a different Archetype.

* public archetypeName : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The human readable name of the Archetype. This is typically derived from the other archetype details (See: openEHR Knowledge Artefact Identification - Revision 0.7.0 for an example). It is possible for this identifier to change over the life of an Archetype.

* public rmPackagePath : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The qualifiedName of a package in the target reference model that has the root *rmClass* as a visible member (there can be more than one possibility in a reference model).

* public rmClassName : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

Name of the root class of this archetype. *rmClass* must match the *visibleName* of the class referenced by the *ComplexObjectConstraint* target of the *Archetype definition* as well as the visibleName of the RMMClass instance that it constrains.

* public formalDefinition : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [0..1]

A reference into a terminology resource that includes a formal description of the archetype and serves as an anchor for archetype classification. FormalDefinition references a terminological entry that can include descriptions, definitions, notes, multi-language designations as well as classification systems that associate the archetype with specific uses, categories, etc. Note also, that the formalDefinition terminology code is used to determine whether a given archetype can fill an [ArchetypeSlot](platform:/resource/metamodel/am.emx#_TcWQ70MeEeOtGrDeWGiQFw). ArchetypeSlot identifies the included and/or excluded filler archetypes using [ValueSetReference](platform:/resource/metamodel/am.emx#_UIwysFL0EeOj1Z0Fm_09lQ)s. Any archetype that (a) has the same rmClass (in the same *rmURI* and *rmPackage*) and (b) whose formalDefinition [TerminologyCodeReference](platform:/resource/metamodel/am.emx#_P72bYFFJEeOj1Z0Fm_09lQ) is in the resolution of the in the resolution of the ArchetypeSlot valueSet reference is a valid entry for the given archetype slot.

* public originalLanguage : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [0..1]

The original language in which the resource was authored (essential for evaluating natural language quality)

#### Associations

* public rmUMLModel : [RMMModel](#_fc116c5fcb379006ed51eb855a1dae57) [1]

Quoting the UML 2.5 specification, "A Model is a description of a system, where ‘system’ is meant in the broadest sense and may include not only software and

hardware but organizations and processes. It describes the system from a certain viewpoint (or vantage point) for a certain

category of stakeholders (e.g., designers, users, or customers of the system) and at a certain level of abstraction. A Model is

complete in the sense that it covers the whole system, although only those aspects relevant to its purpose (i.e., within the given

level of abstraction and viewpoint) are represented in the Model."

From the AML perspective, the "aspects relative to [the model's] purpose" consist of a collection of packages which in turn contain a set of RMMClass definitions. To be used in AML, a model *must* be identified by a unique URI.

* public rmPackage : [RMMPackage](#_a0a843d7d41881592e31e887cebd6da4) [1]
* public constrains : [RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3) [1]

A class, in the object-oriented sense

* public version : [ArchetypeVersion](#_1de96fa71501cf96b27b14f3f9f1bb99) [0..\*]

An Archetype is a set of constraints that can be applied as a predicate against instances of the Reference Model class constrained by the *ComplexObjectConstraint* *definition.*

### <Class> ArchetypeLibrary

#### Description

A collection of archetypes that apply to the same reference model.

#### Attributes

* public rmURI : [URI](#_887928f30f99c8a1ca89ed7a082356aa)
* public rmPublisher : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

#### Associations

* public : [Archetype](#_f45a7b68ecac449e953ff8a65d6eff75)

### <Class> ArchetypeTerminology

#### Description

The set of ontological identifiers, permissible values and/or value sets referenced within an Archetype definition. These identifiers may either be locally defined, in which case the *ArchetypeTerminology* will carry the name(s) and description(s) for the identifier referents or may reference terminological resources that are defined in other archetypes or in external terminology systems.

#### Attributes

* public originalLanguage : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [1]

Original language of the terminology, as set at archetype creation and parsing time.

* public archetypeNamespace : [NamespaceIdentifier](#_94cb7eefb9b55dbc722d53bf1ec0f163) [1]
* public archetypeNamespaceURI : [URI](#_887928f30f99c8a1ca89ed7a082356aa) [0..1]

#### Associations

* public ownedTerminologyCode : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [0..\*]

A *TerminologyCodeReference* (alias: URIAndEntityName) consists of a local identifier that references a unique meaning within the context of a given domain in a terminology service instance and a globally unique *URI* that identifies the intended meaning of the identifier.

* public referencedTerminologyCode : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [1..\*]

A *TerminologyCodeReference* (alias: URIAndEntityName) consists of a local identifier that references a unique meaning within the context of a given domain in a terminology service instance and a globally unique *URI* that identifies the intended meaning of the identifier.

* public referencedValueSet : [ValueSetReference](#_53376ea1584b6547b15f0e1392fc93e7) [0..\*]

The URI, identifier and name of a collection of TerminologyCodeReferences

* public enumeratedValueDomain : [EnumeratedValueDomain](#_ad639ee3d4cd535b2d3e55238d69cc51) [0..\*]

An EnumeratedValueDomain represents a discrete set of possible values for a particular field or data element. Each permissible value represents an intended meaning that, while sometimes determinable from the string itself or its accompanying documentation, can only be fully fixed by connecting it to an official "value meaning" reference in an external terminological resource.

* public archetypeversion : [ArchetypeVersion](#_1de96fa71501cf96b27b14f3f9f1bb99) [1]

An Archetype is a set of constraints that can be applied as a predicate against instances of the Reference Model class constrained by the *ComplexObjectConstraint* *definition.*

### <Class> ArchetypeVersion

#### Description

An Archetype is a set of constraints that can be applied as a predicate against instances of the Reference Model class constrained by the *ComplexObjectConstraint* *definition.*

#### Attributes

* public archetypeVersionId : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The specific version of this *Archetype*. *archetypeVersion* does not impact archetype identity. If an archetype undergoes non-backwards compatible changes, it becomes a new archetype with a new identifier.

* public amlVersion : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The URI of the modeling language and version used to construct this Archetype, if derived from a serialized representation

* public armRelease : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

The specific version of the reference model that was constrained. Depending on the context and workflow model, it may be possible to update a reference model in a backwards-compatible fashion that doesn't require the referencing archetypes to be revised. *rmVersion* exists to support this particular situation and records the specific RM version that the archetype was built to constrain.

#### Associations

* public definition : [ComplexObjectConstraint](#_abfab8c8e983a73b4981f6fcfdd16134) [1]

A constraint on a complex object, which will typically consist of other constraints

* public terminology : [ArchetypeTerminology](#_ce78bd894405bf3f288466c83ca82fea) [1]

The set of ontological identifiers, permissible values and/or value sets referenced within an Archetype definition. These identifiers may either be locally defined, in which case the *ArchetypeTerminology* will carry the name(s) and description(s) for the identifier referents or may reference terminological resources that are defined in other archetypes or in external terminology systems.

* public rules : [RuleStatement](#_f8740e8d27529166da46265bd8521c94) [0..\*]

Abstract parent of all statement types

* public archetypeMetadata : [AuthoredResource](#_47dea9d0676ad6870be946fa52e870ad) [0..1]

*AuthoredResource* carries a minimal set of information about the source and origin of an *Archetype*. Its intent is to be a "connection point" to attach additional workflow and other provenance information to the target *Archetype.*

* public reference : [AuthoredResource](#_47dea9d0676ad6870be946fa52e870ad) [0..1]

*AuthoredResource* carries a minimal set of information about the source and origin of an *Archetype*. Its intent is to be a "connection point" to attach additional workflow and other provenance information to the target *Archetype.*

* public archetype : [Archetype](#_f45a7b68ecac449e953ff8a65d6eff75) [1]

### <Class> AuthoredResource

#### Description

*AuthoredResource* carries a minimal set of information about the source and origin of an *Archetype*. Its intent is to be a "connection point" to attach additional workflow and other provenance information to the target *Archetype.*

#### Attributes

* public isControlled : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f) [1]

A flag indicating whether the archetype is change-controlled or not can be included after the version. Archetypes that include the “controlled” flag should have the revision history section included, while those with the “uncontrolled” flag, or no flag at all, may omit the revision history. This enables archetypes to be privately edited in an early development phase without generating large revision histories of little or no value

* public isGenerated : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f) [1]

A flag indicating whether the archetype was generated or authored. This marker is used to support the migration to differential archetype representation introduced in ADL 1.5, to enable proper representation of specialised archetypes.

* public resourceSource : [URI](#_887928f30f99c8a1ca89ed7a082356aa) [0..1]

A URI that references the source document (if any) from which the original resource was derived.

* public resourceDocumentLanguage : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

The language (e.g. AOM, CEM, ...) of the source of the constraints, if any.

* public resourceDocumentSyntax : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

The syntax of the resource document (ADL, XML, XMI, ...)

* public resourceLanguageVersion : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

The version of the resourceDocumentLanguage (e.g. ADL 1.5, XMI 2.1, etc)

* public resourceSourceUID : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

An external identifier that uniquely identifies this *Archetype*. The format and structure of this identifier are determined by the rules of the *resourceDocumentLanguage* and/or *resourceDocumentSyntax.* This identifier cannot be used as an identifier within AML itself as it may not always be present. It must be preserved, however, for export to external resources.

* resourceType : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

The artefact type. This field does not impact the semantics of the representation is can be used to record specific types or classifications according to the source entity. As an example, ADL specifies artefact types of "archetype", "template", "template\_overlay" and "operational\_archetype" with an optional "flat" keyword.

#### Associations

* public describedArchetype : [ArchetypeVersion](#_1de96fa71501cf96b27b14f3f9f1bb99) [1]

An Archetype is a set of constraints that can be applied as a predicate against instances of the Reference Model class constrained by the *ComplexObjectConstraint* *definition.*

### <Class> ComplexObjectConstraint

#### Description

A constraint on a complex object, which will typically consist of other constraints

#### Attributes

* public assumedValue : [RMClassInstance](#_935cd7de4b22d47dd2c6aef93bed5c7a) [0..1]

Value to be assumed in instances in which no value is provided

* public defaultValue : [RMClassInstance](#_935cd7de4b22d47dd2c6aef93bed5c7a) [0..1]

Value to be populated in instances in absence of an instance value

#### Associations

* public attributeTuple : [AttributeTupleConstraint](#_f6da15c71717330ae1b56f8b41e3dd51) [0..\*]

An AttributeTupleConstraint presents a set of two or more alternative tuples, each of which consists of two or more attributes. The containing ComplexObjectConstraint is satisfied when all of the constraints in one of the AttributeTuples are satisfied.

* private targetObject : [ObjectConstraintProxy](#_6da4a9bc7db41a2b89064f79f0c4ed36) [0..\*]

A constraint defined by reference to a node defined elsewhere in the same archetype

* public parentClass : [RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3) [1]

A class, in the object-oriented sense

### <Class> FlatArchetype

#### Description

A *FlatArchetype* is generated from one or more *SourceArchetypes* via the flattening process. The flattening operation:

Replaces *ComplexObjectConstraintProxies* with *ComplexObjectConstraints* that contain copies of the subtrees to which they point.

Applies *SourceArchetype* overlays to the parent structure resulting in a full archetype structure.

#### Associations

* public flatteningOf : [SourceArchetype](#_dcaf9716e9bc2255b93c20393e8712f2) [1]

The source form of an archetype, potentially including references to other archetypes whose contents are not explicitly reproduced in the source form

### <Class> RMMClass

#### Description

A class, in the object-oriented sense

#### Associations

* public ownedAttribute : [RMMProperty](#_652433ba6af347b5ab3d4b0b4b2931c9) [0..\*]

A Reference Model Property (RMProperty) is a proper subset of a UML property. The aspects of a property that can be addressed by archetype includes:

The property name. Only named properties may be constrained within a reference model. Referring to section 7.4.3 in the ptc/2013-09-05, a non-hidden *RMProperty* is always referred to in its unqualified form. If it is necessary to reference hidden elements within an archetype, the qualified name (N::x) form should be used. Qualification should be the minimum that sufficient to render the name unique.

The lower and upper bounds. The UML MultiplicityElement shows lower and upper as derived properties. The AML specification assumes that, if present, these properties have been computed and it is up to the implementer to correctly interpret MultiplicityElement lowerValue and upperValue properties to determine these results.

Derived properties cannot be constrained using AML -- the rationale being that (a) derived properties may or may not be present in object instances and (b) the primary constraints need to be applied to the parameters of the derivation rather than the result.

UML::Associations are not used in AML -- the model is traversed via the *ownedAttribute* association. AssociationClasses are not differentiated from any other RMMClass in the model, and may be referenced and traversed via. whatever *ownedAttribute*/type links that are available.

While default values can be specified in the Reference Model, they are ignored in AML. Note, however, that AML can specify default values (with tighter semantics) in an archetype.

All other UML::Property links, including aggregation, isComposite, isID, association, qualifier, opposite, defaultVelue, redefines, subsettedProperty, and interface are ignored within the AML profile.

* public ownedTemplateSignature : [RMRedefinableTemplateSignature](#_6afdd25f5589999ef5ae78a4eab8563d) [0..1]

A *RMRedefinableTemplateSignature* associates an ordered list of *RMClassifierTemplateParameters* with an owning *RMClass.* The owning *RMClass* typically, but not always has one or more ownedAttributes that reference one of the ownedParameters of the *RMRedefinableTemplateSignature.*

* public templateBinding : [RMTemplateBinding](#_039ec0a61521832e985575d3d9688234) [0..\*]

*RMTemplateBinding* is a subtype of the UML::TemplateBinding class. It represents a set of parameter substitutions that are to be applied to a *RMRedefinableTemplateSignature* defined by a parent or ancestor *superClass.* A *RMTemplateBinding* contains one or more parameter substitutions to be applied to one or more types referenced by an *ownedAttribute* of the parent or ancestor class.

* public attribute : [RMMProperty](#_652433ba6af347b5ab3d4b0b4b2931c9) [0..\*]

A Reference Model Property (RMProperty) is a proper subset of a UML property. The aspects of a property that can be addressed by archetype includes:

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While default values can be specified in the Reference Model, they are ignored in AML. Note, however, that AML can specify default values (with tighter semantics) in an archetype.

All other UML::Property links, including aggregation, isComposite, isID, association, qualifier, opposite, defaultVelue, redefines, subsettedProperty, and interface are ignored within the AML profile.

* public superClass : [RMMProperty](#_652433ba6af347b5ab3d4b0b4b2931c9) [0..\*]

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The lower and upper bounds. The UML MultiplicityElement shows lower and upper as derived properties. The AML specification assumes that, if present, these properties have been computed and it is up to the implementer to correctly interpret MultiplicityElement lowerValue and upperValue properties to determine these results.

Derived properties cannot be constrained using AML -- the rationale being that (a) derived properties may or may not be present in object instances and (b) the primary constraints need to be applied to the parameters of the derivation rather than the result.

UML::Associations are not used in AML -- the model is traversed via the *ownedAttribute* association. AssociationClasses are not differentiated from any other RMMClass in the model, and may be referenced and traversed via. whatever *ownedAttribute*/type links that are available.

While default values can be specified in the Reference Model, they are ignored in AML. Note, however, that AML can specify default values (with tighter semantics) in an archetype.

All other UML::Property links, including aggregation, isComposite, isID, association, qualifier, opposite, defaultVelue, redefines, subsettedProperty, and interface are ignored within the AML profile.

### <Class> RuleStatement

#### Description

Abstract parent of all statement types

### <Class> SourceArchetype

#### Description

The source form of an archetype, potentially including references to other archetypes whose contents are not explicitly reproduced in the source form

#### Associations

* public parent : [RMMProperty](#_652433ba6af347b5ab3d4b0b4b2931c9) [0..\*]

A Reference Model Property (RMProperty) is a proper subset of a UML property. The aspects of a property that can be addressed by archetype includes:

The property name. Only named properties may be constrained within a reference model. Referring to section 7.4.3 in the ptc/2013-09-05, a non-hidden *RMProperty* is always referred to in its unqualified form. If it is necessary to reference hidden elements within an archetype, the qualified name (N::x) form should be used. Qualification should be the minimum that sufficient to render the name unique.

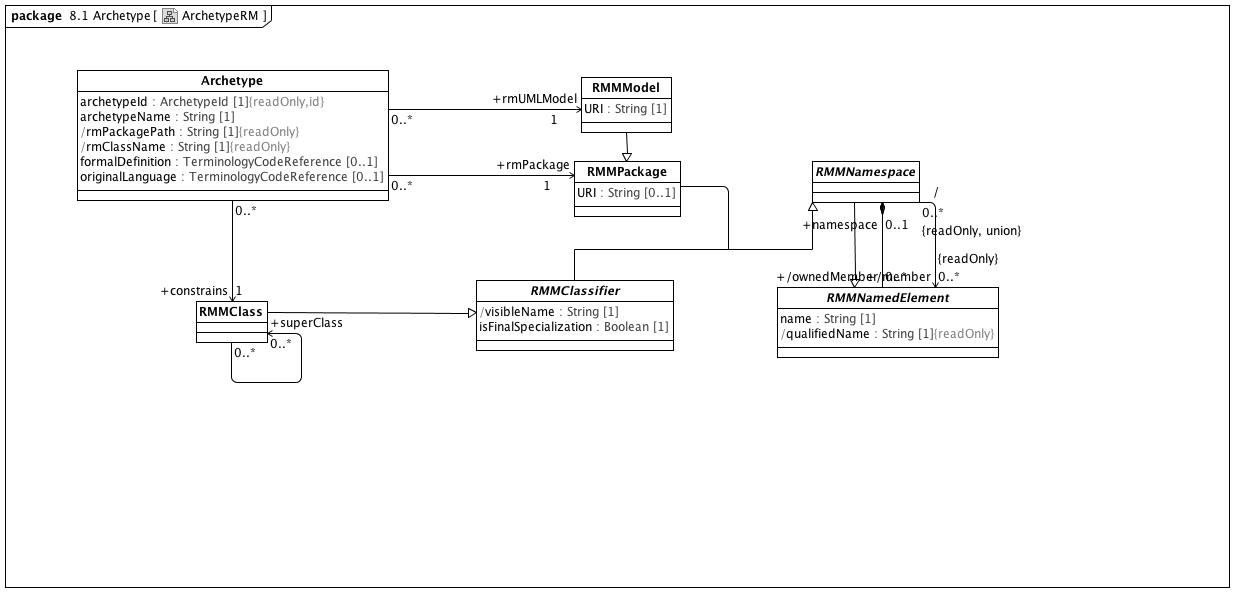
The lower and upper bounds. The UML MultiplicityElement shows lower and upper as derived properties. The AML specification assumes that, if present, these properties have been computed and it is up to the implementer to correctly interpret MultiplicityElement lowerValue and upperValue properties to determine these results.

Derived properties cannot be constrained using AML -- the rationale being that (a) derived properties may or may not be present in object instances and (b) the primary constraints need to be applied to the parameters of the derivation rather than the result.

UML::Associations are not used in AML -- the model is traversed via the *ownedAttribute* association. AssociationClasses are not differentiated from any other RMMClass in the model, and may be referenced and traversed via. whatever *ownedAttribute*/type links that are available.

While default values can be specified in the Reference Model, they are ignored in AML. Note, however, that AML can specify default values (with tighter semantics) in an archetype.

All other UML::Property links, including aggregation, isComposite, isID, association, qualifier, opposite, defaultVelue, redefines, subsettedProperty, and interface are ignored within the AML profile.



**ArchetypeRM**

An Archetype references (or constrains) a single class in a UML Reference Model. The rmURI identifies the particular model, the rmPackage names the path to the (a) package that has the constrained class as a member, and the rmClassName identifies the particular class being constrained.

### <Class> RMMClassifier

#### Description

A generalization of *RMDataType* and *RMClass*, both of which have *RMProperty*s

#### Attributes

* public visibleName : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The minimal qualification necessary to render the RMClass or RMDataType name distinguishable from all other names within the containing namespace

* public isFinalSpecialization : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f) [1]

If true, the *RMMClassifier* instance cannot be constrained within an archetype.

#### Associations

* public templateParameter : [RMClassifierTemplateParameter](#_3d9b09fe9052c8305d90ab92bc37d26b) [0..1]

### <Class> RMMModel

#### Description

Quoting the UML 2.5 specification, "A Model is a description of a system, where ‘system’ is meant in the broadest sense and may include not only software and

hardware but organizations and processes. It describes the system from a certain viewpoint (or vantage point) for a certain

category of stakeholders (e.g., designers, users, or customers of the system) and at a certain level of abstraction. A Model is

complete in the sense that it covers the whole system, although only those aspects relevant to its purpose (i.e., within the given

level of abstraction and viewpoint) are represented in the Model."

From the AML perspective, the "aspects relative to [the model's] purpose" consist of a collection of packages which in turn contain a set of RMMClass definitions. To be used in AML, a model *must* be identified by a unique URI.

#### Attributes

* public URI : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

### <Class> RMMNamedElement

#### Description

*RMNamedElement* is the superclass of all named elements in the Reference Model, and represents the subset of UML::NamedElements that are referenced by the AML profile. While a Reference Model may contain UML::NamedElements without names, Archetypes can only constrain those that have *names* and are of type *RMPrimitiveDataType*, *RMClass* or *RMProperty*.

#### Attributes

* public name : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The name of the Reference Model element. Name must be unique within the context of the owning *namespace*

* public qualifiedName : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

#### Associations

* public namespace : [RMMNamespace](#_f762e4ef59f1948849a49d421126c16b) [0..1]

An element in a model that owns and/or imports a set of NamedElements that can be identified by name

### <Class> RMMNamespace

#### Description

An element in a model that owns and/or imports a set of NamedElements that can be identified by name

#### Associations

* public member : [RMMNamedElement](#_527fd9eb1e787c36a3748854a9431816) [0..\*]

*RMNamedElement* is the superclass of all named elements in the Reference Model, and represents the subset of UML::NamedElements that are referenced by the AML profile. While a Reference Model may contain UML::NamedElements without names, Archetypes can only constrain those that have *names* and are of type *RMPrimitiveDataType*, *RMClass* or *RMProperty*.

* public ownedMember : [RMMNamedElement](#_527fd9eb1e787c36a3748854a9431816) [0..\*]

*RMNamedElement* is the superclass of all named elements in the Reference Model, and represents the subset of UML::NamedElements that are referenced by the AML profile. While a Reference Model may contain UML::NamedElements without names, Archetypes can only constrain those that have *names* and are of type *RMPrimitiveDataType*, *RMClass* or *RMProperty*.

### <Class> RMMPackage

#### Attributes

* public URI : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

#### Known other classes

[Archetype](#_f45a7b68ecac449e953ff8a65d6eff75), [RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3)

# 

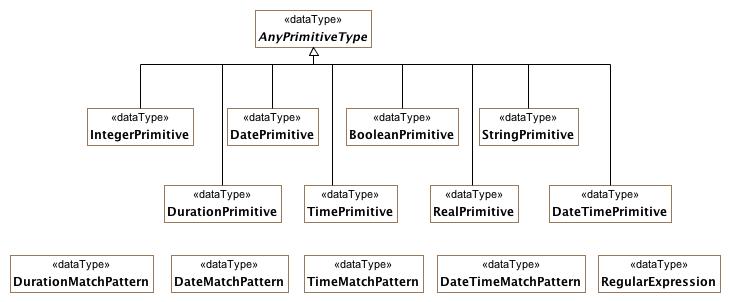
# 

## <Package> Reference Metamodel

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### <Package> Primitive Data Types



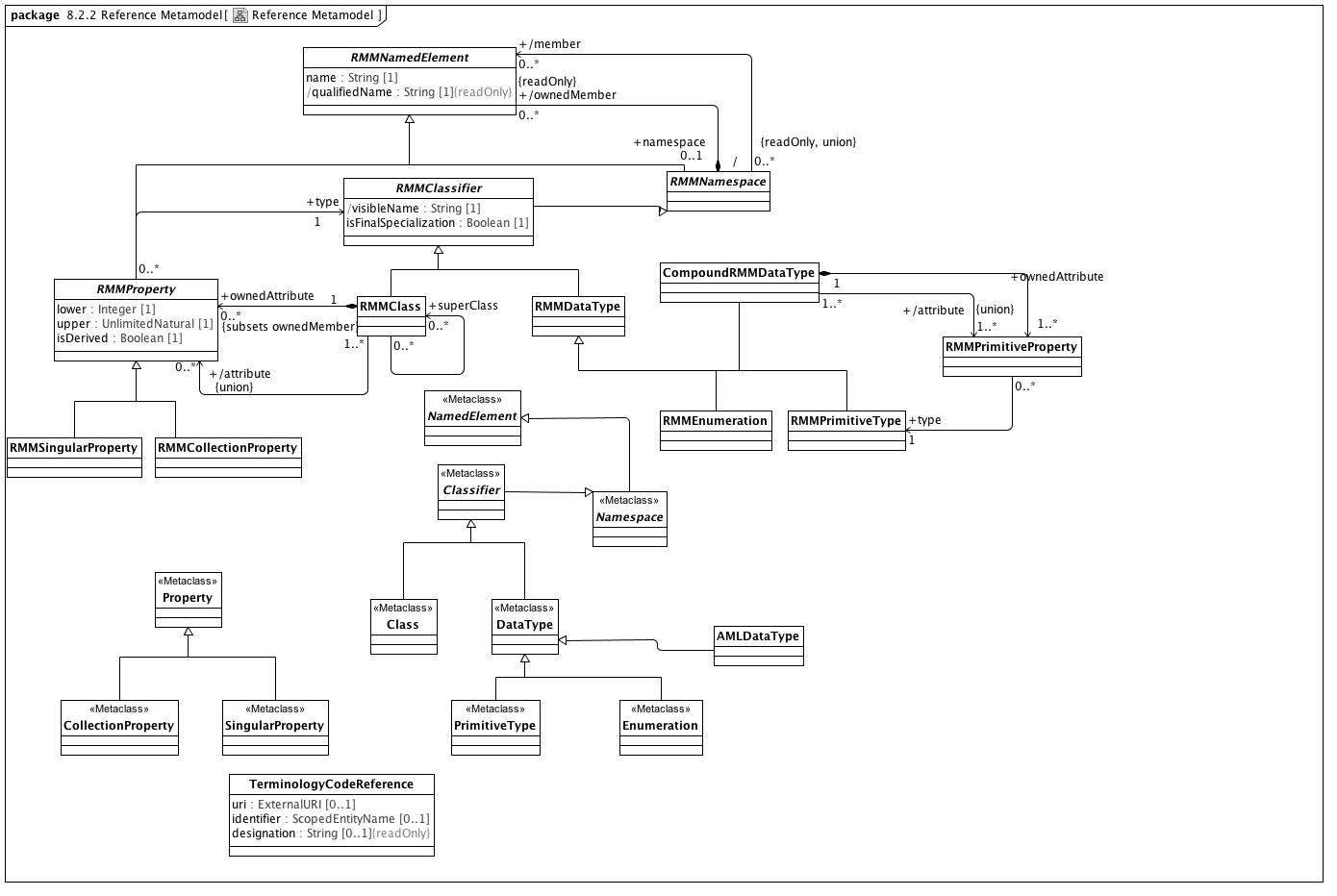
**PrimitiveDataTypes**

The set of primitive data types that can appear on a reference model and can be constrained using AML primitive constraints.

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# 

### <Package> Reference Metamodel



**Reference Metamodel**

### <Class> AMLDataType

### <Class> Class

### <Class> Classifier

### <Class> CollectionProperty

### <Class> CompoundRMMDataType

#### Description

A data type that consists of one or more primitive properties

#### Associations

* public ownedAttribute : [RMMPrimitiveProperty](#_e2ab190321a123517e8ba7fce4aa81d1) [1..\*]

An attribute of a *CompoundRMMDataType. RMMPrimiteProperty* is the subset of UML::Property having lower = 1, upper = 1 and isDerived = false and type references a UML::PrimitiveType.

* public attribute : [RMMPrimitiveProperty](#_e2ab190321a123517e8ba7fce4aa81d1) [1..\*]

An attribute of a *CompoundRMMDataType. RMMPrimiteProperty* is the subset of UML::Property having lower = 1, upper = 1 and isDerived = false and type references a UML::PrimitiveType.

### <Class> DataType

### <Class> Enumeration

### <Class> NamedElement

### <Class> Namespace

### <Class> PrimitiveType

### <Class> Property

### <Class> RMMCollectionProperty

#### Description

RMMCollectionProperty represents the subset of RMMProperty instances that can occur more than one time. An RMMCollectionProperty instance is viewed by AML as a collection of objects of a given type that possess two separate characteristics:

The collection as a whole may be required, optional or prohibited.

The cardinality of the collection may be constrained.

This combination allows a number of useful constructs, including:

requiring that a list be present but that it have no members, which can be used to assert a relationship between an object and an empty set of objects

making an attribute optional, but, if present, requiring that it have a minimum number of members

### <Class> RMMDataType

#### Description

*RMMDataTypes*, like UML::DataTypes "model Types whose instances are distinguished only by their value". *RMMDataTypes* form the leaf nodes of any AML constraint model -- they are the places where actual atomic value instances are recorded.

While not formally represented in this model (because we don't know how to create a generalization set), the three subclasses of *RMMDataType* (*RMMEnumeration*, *CompoundRMMDataType* and *UMLPrimitiveType*) are both disjoint and covering.

### <Class> RMMEnumeration

#### Description

A subset of the UML::Enumeration data type. While UML::Enumeration data types can have both ownedAttributes and ownedOperations, these aspects are ignored from the AML perspective. The only aspects of an RMMEnumeration that are visible in the AML model is the package name.

#### Associations

* public ownedLiteral : [RMMEnumerationLiteral](#_41faf6a7041d7068bbbf4f9ff3924d22) [0..\*]

A RMMEnumerationLiteral is a specialization UML::EnumerationLiteral. The only characteristic that is significant from the AML model perspective is the *RMMEnumerationLiteral* name, which is unique within the context of the RMMEnumeration namespace. An *RMMEnumerationLiteral* returns its *name* as the *PermissibleValue* value().

### <Class> RMMPrimitiveProperty

#### Description

An attribute of a *CompoundRMMDataType. RMMPrimiteProperty* is the subset of UML::Property having lower = 1, upper = 1 and isDerived = false and type references a UML::PrimitiveType.

#### Associations

* public type : [RMMPrimitiveType](#_bd00db82392e861a6828e5f762e45733) [1]

Reference Model data types may only have *attributes* of *type* UML::PrimitiveType and limited to the UML primitive types of *String*, *Integer*, *Boolean* and *Real*.

### <Class> RMMPrimitiveType

#### Description

Reference Model data types may only have *attributes* of *type* UML::PrimitiveType and limited to the UML primitive types of *String*, *Integer*, *Boolean* and *Real*.

### <Class> RMMProperty

#### Description

A Reference Model Property (RMProperty) is a proper subset of a UML property. The aspects of a property that can be addressed by archetype includes:

The property name. Only named properties may be constrained within a reference model. Referring to section 7.4.3 in the ptc/2013-09-05, a non-hidden *RMProperty* is always referred to in its unqualified form. If it is necessary to reference hidden elements within an archetype, the qualified name (N::x) form should be used. Qualification should be the minimum that sufficient to render the name unique.

The lower and upper bounds. The UML MultiplicityElement shows lower and upper as derived properties. The AML specification assumes that, if present, these properties have been computed and it is up to the implementer to correctly interpret MultiplicityElement lowerValue and upperValue properties to determine these results.

Derived properties cannot be constrained using AML -- the rationale being that (a) derived properties may or may not be present in object instances and (b) the primary constraints need to be applied to the parameters of the derivation rather than the result.

UML::Associations are not used in AML -- the model is traversed via the *ownedAttribute* association. AssociationClasses are not differentiated from any other RMMClass in the model, and may be referenced and traversed via. whatever *ownedAttribute*/type links that are available.

While default values can be specified in the Reference Model, they are ignored in AML. Note, however, that AML can specify default values (with tighter semantics) in an archetype.

All other UML::Property links, including aggregation, isComposite, isID, association, qualifier, opposite, defaultVelue, redefines, subsettedProperty, and interface are ignored within the AML profile.

#### Attributes

* private lower : [Integer](#_aeefbb09a8c456505ebb76cf8a103a03) [1]
* private upper : [UnlimitedNatural](#_7891541ba798985936e480ca8b19216f) [1]
* public isDerived : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f) [1]

#### Associations

* public type : [RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873) [1]

A generalization of *RMDataType* and *RMClass*, both of which have *RMProperty*s

### <Class> RMMSingularProperty

#### Description

*RMMSingularProperty* represents the subset of *RMMProperty* instances having an upper bound of 1. The AML treats RMMSingular properties as single values (vs. collections) of attributes that can be required, optional or prohibited.

### <Class> SingularProperty

### <Class> TerminologyCodeReference

#### Description

A *TerminologyCodeReference* (alias: URIAndEntityName) consists of a local identifier that references a unique meaning within the context of a given domain in a terminology service instance and a globally unique *URI* that identifies the intended meaning of the identifier.

#### Attributes

* public uri : [ExternalURI](#_de932b9629138c166e8cfb00efa65177) [0..1]

A URI that resolves to the full EntityDescription represented by this resource.

* public identifier : [ScopedEntityName](#_bf3eeb4d95f5d93bbd59440cca5ed9d6) [0..1]

A namespace/name combination that uniquely represents the entity. This can be the primary entityID, as determined by the service or any valid alternateId. Service implementers are encouraged to develop mechanisms that will allow clients to choose an appropriate namespace for rendering URIAndEntityName instances. As an example, it should be possible to view SNOMED-CT entity references by either the SctId, the “fully specified name” or, where appropriate, the CTV3ID or SNOMED-3 identifier. Similar mechanisms would apply to ontologies that have both id and label fields.

* public designation : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

A designation considered appropriate for the entity in the specific context of use.

#### Associations

* public terminologyCodeDescription : [ItemDescription](#_47e163911a910ae4a0de27029dcdf5dd) [0..\*]

A human-readable definition of a term

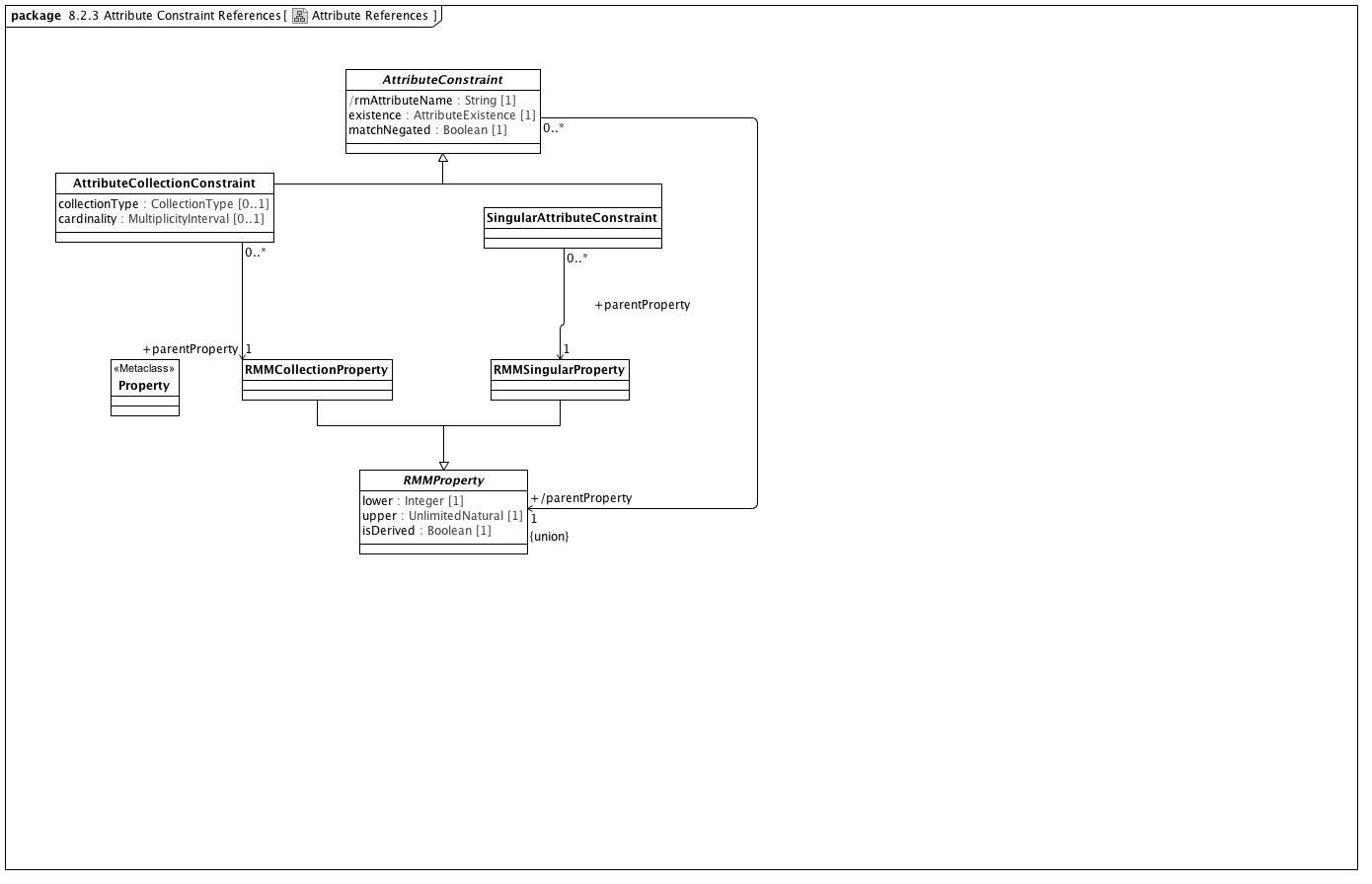
#### Known other classes

[RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3), [RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873), [RMMNamedElement](#_527fd9eb1e787c36a3748854a9431816), [RMMNamespace](#_f762e4ef59f1948849a49d421126c16b)

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### <Package> Attribute Constraint References



**Attribute References**

### <Class> AttributeCollectionConstraint

#### Description

A constraint on a set of objects contained in an attribute

#### Attributes

* public collectionType : [CollectionType](#_ac8c7771bf7f68d6747022e6924749ca) [0..1]

A classification of collection indicating whether its members must be unique or ordered

* public cardinality : [MultiplicityInterval](#_c810ec7fa381fa249b7a7d9fecae85b6) [0..1]

The range of quantities of members that can be included in an attribute

#### Associations

* public member : [AttributeCollectionMember](#_177e37623ae3f5642980fd445bf78af1) [1..\*]

An association that matches members of a collection of attributes with specific ObjectConstraints

* public parentProperty : [RMMCollectionProperty](#_702e30cd0381b6e9726bcc6fe779a70f) [1]

RMMCollectionProperty represents the subset of RMMProperty instances that can occur more than one time. An RMMCollectionProperty instance is viewed by AML as a collection of objects of a given type that possess two separate characteristics:

The collection as a whole may be required, optional or prohibited.

The cardinality of the collection may be constrained.

This combination allows a number of useful constructs, including:

requiring that a list be present but that it have no members, which can be used to assert a relationship between an object and an empty set of objects

making an attribute optional, but, if present, requiring that it have a minimum number of members

### <Class> AttributeConstraint

#### Description

A constraint on a reference model attribute

#### Attributes

* public rmAttributeName : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

Name of attribute within the reference model that is constrained by this node

* public existence : [AttributeExistence](#_4f99fbfcf9617d7ad55eca111d84fb67) [1]

Strength of requirement that the attribute instance be present

* public matchNegated : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f) [1]

Whether the match operator is to be inverted so that the constraint specifies anything except what is represented

#### Associations

* public attribute : [ComplexObjectConstraint](#_abfab8c8e983a73b4981f6fcfdd16134) [1]

A constraint on a complex object, which will typically consist of other constraints

* public parentProperty : [RMMProperty](#_652433ba6af347b5ab3d4b0b4b2931c9) [1]

A Reference Model Property (RMProperty) is a proper subset of a UML property. The aspects of a property that can be addressed by archetype includes:

The property name. Only named properties may be constrained within a reference model. Referring to section 7.4.3 in the ptc/2013-09-05, a non-hidden *RMProperty* is always referred to in its unqualified form. If it is necessary to reference hidden elements within an archetype, the qualified name (N::x) form should be used. Qualification should be the minimum that sufficient to render the name unique.

The lower and upper bounds. The UML MultiplicityElement shows lower and upper as derived properties. The AML specification assumes that, if present, these properties have been computed and it is up to the implementer to correctly interpret MultiplicityElement lowerValue and upperValue properties to determine these results.

Derived properties cannot be constrained using AML -- the rationale being that (a) derived properties may or may not be present in object instances and (b) the primary constraints need to be applied to the parameters of the derivation rather than the result.

UML::Associations are not used in AML -- the model is traversed via the *ownedAttribute* association. AssociationClasses are not differentiated from any other RMMClass in the model, and may be referenced and traversed via. whatever *ownedAttribute*/type links that are available.

While default values can be specified in the Reference Model, they are ignored in AML. Note, however, that AML can specify default values (with tighter semantics) in an archetype.

All other UML::Property links, including aggregation, isComposite, isID, association, qualifier, opposite, defaultVelue, redefines, subsettedProperty, and interface are ignored within the AML profile.

* public parent : [RMMProperty](#_652433ba6af347b5ab3d4b0b4b2931c9) [1]

A Reference Model Property (RMProperty) is a proper subset of a UML property. The aspects of a property that can be addressed by archetype includes:

The property name. Only named properties may be constrained within a reference model. Referring to section 7.4.3 in the ptc/2013-09-05, a non-hidden *RMProperty* is always referred to in its unqualified form. If it is necessary to reference hidden elements within an archetype, the qualified name (N::x) form should be used. Qualification should be the minimum that sufficient to render the name unique.

The lower and upper bounds. The UML MultiplicityElement shows lower and upper as derived properties. The AML specification assumes that, if present, these properties have been computed and it is up to the implementer to correctly interpret MultiplicityElement lowerValue and upperValue properties to determine these results.

Derived properties cannot be constrained using AML -- the rationale being that (a) derived properties may or may not be present in object instances and (b) the primary constraints need to be applied to the parameters of the derivation rather than the result.

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While default values can be specified in the Reference Model, they are ignored in AML. Note, however, that AML can specify default values (with tighter semantics) in an archetype.

All other UML::Property links, including aggregation, isComposite, isID, association, qualifier, opposite, defaultVelue, redefines, subsettedProperty, and interface are ignored within the AML profile.

* public object : [ObjectConstraint](#_aa52f11e5760ad2f47030803962bb855) [0..\*]

ObjectConstraint represents the properties and associations that are common to all types of object constraints:

Every object constraint may directly specialize at most one parent ObjectConstraint

Every AttributeConstraint is owned by exactly one ObjectConstraint

Every ObjectConstraint is referenced by exactly one AttributeConstraint, with the exception of the root Archetype definition ComplexObjectConstraint that is not owned by any referencing attribute.

The subtypes of ObjectConstraint include:

ObjectConstraintProxy - a reference to an existing NamedObjectConstraint. ObjectConstraintProxys only exist in SourceArchetypes and are replaced by a copy of their targetObject during the flattening process.

NamedObjectConstraint - the set of ObjectConstraints that reference a Reference Model Class and have node identifiers

EnumerationConstraint - constraints on the Reference Model Enumeration class

ArchetypeSlot - identifies a (constrained) slot to be filled by a separate archetype

ArchetypeRootProxy - references an archetype that constraints the type and/or attributes of a Reference Model Class and optionally fills an ArchetypeSlot defined in a parent Archetype

ComplexObjectConstraint - a constraint on the type and/or attributes of a Reference Model Class

TerminologyConstraint - constraints on the TerminologyCodeReference type

PrimitiveObjectConstraint - constraints on the set of primitive data types supplied in the reference model

### <Class> SingularAttributeConstraint

#### Description

An AttributeConstraint that identifies valid values for a single value instance

#### Associations

* public alternative : [ObjectConstraint](#_aa52f11e5760ad2f47030803962bb855) [0..\*]

ObjectConstraint represents the properties and associations that are common to all types of object constraints:

Every object constraint may directly specialize at most one parent ObjectConstraint

Every AttributeConstraint is owned by exactly one ObjectConstraint

Every ObjectConstraint is referenced by exactly one AttributeConstraint, with the exception of the root Archetype definition ComplexObjectConstraint that is not owned by any referencing attribute.

The subtypes of ObjectConstraint include:

ObjectConstraintProxy - a reference to an existing NamedObjectConstraint. ObjectConstraintProxys only exist in SourceArchetypes and are replaced by a copy of their targetObject during the flattening process.

NamedObjectConstraint - the set of ObjectConstraints that reference a Reference Model Class and have node identifiers

EnumerationConstraint - constraints on the Reference Model Enumeration class

ArchetypeSlot - identifies a (constrained) slot to be filled by a separate archetype

ArchetypeRootProxy - references an archetype that constraints the type and/or attributes of a Reference Model Class and optionally fills an ArchetypeSlot defined in a parent Archetype

ComplexObjectConstraint - a constraint on the type and/or attributes of a Reference Model Class

TerminologyConstraint - constraints on the TerminologyCodeReference type

PrimitiveObjectConstraint - constraints on the set of primitive data types supplied in the reference model

* public excludes : [ObjectConstraint](#_aa52f11e5760ad2f47030803962bb855) [0..\*]

ObjectConstraint represents the properties and associations that are common to all types of object constraints:

Every object constraint may directly specialize at most one parent ObjectConstraint

Every AttributeConstraint is owned by exactly one ObjectConstraint

Every ObjectConstraint is referenced by exactly one AttributeConstraint, with the exception of the root Archetype definition ComplexObjectConstraint that is not owned by any referencing attribute.

The subtypes of ObjectConstraint include:

ObjectConstraintProxy - a reference to an existing NamedObjectConstraint. ObjectConstraintProxys only exist in SourceArchetypes and are replaced by a copy of their targetObject during the flattening process.

NamedObjectConstraint - the set of ObjectConstraints that reference a Reference Model Class and have node identifiers

EnumerationConstraint - constraints on the Reference Model Enumeration class

ArchetypeSlot - identifies a (constrained) slot to be filled by a separate archetype

ArchetypeRootProxy - references an archetype that constraints the type and/or attributes of a Reference Model Class and optionally fills an ArchetypeSlot defined in a parent Archetype

ComplexObjectConstraint - a constraint on the type and/or attributes of a Reference Model Class

TerminologyConstraint - constraints on the TerminologyCodeReference type

PrimitiveObjectConstraint - constraints on the set of primitive data types supplied in the reference model

* public parentProperty : [RMMSingularProperty](#_5917d2795b1a9ae4f33929e6edb8af81) [1]

*RMMSingularProperty* represents the subset of *RMMProperty* instances having an upper bound of 1. The AML treats RMMSingular properties as single values (vs. collections) of attributes that can be required, optional or prohibited.

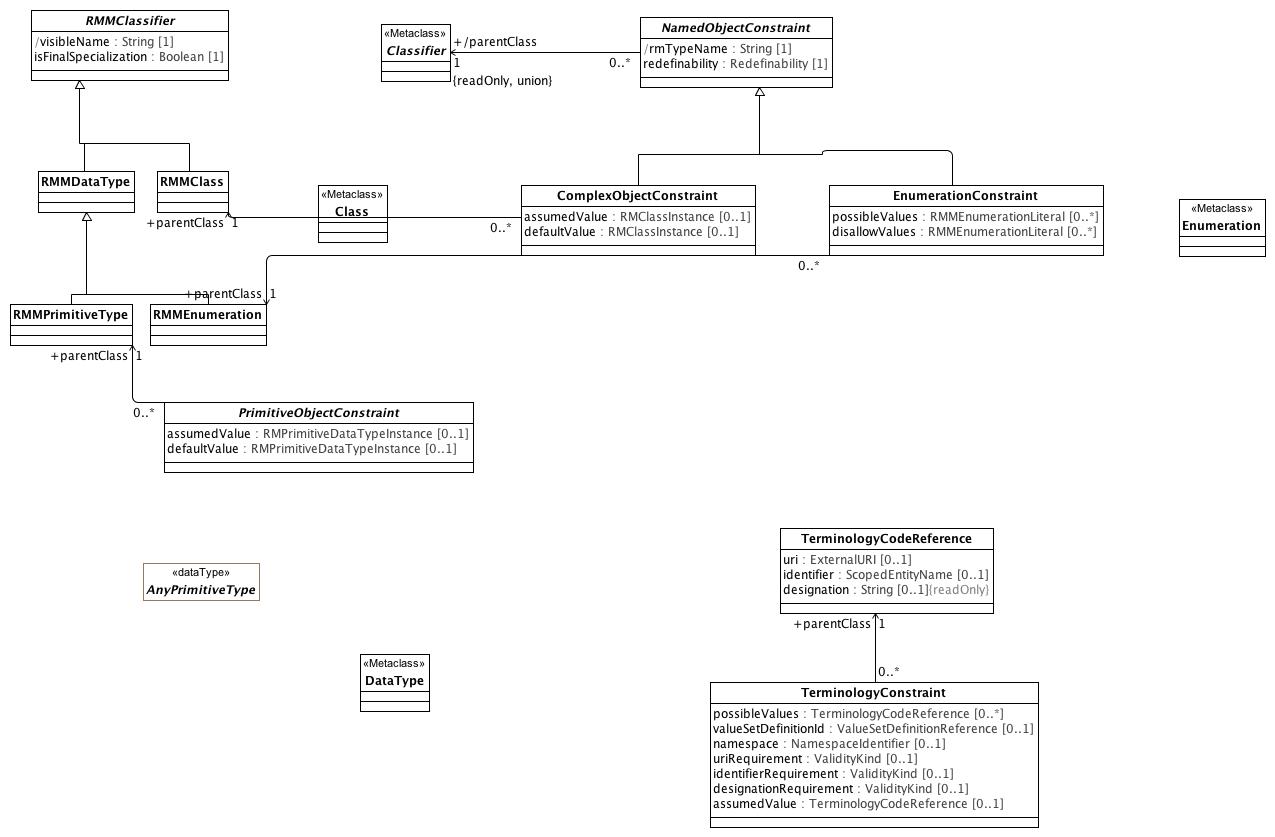
#### Known other classes

[Property](#_9624701f3c3fcd329e6dba1fc74db836), [RMMCollectionProperty](#_702e30cd0381b6e9726bcc6fe779a70f), [RMMProperty](#_652433ba6af347b5ab3d4b0b4b2931c9), [RMMSingularProperty](#_5917d2795b1a9ae4f33929e6edb8af81)

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### <Package> Object Constraint References



**Object References**

### <Class> EnumerationConstraint

#### Attributes

* public possibleValues : [RMMEnumerationLiteral](#_41faf6a7041d7068bbbf4f9ff3924d22) [0..\*]

The set of possible enumeration literals that are valid in the constrained instance. If *possibleValues* is empty, all literals not referenced in *disallowValues* are valid.

* public disallowValues : [RMMEnumerationLiteral](#_41faf6a7041d7068bbbf4f9ff3924d22) [0..\*]

The set of enumeration literals that can't appear in this constrained instance.

#### Associations

* public parentClass : [RMMEnumeration](#_190e24bd48f094ad9ad981ac0b4eb47e) [1]

A subset of the UML::Enumeration data type. While UML::Enumeration data types can have both ownedAttributes and ownedOperations, these aspects are ignored from the AML perspective. The only aspects of an RMMEnumeration that are visible in the AML model is the package name.

### <Class> NamedObjectConstraint

#### Description

Abstract model of constraint on any kind of object node

#### Attributes

* public rmTypeName : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

Reference model type that this node constrains

* public redefinability : [Redefinability](#_45bc3b03e253b26272fb450b2c34f5f2) [1]

Whether this node can be further constrained or elaborated in specializations

#### Associations

* public parentClass : [Classifier](#_5f9a87915e1e9718a1a1cc45af995a70) [1]

### <Class> PrimitiveObjectConstraint

#### Description

A constraint on an instance of a primitive data type (see: [Primitive Data Types package](platform:/resource/metamodel/am.emx#_-pgJIByrEeONZZvjZFK4_A)) a Terminology Code Reference (See: [Core package of the Terminology Services module](platform:/resource/metamodel/am.emx#_FkmfQJgMEeOEysZ5-LoitA)) or an RMMEnumeration as defined in the [Enumeration Metamodel](platform:/resource/metamodel/am.emx#_BgPdsJW2EeOEysZ5-LoitA).

#### Attributes

* public assumedValue : [RMPrimitiveDataTypeInstance](#_44fd267adf8202d91aafd96398da0a13) [0..1]

The value that is assumed if no value is provided. An assumed value makes no sense for a required attribute, and may be ignored. Assumed values for prohibited attributes are treated as "fixed" -- as there can be no other possible values, the assumed value is the same for all instances.

* public defaultValue : [RMPrimitiveDataTypeInstance](#_44fd267adf8202d91aafd96398da0a13) [0..1]

The *defaultValue,* if present, should is used to pre-populate object instances, forms, etc. as the value to be used unless it is removed or overwritten. Nothing may be assumed about an object in which an attribute with specified *defaultValue* is missing.

#### Associations

* public parentClass : [RMMPrimitiveType](#_bd00db82392e861a6828e5f762e45733) [1]

Reference Model data types may only have *attributes* of *type* UML::PrimitiveType and limited to the UML primitive types of *String*, *Integer*, *Boolean* and *Real*.

### <Class> TerminologyConstraint

#### Description

A constraint on instances of the reference model Terminology type

#### Attributes

* public possibleValues : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [0..\*]

List of valid Terminology values

* public valueSetDefinitionId : [ValueSetDefinitionReference](#_be2600754ff104c3bebcfa73ab768821) [0..1]

Identifier of a constraint defined in the Terminology package

* public namespace : [NamespaceIdentifier](#_94cb7eefb9b55dbc722d53bf1ec0f163) [0..1]
* public uriRequirement : [ValidityKind](#_411de44f0fb7bb89a16c1f6c35fcd7d9) [0..1]

Whether a URI is required

* public identifierRequirement : [ValidityKind](#_411de44f0fb7bb89a16c1f6c35fcd7d9) [0..1]

Whether a concept identifier is required

* public designationRequirement : [ValidityKind](#_411de44f0fb7bb89a16c1f6c35fcd7d9) [0..1]

Whether a human-readable designation is required

* public assumedValue : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [0..1]

A value to be assumed in instances that do not specify one

#### Associations

* public parentClass : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [1]

A *TerminologyCodeReference* (alias: URIAndEntityName) consists of a local identifier that references a unique meaning within the context of a given domain in a terminology service instance and a globally unique *URI* that identifies the intended meaning of the identifier.

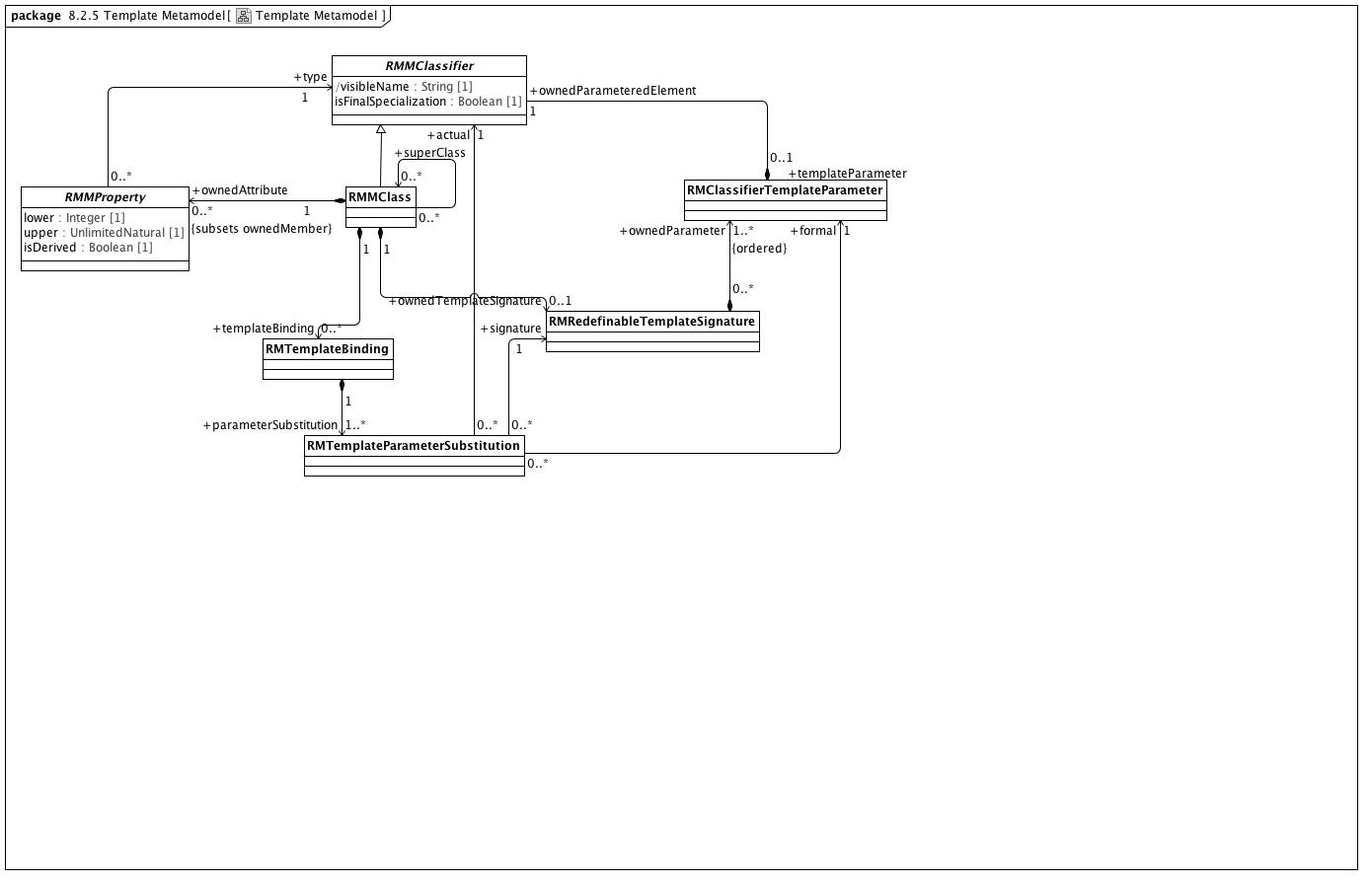
#### Known other classes

[Class](#_bdb071ba1da37974bd8d9639d911511b), [Classifier](#_5f9a87915e1e9718a1a1cc45af995a70), [ComplexObjectConstraint](#_abfab8c8e983a73b4981f6fcfdd16134), [DataType](#_687a198ec4e5e49dcd9a605729dc1c24), [Enumeration](#_e3fb46f85efa560d0f6c20afc26f4f5b), [RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3), [RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873), [RMMDataType](#_d5914eb0da42172989bbe57f23fc4310), [RMMEnumeration](#_190e24bd48f094ad9ad981ac0b4eb47e), [RMMPrimitiveType](#_bd00db82392e861a6828e5f762e45733), [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4)

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### <Package> Template Metamodel



**Template Metamodel**

### <Class> RMClassifierTemplateParameter

#### Associations

* public ownedParameteredElement : [RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873) [1]

A generalization of *RMDataType* and *RMClass*, both of which have *RMProperty*s

### <Class> RMRedefinableTemplateSignature

#### Description

A *RMRedefinableTemplateSignature* associates an ordered list of *RMClassifierTemplateParameters* with an owning *RMClass.* The owning *RMClass* typically, but not always has one or more ownedAttributes that reference one of the ownedParameters of the *RMRedefinableTemplateSignature.*

#### Associations

* public ownedParameter : [RMClassifierTemplateParameter](#_3d9b09fe9052c8305d90ab92bc37d26b) [1..\*]

### <Class> RMTemplateBinding

#### Description

*RMTemplateBinding* is a subtype of the UML::TemplateBinding class. It represents a set of parameter substitutions that are to be applied to a *RMRedefinableTemplateSignature* defined by a parent or ancestor *superClass.* A *RMTemplateBinding* contains one or more parameter substitutions to be applied to one or more types referenced by an *ownedAttribute* of the parent or ancestor class.

#### Associations

* public parameterSubstitution : [RMTemplateParameterSubstitution](#_c2a122fef357367888fcb3768852586c) [1..\*]

A *RMTemplateParameterSubstitution* indicates that the *actual RMClass* or *RMPrimitiveType* is to be substituted as the *type* for the *ownedParameteredElement* owned by the *formal* *RMClassifierTemplateParameter.*

### <Class> RMTemplateParameterSubstitution

#### Description

A *RMTemplateParameterSubstitution* indicates that the *actual RMClass* or *RMPrimitiveType* is to be substituted as the *type* for the *ownedParameteredElement* owned by the *formal* *RMClassifierTemplateParameter.*

#### Associations

* public formal : [RMClassifierTemplateParameter](#_3d9b09fe9052c8305d90ab92bc37d26b) [1]
* public signature : [RMRedefinableTemplateSignature](#_6afdd25f5589999ef5ae78a4eab8563d) [1]

A *RMRedefinableTemplateSignature* associates an ordered list of *RMClassifierTemplateParameters* with an owning *RMClass.* The owning *RMClass* typically, but not always has one or more ownedAttributes that reference one of the ownedParameters of the *RMRedefinableTemplateSignature.*

* public actual : [RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873) [1]

A generalization of *RMDataType* and *RMClass*, both of which have *RMProperty*s

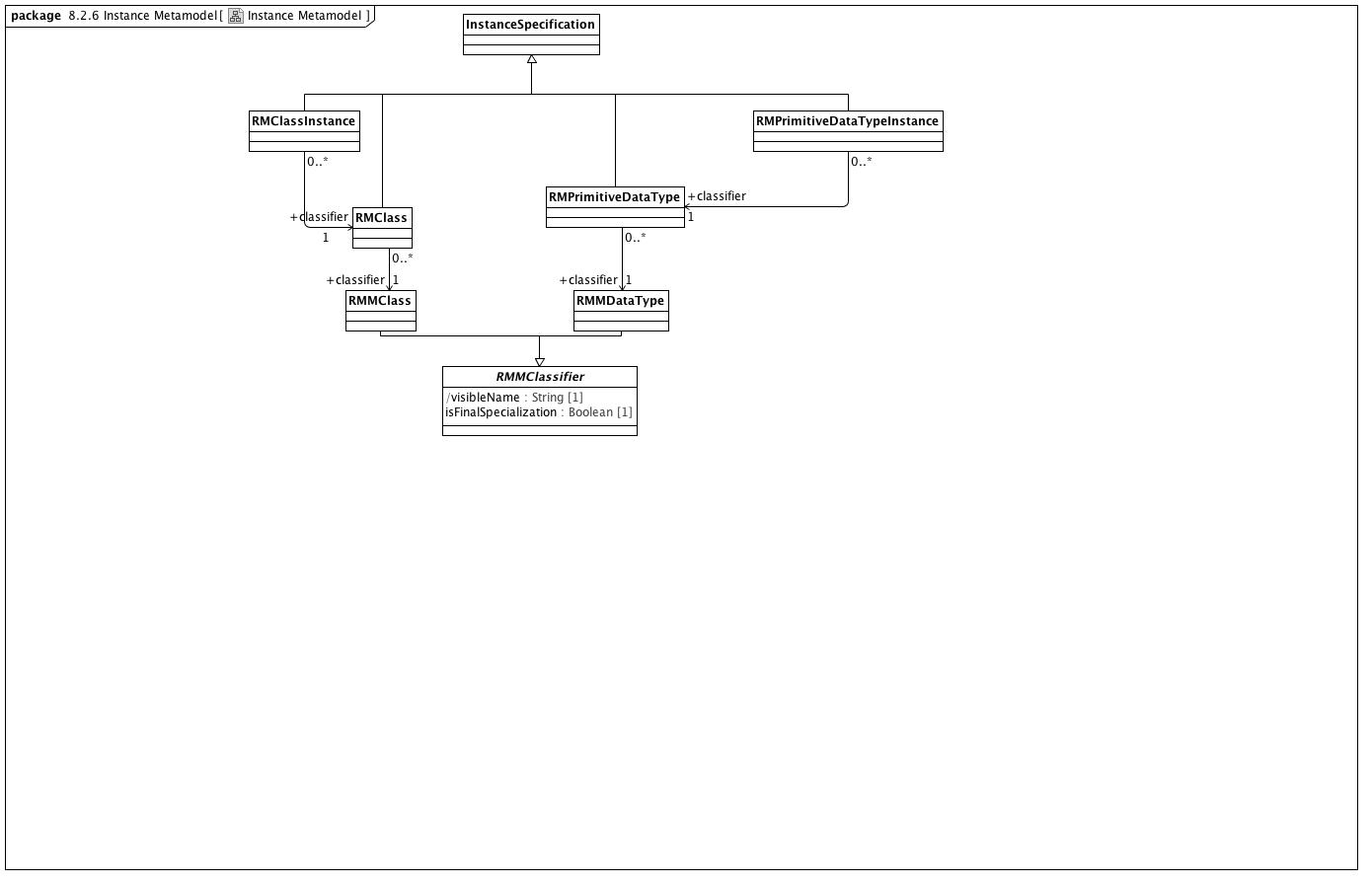
#### Known other classes

[RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3), [RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873), [RMMProperty](#_652433ba6af347b5ab3d4b0b4b2931c9)

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### <Package> Instance Metamodel



**Instance Metamodel**

### <Class> InstanceSpecification

### <Class> RMClass

#### Description

An instance of *an instance* of an *RMClass.* As an example, if the RMClass "Automobile" were an instance of an RMClass, with the ownedAttributes "model" and "year", an RMClassInstance might be named "Ford", with the model attribute set to "Fairlane" and the year to "1965".

#### Associations

* public classifier : [RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3) [1]

A class, in the object-oriented sense

### <Class> RMClassInstance

#### Associations

* public classifier : [RMClass](#_977fccbc34231ad0bea8fc5ff3c8addc) [1]

An instance of *an instance* of an *RMClass.* As an example, if the RMClass "Automobile" were an instance of an RMClass, with the ownedAttributes "model" and "year", an RMClassInstance might be named "Ford", with the model attribute set to "Fairlane" and the year to "1965".

### <Class> RMPrimitiveDataType

#### Associations

* public classifier : [RMMDataType](#_d5914eb0da42172989bbe57f23fc4310) [1]

*RMMDataTypes*, like UML::DataTypes "model Types whose instances are distinguished only by their value". *RMMDataTypes* form the leaf nodes of any AML constraint model -- they are the places where actual atomic value instances are recorded.

While not formally represented in this model (because we don't know how to create a generalization set), the three subclasses of *RMMDataType* (*RMMEnumeration*, *CompoundRMMDataType* and *UMLPrimitiveType*) are both disjoint and covering.

### <Class> RMPrimitiveDataTypeInstance

#### Associations

* public classifier : [RMPrimitiveDataType](#_2fd719f1d4a4fafd390224b10cd96510) [1]

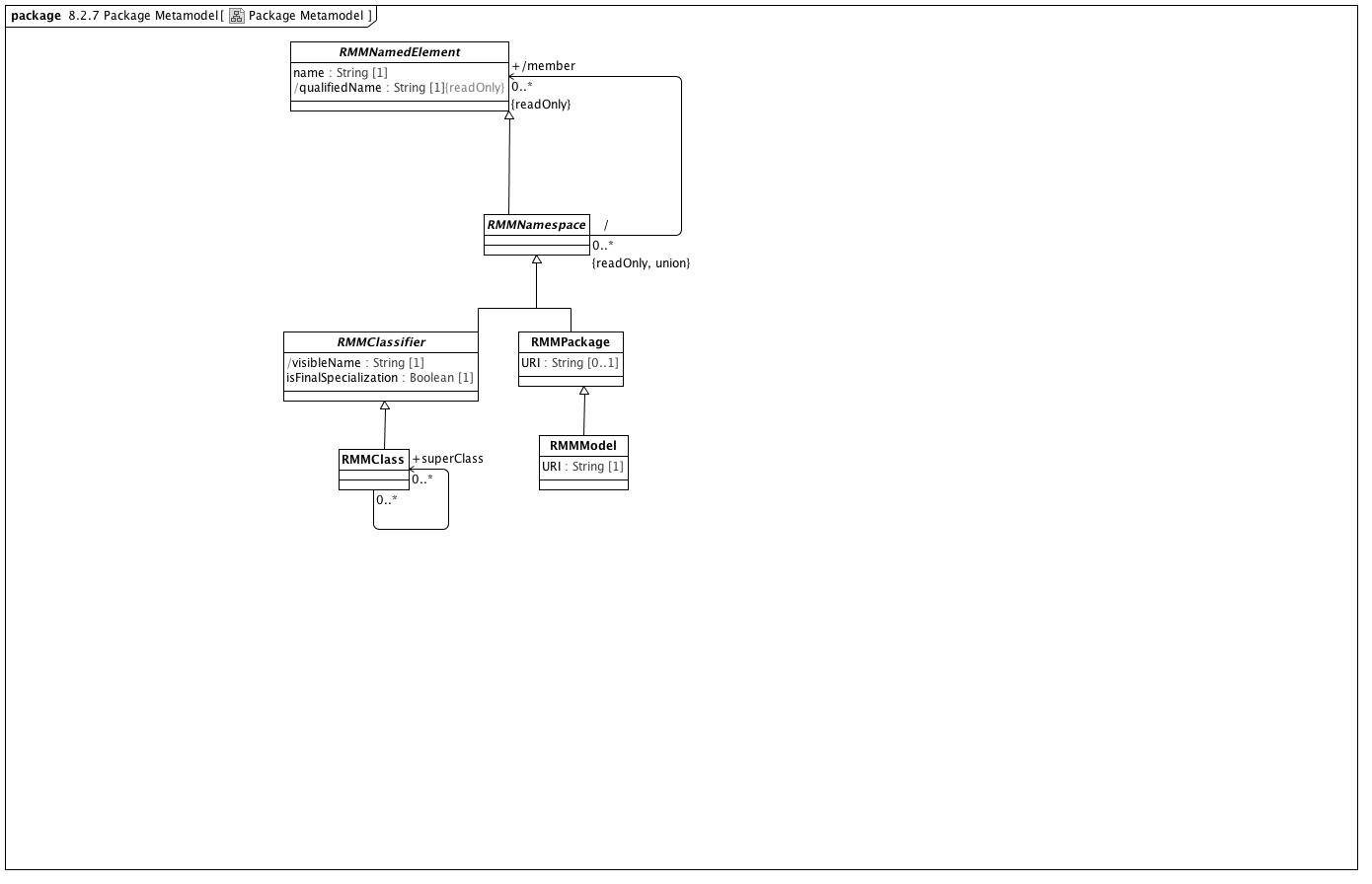
#### Known other classes

[RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3), [RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873), [RMMDataType](#_d5914eb0da42172989bbe57f23fc4310)

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### <Package> Package Metamodel



**Package Metamodel**

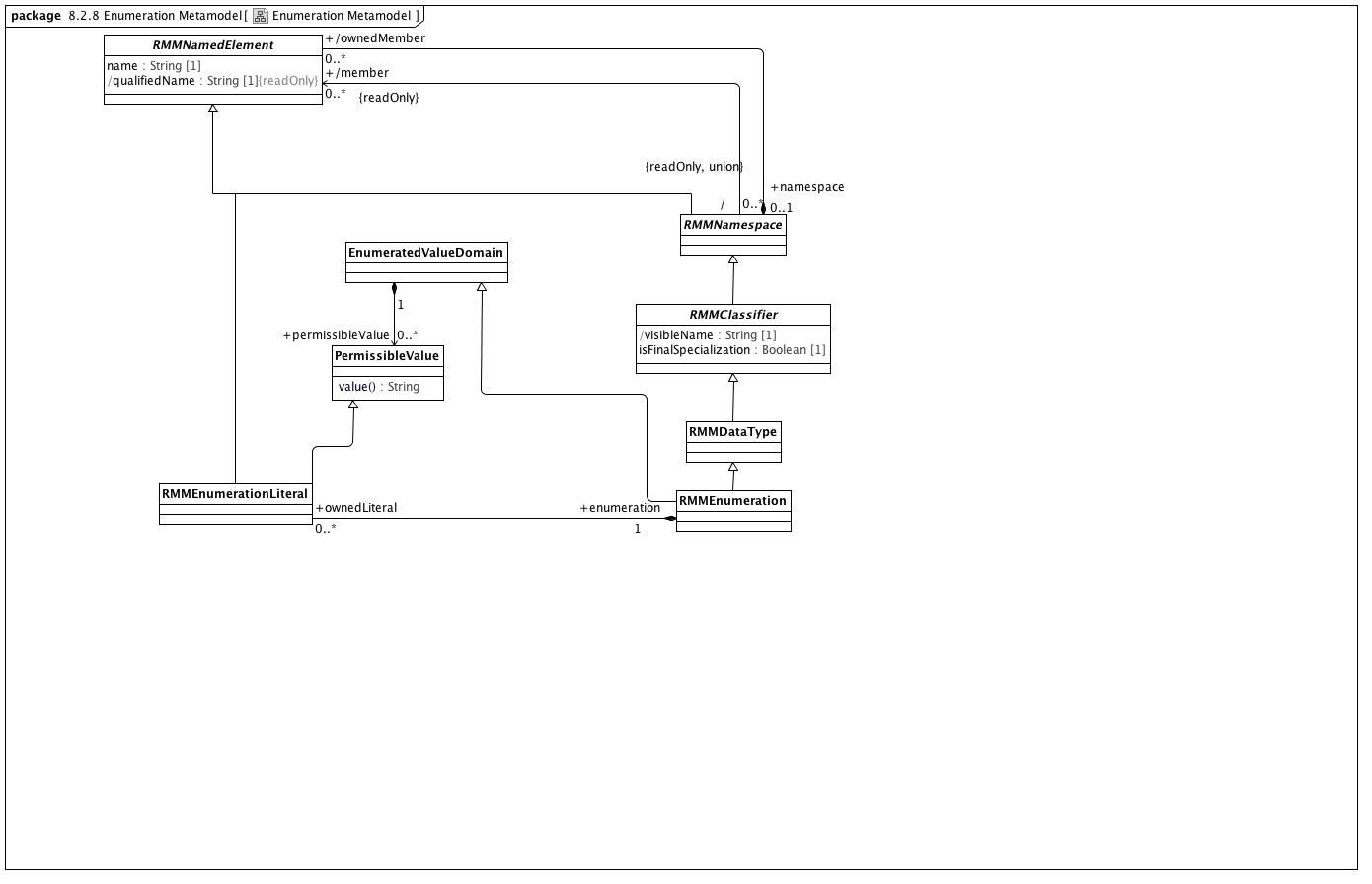
#### Known other classes

[RMMClass](#_a75c06fc93e516ccf92a1e38e18c46f3), [RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873), [RMMModel](#_fc116c5fcb379006ed51eb855a1dae57), [RMMNamedElement](#_527fd9eb1e787c36a3748854a9431816), [RMMNamespace](#_f762e4ef59f1948849a49d421126c16b), [RMMPackage](#_a0a843d7d41881592e31e887cebd6da4)

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### <Package> Enumeration Metamodel



**Enumeration Metamodel**

### <Class> EnumeratedValueDomain

#### Description

An EnumeratedValueDomain represents a discrete set of possible values for a particular field or data element. Each permissible value represents an intended meaning that, while sometimes determinable from the string itself or its accompanying documentation, can only be fully fixed by connecting it to an official "value meaning" reference in an external terminological resource.

#### Associations

* public permissibleValue : [PermissibleValue](#_66976d5fcaf3eff9df49b6e5dab4ad12) [0..\*]

A permissible value within the context of a value domain. While permissible values may be represented as integers, strings or simply as named data type instances (as is the case in UML), all permissible values need to have a mechanism for providing a String representation of the represented value. The String returned by the value function must be unique within the context of the containing domain.

### <Class> PermissibleValue

#### Description

A permissible value within the context of a value domain. While permissible values may be represented as integers, strings or simply as named data type instances (as is the case in UML), all permissible values need to have a mechanism for providing a String representation of the represented value. The String returned by the value function must be unique within the context of the containing domain.

#### Operations

* value () : [String](#_e8a6ce315d976318da3ab784a645ea44)

### <Class> RMMEnumerationLiteral

#### Description

A RMMEnumerationLiteral is a specialization UML::EnumerationLiteral. The only characteristic that is significant from the AML model perspective is the *RMMEnumerationLiteral* name, which is unique within the context of the RMMEnumeration namespace. An *RMMEnumerationLiteral* returns its *name* as the *PermissibleValue* value().

#### Associations

* public enumeration : [RMMEnumeration](#_190e24bd48f094ad9ad981ac0b4eb47e) [1]

A subset of the UML::Enumeration data type. While UML::Enumeration data types can have both ownedAttributes and ownedOperations, these aspects are ignored from the AML perspective. The only aspects of an RMMEnumeration that are visible in the AML model is the package name.

#### Known other classes

[RMMClassifier](#_31f3bed9860f1a34043799bd12ffe873), [RMMDataType](#_d5914eb0da42172989bbe57f23fc4310), [RMMEnumeration](#_190e24bd48f094ad9ad981ac0b4eb47e), [RMMNamedElement](#_527fd9eb1e787c36a3748854a9431816), [RMMNamespace](#_f762e4ef59f1948849a49d421126c16b)

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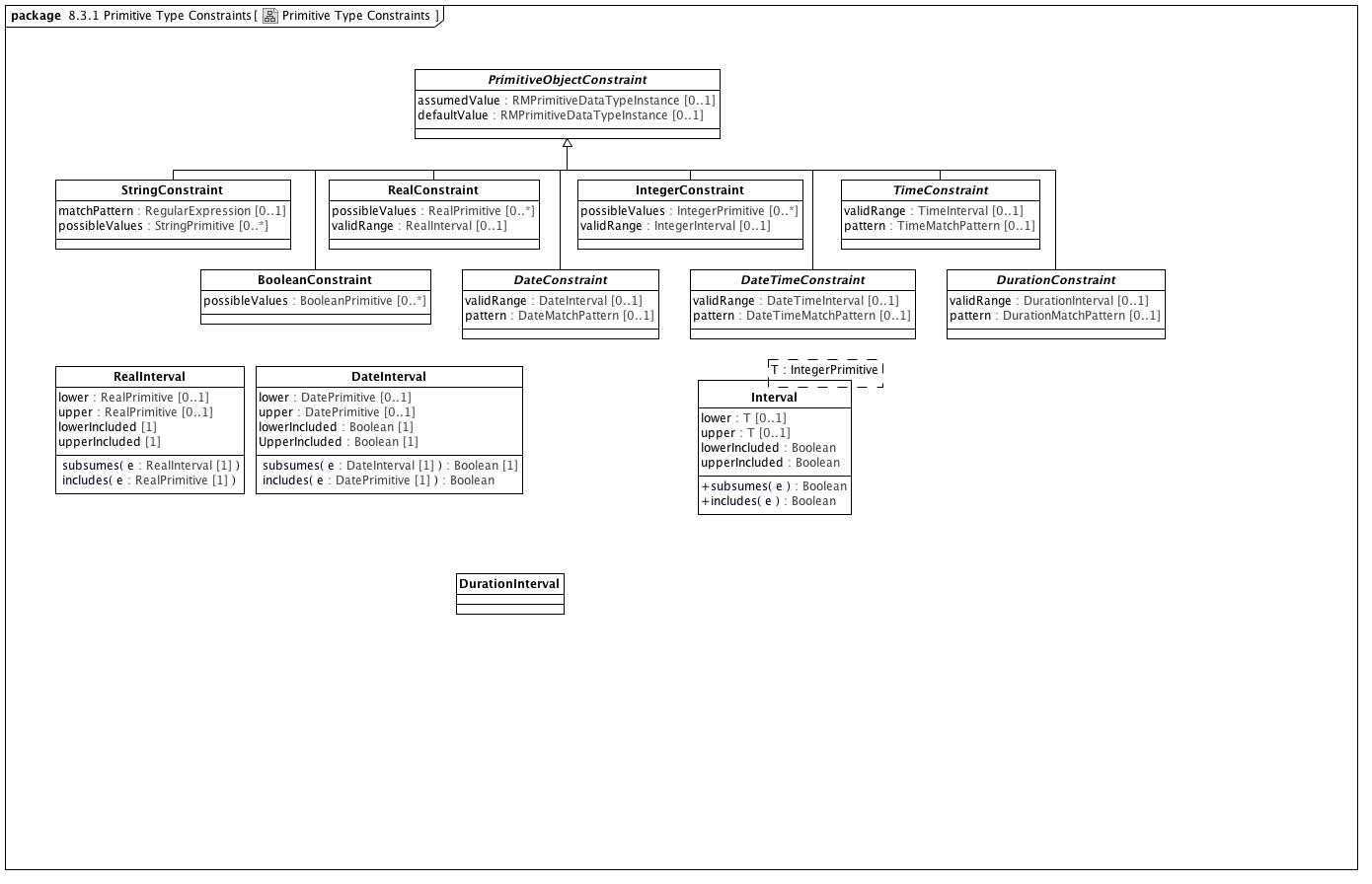
## <Package> Constraint Model

Constraint Model Package Overview The constraint model is the core of the archetype design. It illustrates how constraints are defined, showing the object-attribute-object pattern characteristic of object constraints. ComplexObjectConstraint. Because objects are composed of properties (attributes and relationships), and properties consist of objects, the archetype definition consists of alternate layers of ArchetypeRootConstraint, but rather than a single archetype, it defines a set of archetypes. It can be thought of like a keyhole, into which few or many keys might fit, depending on how specific its shape is. Logically it has the same semantics as a ComplexObjectConstraint, except that the constraints are expressed in another archetype, not the current one. ComplexObjectConstraints PrimitiveObjectConstraints AttributeConstraints SingularAttributeConstraint class. Where a SingularAttributeConstraint is associated with more than one ObjectConstraint, the ObjectConstraints are alternatives. AttributeCollectionConstraint, which differentiates between unique and repeatable and between ordered and unordered collections. In addition, while the AttributeConstraint determines whether a property may exist, the quantity of a repeating element is defined in the AttributeCollectionConstraint’s cardinality property. AttributeCollectionConstraint, with its defined cardinality, there may be different sets of sibling members with different constraints, and the number of each of these subsets is specified as the AttributeCollectionMember’s occurrences property. In an organization, for instance, the cardinality for the member property may be “two or more,” but within that set of members, we may have two constraints. One type of member, the leader (indicated by an ObjectConstraint on the person type or role), may be required to occur exactly once, whereas other types may have multiple occurrences. AttributeTupleConstraints AttributeTuple would be defined for each pair of the two values (unit code and numeric ceiling), and these tuples would be grouped into an AttributeTupleConstraint, defining an array of acceptable sets of values.

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### <Package> Primitive Type Constraints



**Primitive Type Constraints**

### <Class> BooleanConstraint

#### Description

A *BooleanConstraint* restricts the possible values of a target *BooleanPrimitive* data type.

#### Attributes

* public possibleValues : [BooleanPrimitive](#_19737cdaaaee2179c50553b52361808b) [0..\*]

List of valid Boolean values for this constraint

### <Class> DateConstraint

#### Description

A *DateConstraint* restricts the possible values of a target *DatePrimitive* data type.

#### Attributes

* public validRange : [DateInterval](#_81da588c330e9dbd64b69f35d77517fc) [0..1]

Range of valid Date values

* public pattern : [DateMatchPattern](#_3cae9b111208dfafe95b548c45720f8e) [0..1]

A regular expression to constrain valid instances of Date

### <Class> DateInterval

#### Description

A finite period of time between two documented dates, or an infinite period before or after one documented date.

#### Attributes

* public lower : [DatePrimitive](#_db5d020506d0af7a330f0b4fe1cb870a) [0..1]

The early boundary of the interval

* public upper : [DatePrimitive](#_db5d020506d0af7a330f0b4fe1cb870a) [0..1]

The late boundary of the interval

* public lowerIncluded : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f) [1]

Whether the early boundary of the interval in included

* public UpperIncluded : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f) [1]

Whether the late boundary of the interval is included

#### Operations

* subsumes (e : [DateInterval](#_81da588c330e9dbd64b69f35d77517fc) [1]) : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f)

* includes (e : [DatePrimitive](#_db5d020506d0af7a330f0b4fe1cb870a) [1]) : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f)

### <Class> DateTimeConstraint

#### Description

A *DateTimeConstraint* restricts the possible values of a target *DateTimePrimitive* data type.

#### Attributes

* public validRange : [DateTimeInterval](#_9e3c59498dc8b030bde31c93f4c27788) [0..1]

Range of valid DateTime values

* public pattern : [DateTimeMatchPattern](#_b501b0aa7bbcd9ac89d6ddbf9f0bf3d9) [0..1]

A DateTimeMatchPattern to constrain valid instances of DateTime

### <Class> DurationConstraint

#### Description

A *DurationConstraint* restricts the possible values of a target *DurationPrimitive* data type.

#### Attributes

* public validRange : [DurationInterval](#_3a5abc2dff6af7d55de8f7f683acd3b5) [0..1]

Range of valid Duration values

* private pattern : [DurationMatchPattern](#_baaa358403d3312c0779bc256e1050bd) [0..1]

A DurationMatchPattern to constrain valid instances of Duration

### <Class> DurationInterval

### <Class> IntegerConstraint

#### Description

An *IntegerConstraint* restricts the possible values of a target *IntegerPrimitive* data type.

#### Attributes

* public possibleValues : [IntegerPrimitive](#_89e2b2b9de405e6d05c4c5259fc8ffd6) [0..\*]

List of valid Integer values

* public validRange : [IntegerInterval](#_2dda2c7f1f86ff3b4efad58c3d6f1c22) [0..1]

Range of valid Integer values

### <Class> Interval

#### Attributes

* public lower : [T](#_5a9b93d7814e100099086250b858e172) [0..1]
* public upper : [T](#_5a9b93d7814e100099086250b858e172) [0..1]
* lowerIncluded : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f)
* public upperIncluded : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f)

#### Operations

* public subsumes (e) : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f)
* public includes (e) : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f)

### <Class> RealConstraint

#### Description

A *RealConstraint* restricts the possible values of a target *RealPrimitive* data type.

#### Attributes

* public possibleValues : [RealPrimitive](#_c596f10fb93cb4f697f2f1b0b64b43ce) [0..\*]

List of valid Real values

* public validRange : [RealInterval](#_9e98f2e5a554763f7f5382bf7e9156ee) [0..1]

Range of valid Real values

### <Class> RealInterval

#### Description

A set of real numbers between two specified numbers, or below or above one specified number.

#### Attributes

* public lower : [RealPrimitive](#_c596f10fb93cb4f697f2f1b0b64b43ce) [0..1]

The lower limit on a real number interval

* public upper : [RealPrimitive](#_c596f10fb93cb4f697f2f1b0b64b43ce) [0..1]

The upper limit on a real number interval

* private lowerIncluded [1]

Whether the lower limit on a real number interval is included in the interval

* private upperIncluded [1]

Whether the upper limit on a real number interval is included in the interval

#### Operations

* subsumes (e : [RealInterval](#_9e98f2e5a554763f7f5382bf7e9156ee) [1])

* includes (e : [RealPrimitive](#_c596f10fb93cb4f697f2f1b0b64b43ce) [1])

### <Class> StringConstraint

#### Description

A *StringConstraint* restricts the possible values of a target *StringPrimitive* data type.

#### Attributes

* public matchPattern : [RegularExpression](#_6e2a678bd7e183fc4288d4bbbc8284bb) [0..1]

A regular expression that defines the subset of possible string values that are

* public possibleValues : [StringPrimitive](#_6a90be7cfa784ea4b4e8cad8f4a47e82) [0..\*]

A list of valid String instances

### <Class> TimeConstraint

#### Description

A *TimeConstraint* restricts the possible values of a target *TimePrimitive* data type.

#### Attributes

* public validRange : [TimeInterval](#_638e0e1dff220d5b969760bc1f600557) [0..1]

Range of valid Time values

* public pattern : [TimeMatchPattern](#_a28995c5bf2253d86854a7a97e55ba1d) [0..1]

A TimeMatchPattern to constrain valid instances of Time

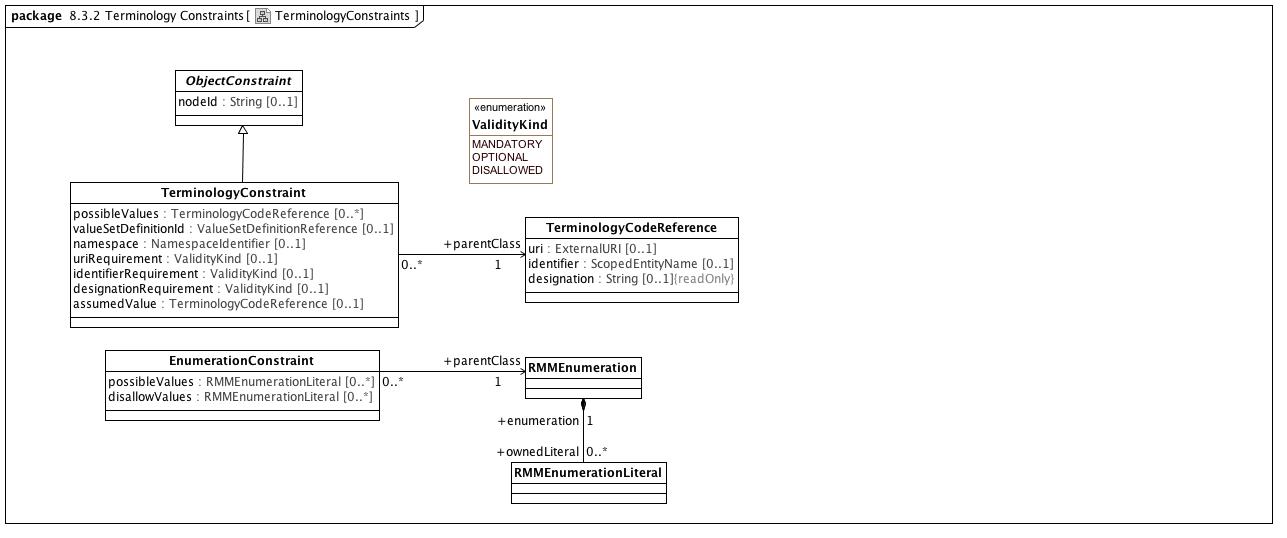
#### Known other classes

[PrimitiveObjectConstraint](#_db9df3b10e304d809393da4afc9a91da)

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### <Package> Terminology Constraints



**TerminologyConstraints**

### <Class> ObjectConstraint

#### Description

ObjectConstraint represents the properties and associations that are common to all types of object constraints:

Every object constraint may directly specialize at most one parent ObjectConstraint

Every AttributeConstraint is owned by exactly one ObjectConstraint

Every ObjectConstraint is referenced by exactly one AttributeConstraint, with the exception of the root Archetype definition ComplexObjectConstraint that is not owned by any referencing attribute.

The subtypes of ObjectConstraint include:

ObjectConstraintProxy - a reference to an existing NamedObjectConstraint. ObjectConstraintProxys only exist in SourceArchetypes and are replaced by a copy of their targetObject during the flattening process.

NamedObjectConstraint - the set of ObjectConstraints that reference a Reference Model Class and have node identifiers

EnumerationConstraint - constraints on the Reference Model Enumeration class

ArchetypeSlot - identifies a (constrained) slot to be filled by a separate archetype

ArchetypeRootProxy - references an archetype that constraints the type and/or attributes of a Reference Model Class and optionally fills an ArchetypeSlot defined in a parent Archetype

ComplexObjectConstraint - a constraint on the type and/or attributes of a Reference Model Class

TerminologyConstraint - constraints on the TerminologyCodeReference type

PrimitiveObjectConstraint - constraints on the set of primitive data types supplied in the reference model

#### Attributes

* public nodeId : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

#### Associations

* public parent : [RMMEnumeration](#_190e24bd48f094ad9ad981ac0b4eb47e) [1]

A subset of the UML::Enumeration data type. While UML::Enumeration data types can have both ownedAttributes and ownedOperations, these aspects are ignored from the AML perspective. The only aspects of an RMMEnumeration that are visible in the AML model is the package name.

* public description : [ItemDescription](#_47e163911a910ae4a0de27029dcdf5dd) [0..\*]

A human-readable definition of a term

#### Known other classes

[EnumerationConstraint](#_42c2e4f902eddd2a1629a431a96cd94f), [RMMEnumeration](#_190e24bd48f094ad9ad981ac0b4eb47e), [RMMEnumerationLiteral](#_41faf6a7041d7068bbbf4f9ff3924d22), [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4), [TerminologyConstraint](#_b2d4edbc24f651e5a3d756933fff1326)

### <Enumeration> ValidityKind

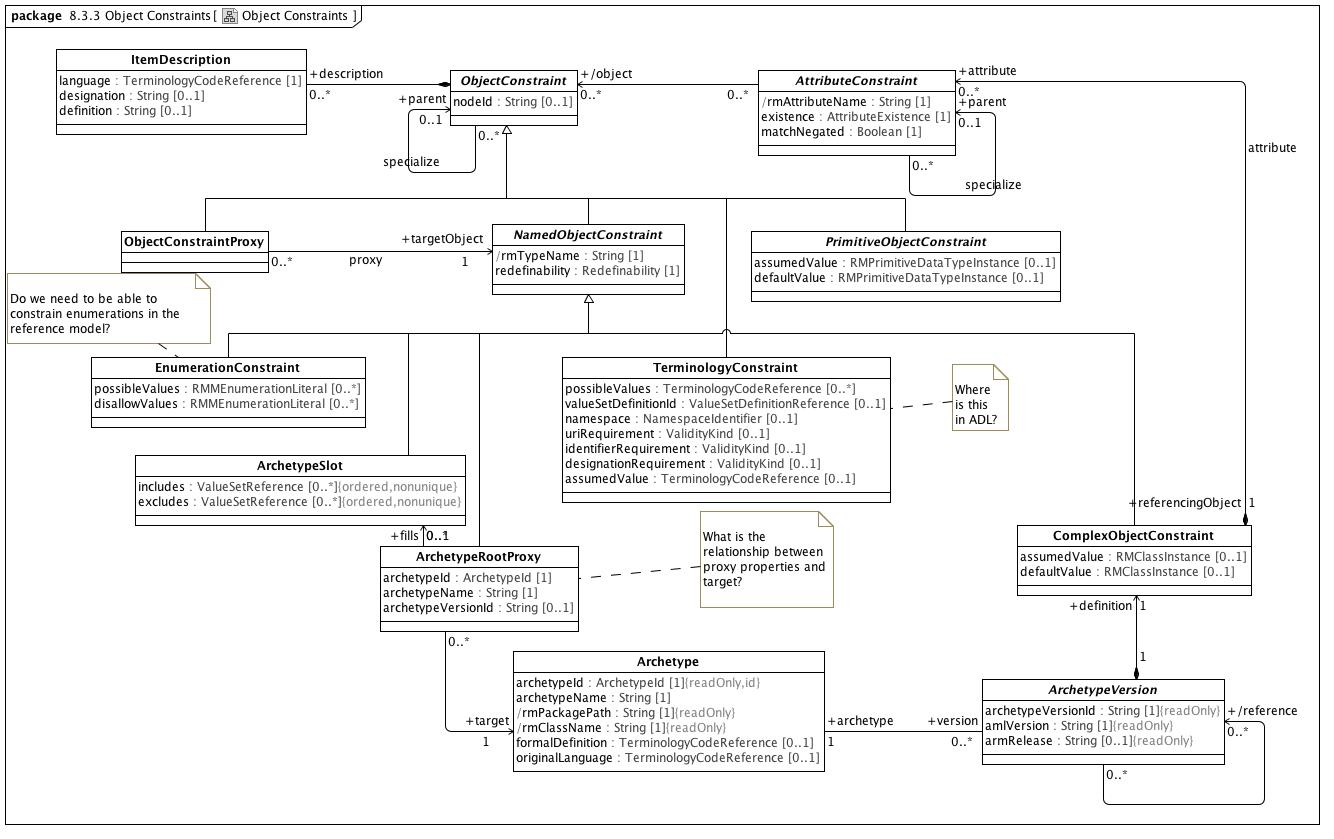
#### Description

Enumeration of classes of permissibility

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### <Package> Object Constraints



**Object Constraints**

### <Class> ArchetypeRootProxy

#### Description

A specialization of ComplexObjectConstraint whose node\_id attribute is an archetype identifier rather than an internal node code. Used to reference external archetypes to be included in a composite archetype.

#### Attributes

* public archetypeId : [ArchetypeId](#_abe68de6d7b599f5e4ea361caee12c81) [1]

The identifier for the archetype to be included at this point

* public archetypeName : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]
* public archetypeVersionId : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

#### Associations

* public target : [Archetype](#_f45a7b68ecac449e953ff8a65d6eff75) [1]
* public fills : [ArchetypeSlot](#_e518b2b75b6f66417345772b8440e6f2) [0..1]

A classifier that describes the set of archetypes that may be used to validate instances

### <Class> ArchetypeSlot

#### Description

A classifier that describes the set of archetypes that may be used to validate instances

#### Attributes

* public includes : [ValueSetReference](#_53376ea1584b6547b15f0e1392fc93e7) [0..\*]

List of constraints characterizing archetypes that may be included at this point

* public excludes : [ValueSetReference](#_53376ea1584b6547b15f0e1392fc93e7) [0..\*]

List of constraints characterizing archetypes that may not be included at this point

### <Class> ItemDescription

#### Description

A human-readable definition of a term

#### Attributes

* public language : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [1]

The language in which the term is defined

* public designation : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

description of the meaning of the term

* public definition : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

description of the meaning of the term

#### Associations

* public : [ObjectConstraint](#_aa52f11e5760ad2f47030803962bb855)

ObjectConstraint represents the properties and associations that are common to all types of object constraints:

Every object constraint may directly specialize at most one parent ObjectConstraint

Every AttributeConstraint is owned by exactly one ObjectConstraint

Every ObjectConstraint is referenced by exactly one AttributeConstraint, with the exception of the root Archetype definition ComplexObjectConstraint that is not owned by any referencing attribute.

The subtypes of ObjectConstraint include:

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NamedObjectConstraint - the set of ObjectConstraints that reference a Reference Model Class and have node identifiers

EnumerationConstraint - constraints on the Reference Model Enumeration class

ArchetypeSlot - identifies a (constrained) slot to be filled by a separate archetype

ArchetypeRootProxy - references an archetype that constraints the type and/or attributes of a Reference Model Class and optionally fills an ArchetypeSlot defined in a parent Archetype

ComplexObjectConstraint - a constraint on the type and/or attributes of a Reference Model Class

TerminologyConstraint - constraints on the TerminologyCodeReference type

PrimitiveObjectConstraint - constraints on the set of primitive data types supplied in the reference model

### <Class> ObjectConstraintProxy

#### Description

A constraint defined by reference to a node defined elsewhere in the same archetype

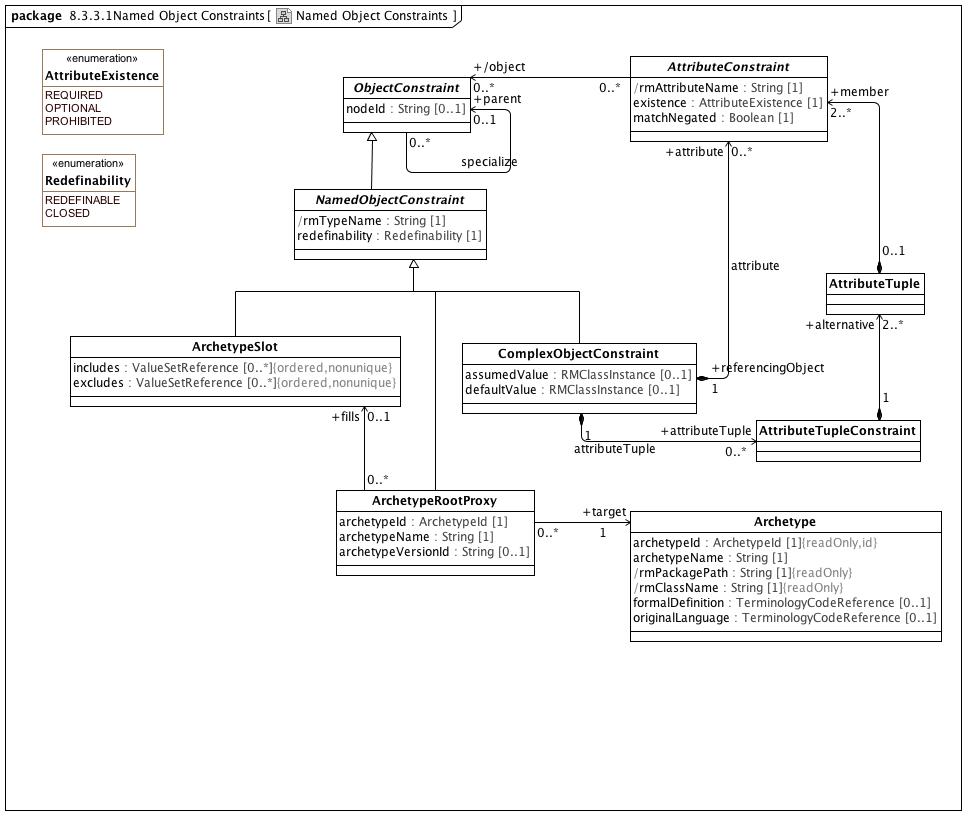
#### Known other classes

[Archetype](#_f45a7b68ecac449e953ff8a65d6eff75), [ArchetypeVersion](#_1de96fa71501cf96b27b14f3f9f1bb99), [AttributeConstraint](#_11f887fb6f19248bf7193bca31772c05), [ComplexObjectConstraint](#_abfab8c8e983a73b4981f6fcfdd16134), [EnumerationConstraint](#_42c2e4f902eddd2a1629a431a96cd94f), [NamedObjectConstraint](#_ab5b3b01964560abb1047edd9efa4eb9), [ObjectConstraint](#_aa52f11e5760ad2f47030803962bb855), [PrimitiveObjectConstraint](#_db9df3b10e304d809393da4afc9a91da), [TerminologyConstraint](#_b2d4edbc24f651e5a3d756933fff1326)

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#### <Package> Named Object Constraints



**Named Object Constraints**

### <Class> AttributeTuple

#### Description

A set of constraints on related attributes to be used to differentiate scenarios where the value of one attribute affects the valid values of another

#### Associations

* public member : [AttributeConstraint](#_11f887fb6f19248bf7193bca31772c05) [2..\*]

A constraint on a reference model attribute

### <Class> AttributeTupleConstraint

#### Description

An AttributeTupleConstraint presents a set of two or more alternative tuples, each of which consists of two or more attributes. The containing ComplexObjectConstraint is satisfied when all of the constraints in one of the AttributeTuples are satisfied.

#### Associations

* public alternative : [AttributeTuple](#_6d5bfb351e19f61e0327587b0ff5fd4f) [2..\*]

A set of constraints on related attributes to be used to differentiate scenarios where the value of one attribute affects the valid values of another

#### Known other classes

[Archetype](#_f45a7b68ecac449e953ff8a65d6eff75), [ArchetypeRootProxy](#_12e58855caae51d65fb43e2837534f63), [ArchetypeSlot](#_e518b2b75b6f66417345772b8440e6f2), [AttributeConstraint](#_11f887fb6f19248bf7193bca31772c05), [ComplexObjectConstraint](#_abfab8c8e983a73b4981f6fcfdd16134), [NamedObjectConstraint](#_ab5b3b01964560abb1047edd9efa4eb9), [ObjectConstraint](#_aa52f11e5760ad2f47030803962bb855)

### <Enumeration> AttributeExistence

#### Description

Strengths of requirement for the existence of an attribute

### <Enumeration> Redefinability

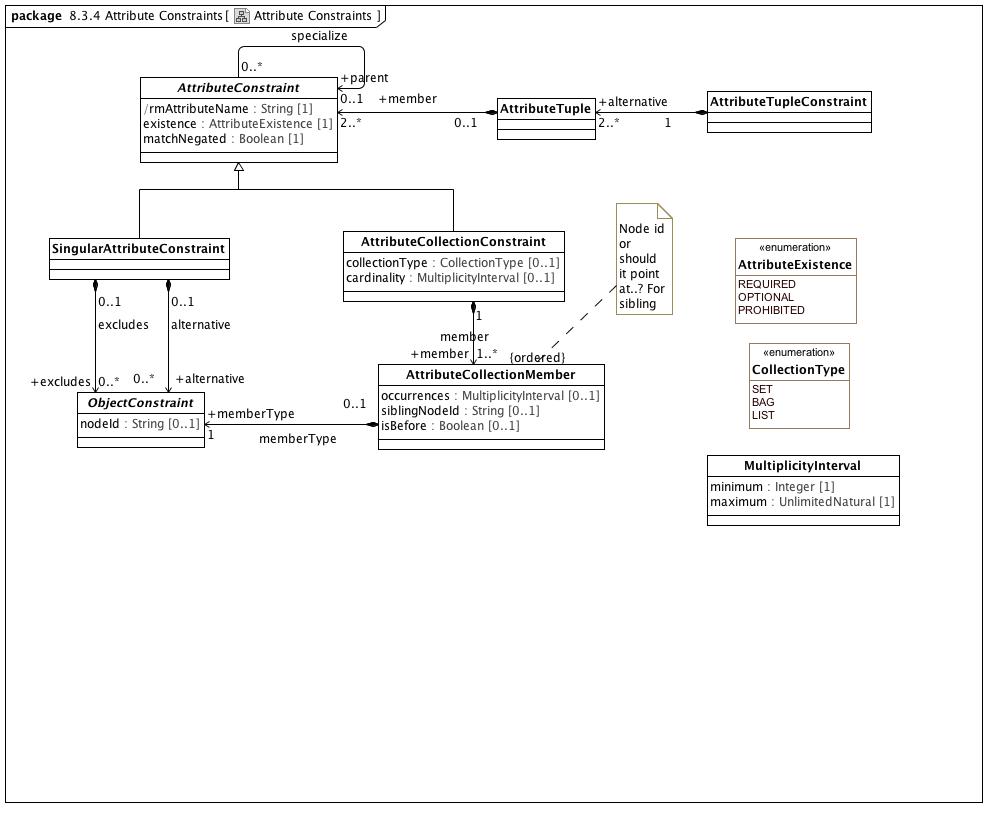
#### Description

Whether a node can be further constrained or elaborated in specializations

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### <Package> Attribute Constraints



**Attribute Constraints**

### <Class> AttributeCollectionMember

#### Description

An association that matches members of a collection of attributes with specific ObjectConstraints

#### Attributes

* public occurrences : [MultiplicityInterval](#_c810ec7fa381fa249b7a7d9fecae85b6) [0..1]

Number of times the element described by this constraint can repeat

* public siblingNodeId : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

Identification of another node under this AttributeConstraint from which *isBefore* is evaluted

* public isBefore : [Boolean](#_6119a00b0834641b9fe3f5ae9f58237f) [0..1]

Whether an object [immediately] precedes the object named in siblingNodeId

#### Associations

* public memberType : [ObjectConstraint](#_aa52f11e5760ad2f47030803962bb855) [1]

ObjectConstraint represents the properties and associations that are common to all types of object constraints:

Every object constraint may directly specialize at most one parent ObjectConstraint

Every AttributeConstraint is owned by exactly one ObjectConstraint

Every ObjectConstraint is referenced by exactly one AttributeConstraint, with the exception of the root Archetype definition ComplexObjectConstraint that is not owned by any referencing attribute.

The subtypes of ObjectConstraint include:

ObjectConstraintProxy - a reference to an existing NamedObjectConstraint. ObjectConstraintProxys only exist in SourceArchetypes and are replaced by a copy of their targetObject during the flattening process.

NamedObjectConstraint - the set of ObjectConstraints that reference a Reference Model Class and have node identifiers

EnumerationConstraint - constraints on the Reference Model Enumeration class

ArchetypeSlot - identifies a (constrained) slot to be filled by a separate archetype

ArchetypeRootProxy - references an archetype that constraints the type and/or attributes of a Reference Model Class and optionally fills an ArchetypeSlot defined in a parent Archetype

ComplexObjectConstraint - a constraint on the type and/or attributes of a Reference Model Class

TerminologyConstraint - constraints on the TerminologyCodeReference type

PrimitiveObjectConstraint - constraints on the set of primitive data types supplied in the reference model

### <Class> MultiplicityInterval

#### Description

Range of quantities

#### Attributes

* public minimum : [Integer](#_aeefbb09a8c456505ebb76cf8a103a03) [1]

The smallest value allowed

* public maximum : [UnlimitedNatural](#_7891541ba798985936e480ca8b19216f) [1]

The largest value allowed

#### Known other classes

[AttributeCollectionConstraint](#_5eefba8eca7402f09bd5619804038771), [AttributeConstraint](#_11f887fb6f19248bf7193bca31772c05), [AttributeTuple](#_6d5bfb351e19f61e0327587b0ff5fd4f), [AttributeTupleConstraint](#_f6da15c71717330ae1b56f8b41e3dd51), [ObjectConstraint](#_aa52f11e5760ad2f47030803962bb855), [SingularAttributeConstraint](#_48ee2586ffa14e5bb1cf8ad893969da7)

### <Enumeration> CollectionType

#### Description

Classification of collections

#### Known other enumerations

[AttributeExistence](#_4f99fbfcf9617d7ad55eca111d84fb67)

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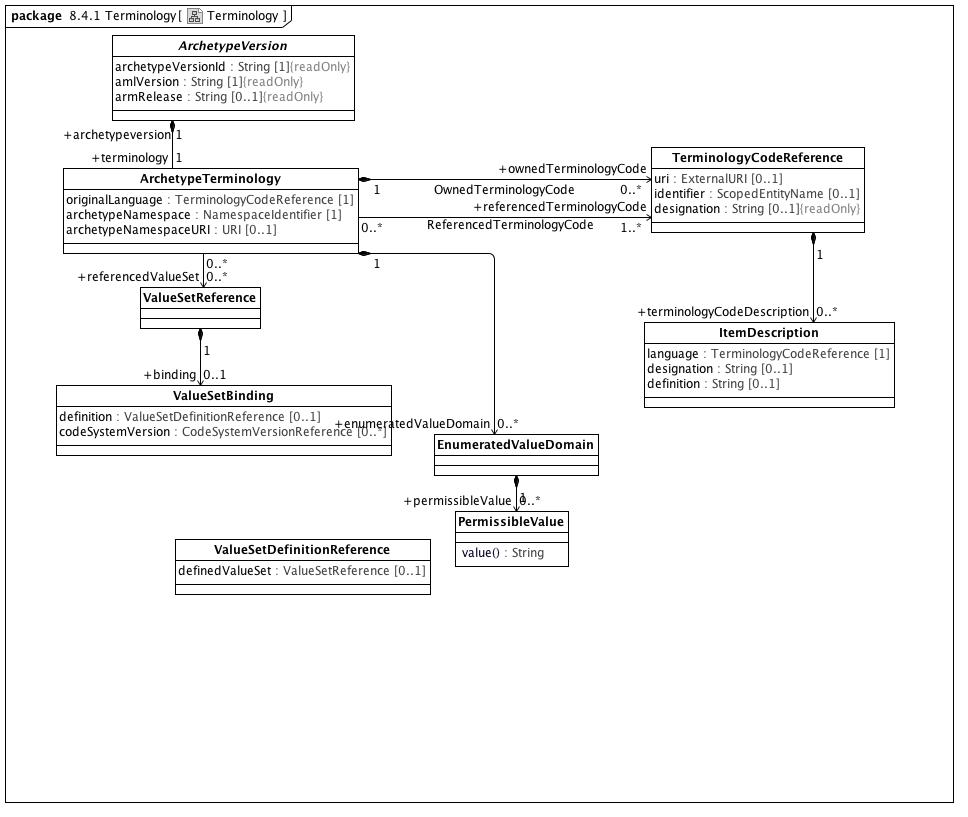
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## <Package> Terminology Binding

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### <Package> Terminology



**Terminology**

### <Class> ValueSetBinding

#### Description

An externally specified set of coded values

#### Attributes

* public definition : [ValueSetDefinitionReference](#_be2600754ff104c3bebcfa73ab768821) [0..1]

The version of the value set definition

* public codeSystemVersion : [CodeSystemVersionReference](#_6cc1b578ac4ab07a6712e0f4fa94db8b) [0..\*]

The version of the controlled terminology from which the values are selected

### <Class> ValueSetDefinitionReference

#### Attributes

* public definedValueSet : [ValueSetReference](#_53376ea1584b6547b15f0e1392fc93e7) [0..1]

### <Class> ValueSetReference

#### Description

The URI, identifier and name of a collection of TerminologyCodeReferences

#### Associations

* public binding : [ValueSetBinding](#_fdb7a97d4c43d7f09387cdc69dd2f65a) [0..1]

An externally specified set of coded values

#### Known other classes

[ArchetypeTerminology](#_ce78bd894405bf3f288466c83ca82fea), [ArchetypeVersion](#_1de96fa71501cf96b27b14f3f9f1bb99), [EnumeratedValueDomain](#_ad639ee3d4cd535b2d3e55238d69cc51), [ItemDescription](#_47e163911a910ae4a0de27029dcdf5dd), [PermissibleValue](#_66976d5fcaf3eff9df49b6e5dab4ad12), [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4)

# 

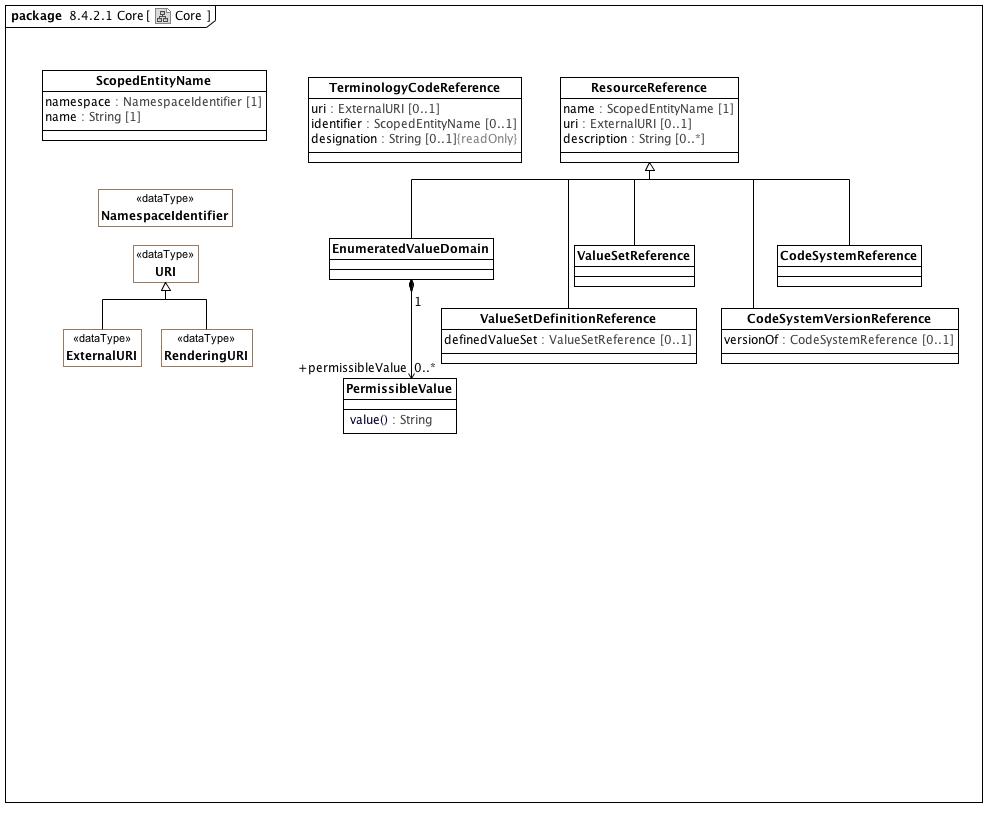
# 

### <Package> Terminology Services

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# 

#### <Package> Core



**Core**

### <Class> CodeSystemReference

#### Description

The URI, identifier and name of a code system, as defined in the CTS2 specification.

### <Class> CodeSystemVersionReference

#### Attributes

* public versionOf : [CodeSystemReference](#_0ff5bf5f2f7cc9422c34b4bfd05628e7) [0..1]

### <Class> ResourceReference

#### Description

#### Attributes

* public name : [ScopedEntityName](#_bf3eeb4d95f5d93bbd59440cca5ed9d6) [1]

* public uri : [ExternalURI](#_de932b9629138c166e8cfb00efa65177) [0..1]

* public description : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..\*]

A textual description of the resource in a human readable language.

### <Class> ScopedEntityName

#### Description

The combination of a *namespace* identifier and a local *name*. Scoped entity names are not portable - they only work within the context of a single service instance, as different services may assign different *namespace* identifiers to the same namespace and different services may make different choices of the appropriate local identifier to use to represent an entity. As an example, one service may choose to use the entity code while a second may use another designation that is known to be unique.

#### Attributes

* public namespace : [NamespaceIdentifier](#_94cb7eefb9b55dbc722d53bf1ec0f163) [1]

An identifier that references a unique namespace URI within the context of a service

* public name : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The local entity name within the context of the namespace. What is chosen for the entity name is service specific.

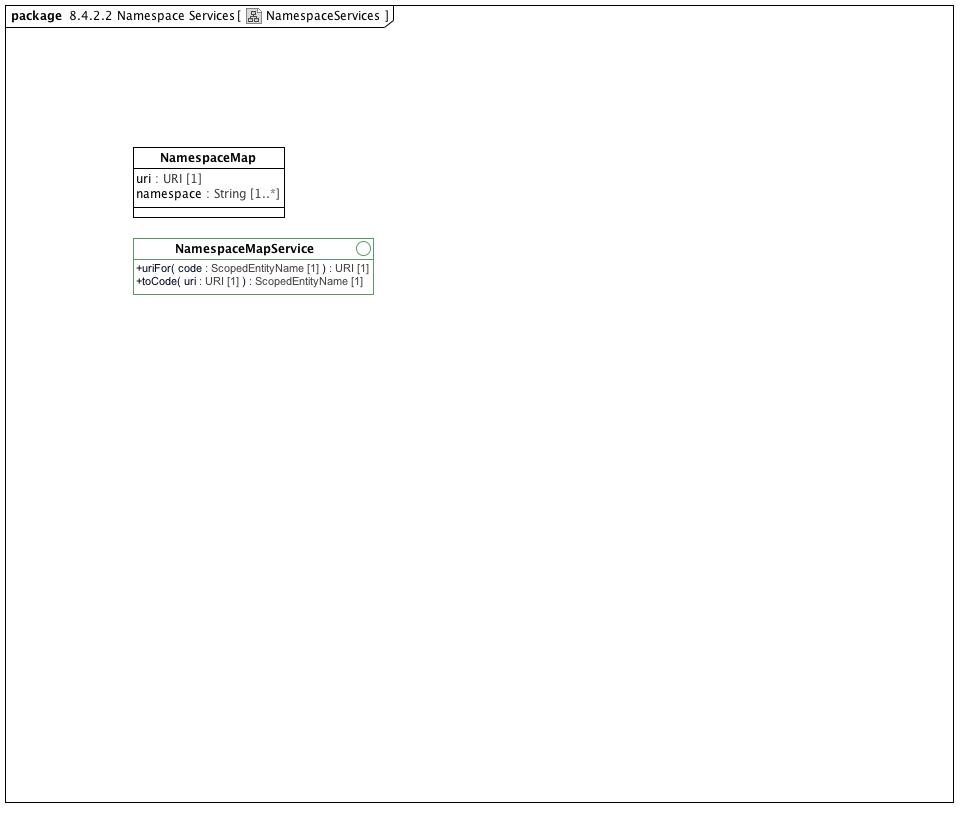
#### Known other classes

[EnumeratedValueDomain](#_ad639ee3d4cd535b2d3e55238d69cc51), [PermissibleValue](#_66976d5fcaf3eff9df49b6e5dab4ad12), [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4), [ValueSetDefinitionReference](#_be2600754ff104c3bebcfa73ab768821), [ValueSetReference](#_53376ea1584b6547b15f0e1392fc93e7)

# 

# 

#### <Package> Namespace Services



**NamespaceServices**

### <Interface> NamespaceMapService

#### Description

A service that provides access to the collection of namespace maps that are used in a given service instance.

### <Class> NamespaceMap

#### Description

A URI and the set of namespace identifiers that represent it. Note that, as in the XML specification, it is possible for more than one namespace to reference the same URI

#### Attributes

* public uri : [URI](#_887928f30f99c8a1ca89ed7a082356aa) [1]

A URI that represents a namespace.

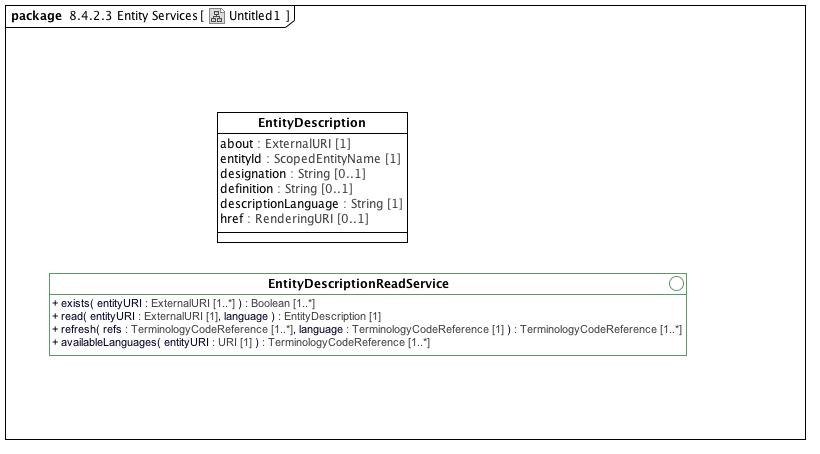
* public namespace : [String](#_e8a6ce315d976318da3ab784a645ea44) [1..\*]

One or more local identifiers that represent the associated *uri*.

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#### <Package> Entity Services



**Untitled1**

### <Interface> EntityDescriptionReadService

#### Description

The EntityDescriptionReadService provides a mechanism to determine whether a given terminology code URI is known to the service, to retrieve a set of entity descriptions in a given language and to refresh the contents of set of terminologyCodeReferences.

### <Class> EntityDescription

#### Description

A short description of a terminology code.

#### Attributes

* public about : [ExternalURI](#_de932b9629138c166e8cfb00efa65177) [1]

The URI of the entity being described.

* public entityId : [ScopedEntityName](#_bf3eeb4d95f5d93bbd59440cca5ed9d6) [1]

A local namespace and name for the referenced entity.

* public designation : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

A name or designation of the entity that is considered compatible with the description language. If not present, no useful designation is available for that language

* public definition : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

A textual description or definition of the entity, if any, compatible with the description language. If not present, no known definition is available for the supplied language

* public descriptionLanguage : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The language of the designation and/or definition.

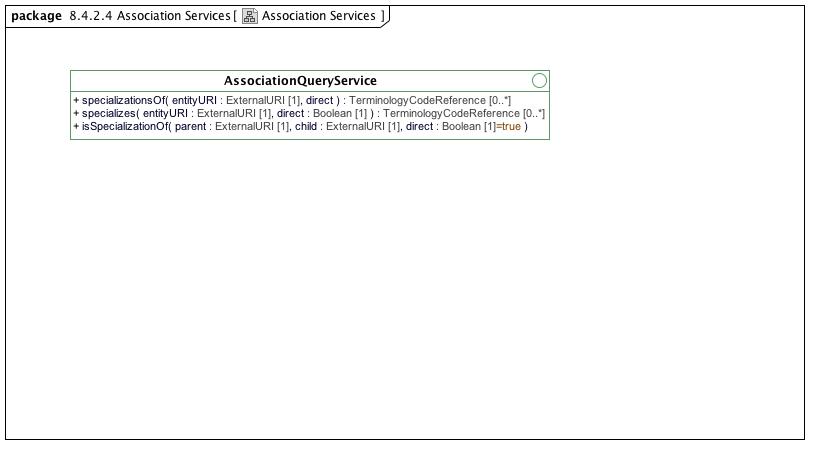
* private href : [RenderingURI](#_821273fdc1c3295a17225200782229ea) [0..1]

A URI that, when dereferenced using an HTTP service, should provide additional information about the entity. In AML implementations that are based on the CTS2 specification, this URI will return a CTS2 EntityDescription of the referenced entity.

# 

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#### <Package> Association Services



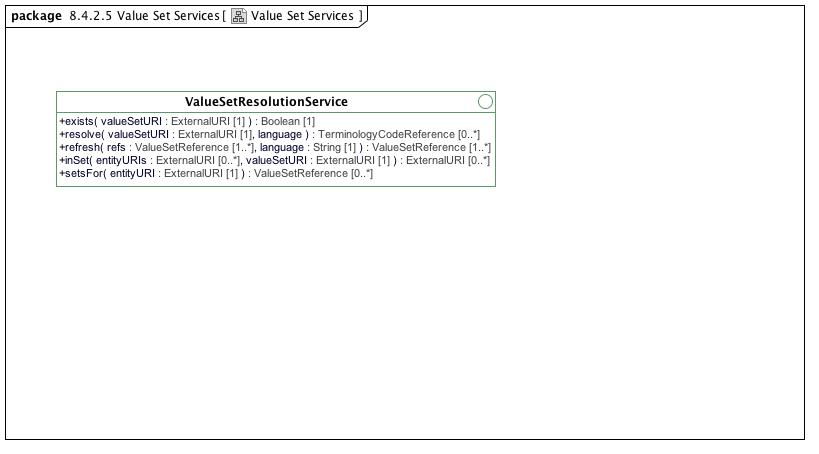
**Association Services**

### <Interface> AssociationQueryService

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#### <Package> Value Set Services



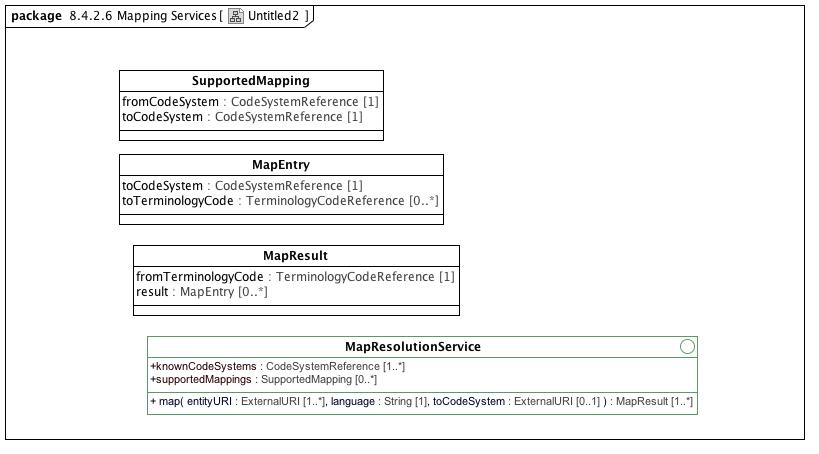
**Value Set Services**

### <Interface> ValueSetResolutionService

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#### <Package> Mapping Services



**Untitled2**

### <Interface> MapResolutionService

### <Class> MapEntry

#### Description

A mapping for a terminology code in a given code system.

#### Attributes

* public toCodeSystem : [CodeSystemReference](#_0ff5bf5f2f7cc9422c34b4bfd05628e7) [1]

The target code system.

* public toTerminologyCode : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [0..\*]

The set of terminology codes that the from code maps to in the target code system. Note that the absence of a *toTerminologyCode* indicates the mapping has positively asserted that no mapping for the source code exists.

### <Class> MapResult

#### Description

The result of a mapping.

#### Attributes

* public fromTerminologyCode : [TerminologyCodeReference](#_4d1f571ab5e9384786ffe39444e822b4) [1]

The terminology code reference for the code that was mapped from.

* public result : [MapEntry](#_7e4c9687f16d9fee85e09a5f98bf4dfd) [0..\*]

The set of mappings for *fromTerminologyCode*, if any.

### <Class> SupportedMapping

#### Description

A from and to tuple that identifies the availability of a partial or complete map between codes in two different code systems.

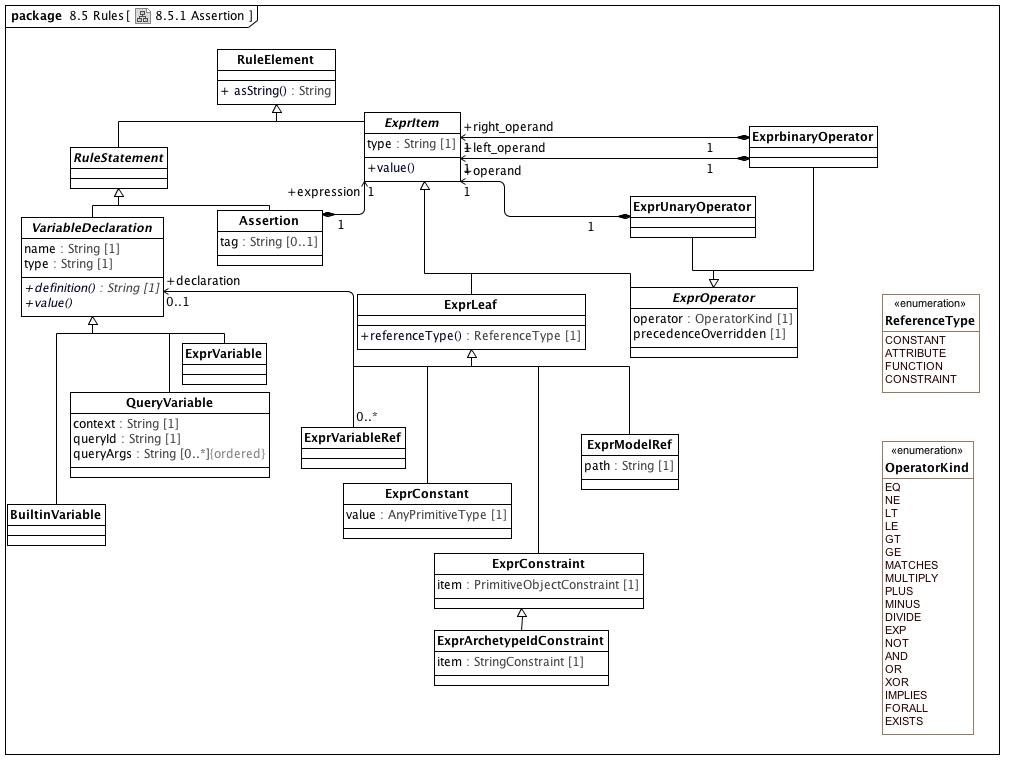
#### Attributes

* public fromCodeSystem : [CodeSystemReference](#_0ff5bf5f2f7cc9422c34b4bfd05628e7) [1]
* public toCodeSystem : [CodeSystemReference](#_0ff5bf5f2f7cc9422c34b4bfd05628e7) [1]

# 

# 

## <Package> Rules



**8.5.1 Assertion**

### <Class> Assertion

#### Description

A first order predicate logic assertion in the form of an expression tree

#### Attributes

* public tag : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..1]

Expression tag, used for differentiating multiple assertions.

#### Associations

* public expression : [ExprItem](#_6584fad2aa663f8951c117400955df67) [1]

Abstract parent of all expression items

### <Class> BuiltinVariable

#### Description

A variable with a name and definition from a small set of assumed environmental variables

### <Class> ExprArchetypeIdConstraint

#### Description

Expression tree leaf item representing a constraint on an archetype identifier

#### Attributes

* public item : [StringConstraint](#_e78c0feb207cbea2ca9911ec94e2a83e) [1]

The constraint on archetype identifiers

### <Class> ExprbinaryOperator

#### Description

Binary operator expression node

#### Associations

* public left\_operand : [ExprItem](#_6584fad2aa663f8951c117400955df67) [1]

Abstract parent of all expression items

* public right\_operand : [ExprItem](#_6584fad2aa663f8951c117400955df67) [1]

Abstract parent of all expression items

### <Class> ExprConstant

#### Description

Constant expression tree leaf item

#### Attributes

* public value : [AnyPrimitiveType](#_72b7d3db018aa6b2ac9fd5dcdf816a12) [1]

The constant value

### <Class> ExprConstraint

#### Description

Expression tree leaf item representing a constraint on a primitive type

#### Attributes

* public item : [PrimitiveObjectConstraint](#_db9df3b10e304d809393da4afc9a91da) [1]

A constraint on a primitive type

### <Class> ExprItem

#### Description

Abstract parent of all expression items

#### Attributes

* public type : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

Logical type of this item

#### Operations

* public value ()

### <Class> ExprLeaf

#### Description

Non-compositional item representing a manifest constant of any primitive type; a path referring to a value in the archetype; a constraint; or a variable reference

#### Operations

* public referenceType () : [ReferenceType](#_428e9af279e2df7756c01dffd2ccc1d4)

The way the leaf item value is defined

### <Class> ExprModelRef

#### Description

Expression tree leaf item representing a reference to a value found at a location specified by a path in the archetype definition

#### Attributes

* public path : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

The path

### <Class> ExprOperator

#### Description

Abstract parent of operator types

#### Attributes

* public operator : [OperatorKind](#_ecd27b09f62f1796f70d44a561b90e90) [1]

Operator kind

* public precedenceOverridden [1]

True if the natural precedence of operators is

overridden in the expression represented by

this node of the expression tree. If True,

parentheses should be introduced around the

totality of the syntax expression corresponding

to this operator node and its operands.

### <Class> ExprUnaryOperator

#### Description

Unary operator expression node

#### Associations

* public operand : [ExprItem](#_6584fad2aa663f8951c117400955df67) [1]

Abstract parent of all expression items

### <Class> ExprVariable

#### Description

A variable whose definition is an expression

#### Associations

* public expression : [ExprItem](#_6584fad2aa663f8951c117400955df67) [1]

Abstract parent of all expression items

### <Class> ExprVariableRef

#### Description

#### Associations

* public declaration : [VariableDeclaration](#_8a634b04f92ff4c449cdcaaae16ba015) [0..1]

Definition of a named variable used in an assertion expression

### <Class> QueryVariable

#### Description

A variable whose value is derived from a query run on a data context in the operational environment

#### Attributes

* public context : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

Name of context

* public queryId : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

Identifier of query in the external context, e.g. �date\_of\_birth�

* public queryArgs : [String](#_e8a6ce315d976318da3ab784a645ea44) [0..\*]

Arguments for query

### <Class> RuleElement

#### Description

#### Operations

* public asString () : [String](#_e8a6ce315d976318da3ab784a645ea44)

A rule element in serialized form

### <Class> VariableDeclaration

#### Description

Definition of a named variable used in an assertion expression

#### Attributes

* private name : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

Name of variable

* private type : [String](#_e8a6ce315d976318da3ab784a645ea44) [1]

Variable type, drawn from the reference model

#### Operations

* public definition () : [String](#_e8a6ce315d976318da3ab784a645ea44)

Formal definition of the variable

* public value ()

#### Known other classes

[RuleStatement](#_f8740e8d27529166da46265bd8521c94)

### <Enumeration> OperatorKind

#### Description

### <Enumeration> ReferenceType

#### Description

# 

# 

# AML Metamodel