9 Structured Assurance Case Base Classes

9.1 General

This chapter presents the normative specification for the SACM Base Metamodel. It begins with an overview of the metamodel structure followed by a description of each element.

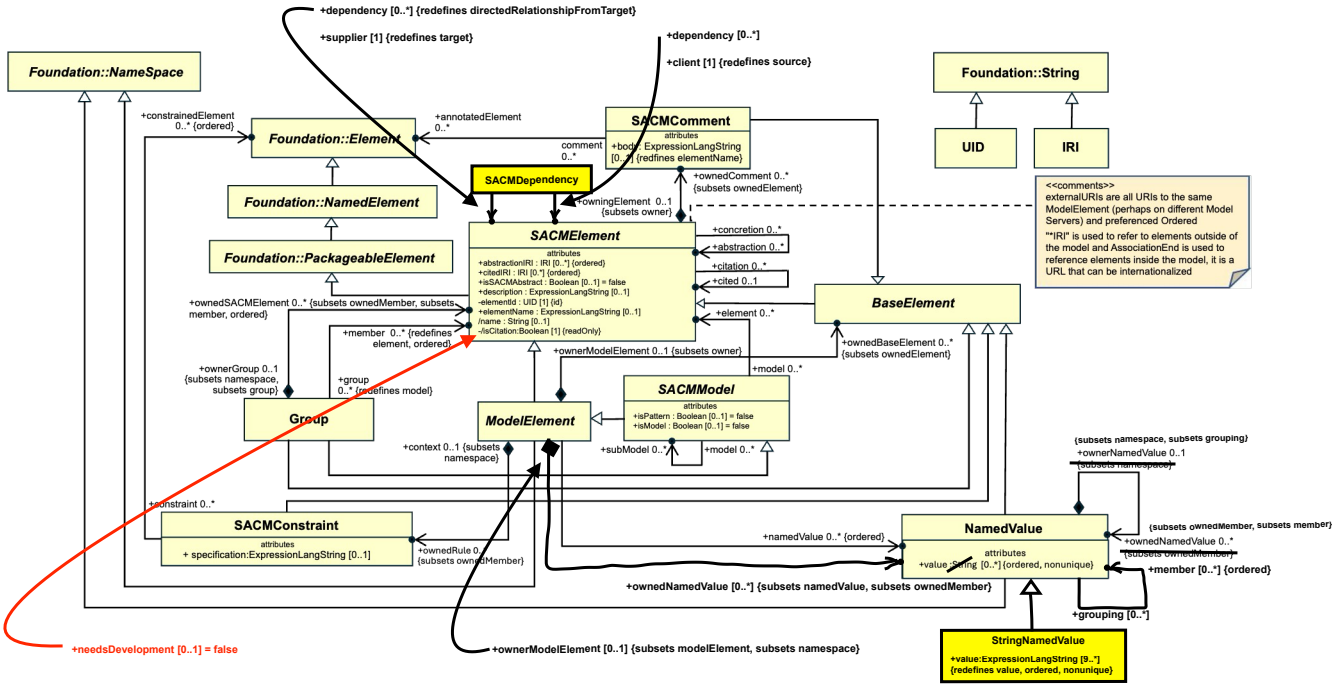

Figure 9.1 - Structured Assurance Case Base Classes Diagram

The Structured Assurance Case Base Classes express the foundational concepts and relationships of the base elements of the SACM metamodel and are utilized, through inheritance, by the bulk of the rest of the Structured Assurance Case Metamodel.

9 8.2 SACMElement (abstract)

SACMElement is the base class for SACM.

needsDevelopment [0..1] = false - indicates that this SACMElement still needs development. Application of this on certain elements can carry other particular semantics, such as Claims need to be supported by evidence or further argumentation..

-/isCitation:Boolean[1]{readOnly}

/isCitation:Boolean[1]=false;

Superclass

Foundation::PackagableElement

MOF:Element

Attributes

/name:String[0..1] – the derived name of the SACMElement, which is the first element of elementName.

-elementId:UID[1]{id}

gid:String[0..1] – a unique identifier that is unique within the scope of the model instance

isCitation[0..1]=false – a flag to indicate whether the SACMElement cites another SACMElement.

isSACMAbstract:Boolean

isAbstract[0..1]=false – a flag to indicate whether the SACMElement is considered to be abstract. For example, this can be used to indicate whether an element is part of a pattern or template.

Associations:

elementName:ExpressionLangString[0..1] – the multi-language name of this SACMElement.

citedElement:SACMElement[0..1] – a reference to another SACMElement that the SACMElement cites

abstraction

abstractForm:SACMElement[0..1] – an optional reference to another abstract SACMElement to which this concrete SACMElement conforms.

abstractionIRI:IRI[0..*] {ordered} – An IRI reference to an abstract element in another model.
citedIRI:IRI[0..*] {ordered} - An IRI reference to an cited element in another model.

description: ExpressionLangString [0..1] – the name of the SACMElement.

Semantics

Association Ends

ownedComment:SACMComment [0..*] – SACMComments owned by this SACMElement

ownedComment:SACMComment[0..*]{subsets ownedElement}

All the elements of a structured assurance case effort created with SACM correspond to a SACMElement.

Constraints:

inv DerivedName : el
implies name=eleme

If citedElement is populated, isCitation must be tr

When +abstractForm is used to refer to another S
+isAbstract of the referred SACMElement should
the SACMElement. If ImplementationConstraints
should satisfy these ImplementationConstraints.

AbstractionIsAbstract
An abstraction for a SACMElement must have isSACMAbstract=true.
inv: abstraction->notEmpty() implies abstraction.isSACMAbstract=true

CitationKindOfCited
A citation must be of the same kind as the cited.
inv: cited->notEmpty() implies oclKindOf(cited)

DeriveCitation
isCitation is true if cited or citationIRI is not empty.
inv: isCitation = citedIRI->notEmpty() or cited->notEmpty()

DerivedName
If there is an elementName and it has content, then name is the first of that content.
inv: elementName->notEmpty() and elementName.content->notEmpty() implies name=elementName.content->first()

IfCitedAbstractCitationAbstract
If cited and cited is abstract, then citation is abstract.
inv: cited->notEmpty() and cited.isSACMAbstract=true implies isSACMAbstract=true

9 8.3 LangString

LangString is the format SACM uses for descripti
specification of the language used for the content.

Superclass

MOF:Element

Attributes

lang:String[0..1] – a field to indicate the language used in the string.

content:String[0..1] – the content of the string

Semantics

LangString serves the same purpose as String, SACM uses LangString for description, which containing the information of the language it uses in the content.

Move to Terminology Class

9 8.4 ExpressionLangString

ExpressionLangString is used to denote a structured expression, it contains a description (LangString) and it also (optionally) points to an ExpressionElement in the Terminology Package.

inherits description (LangString) and it also (optionally) points to an ExpressionElement.