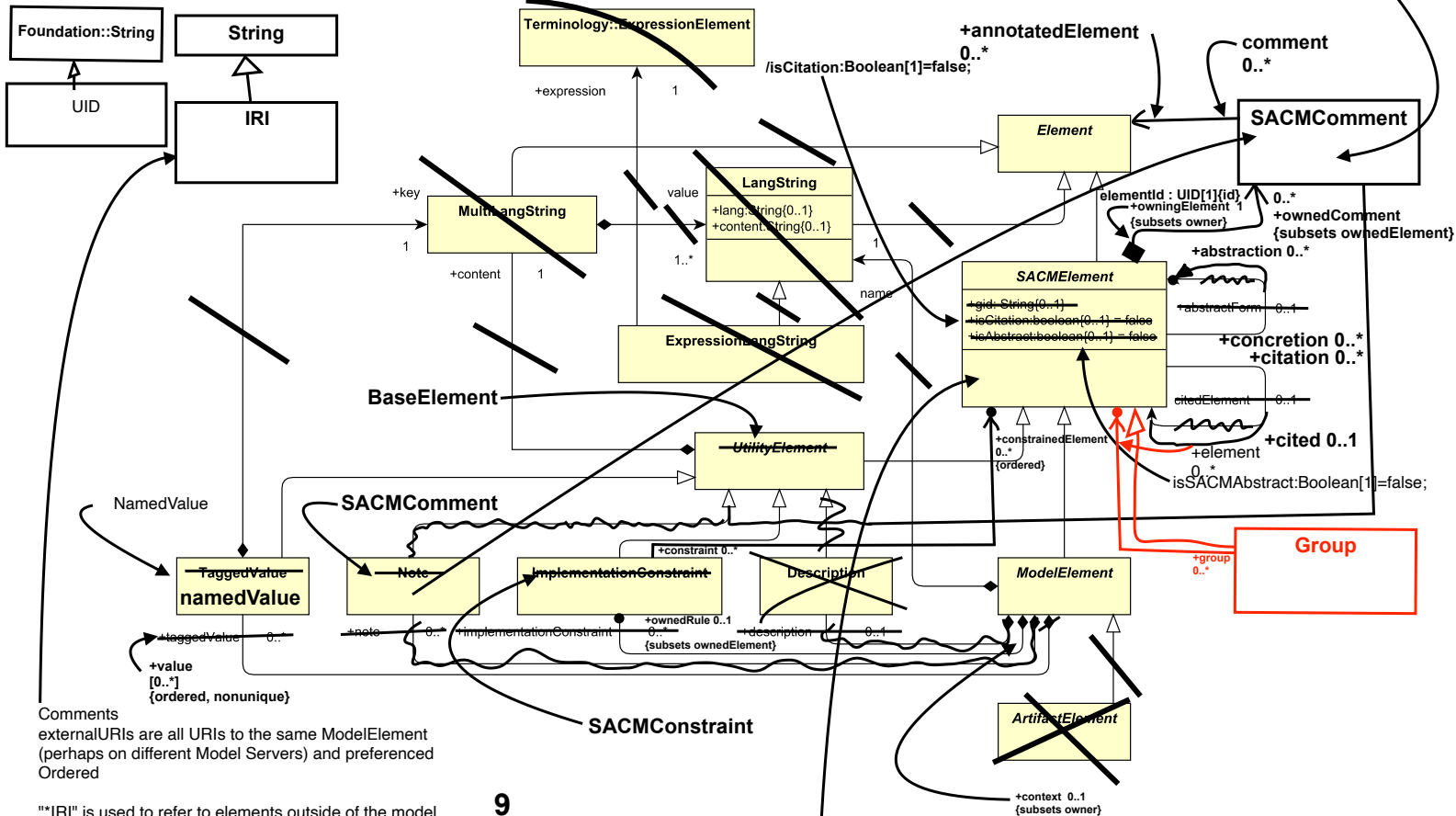


# 9 ~~8~~ Structured Assurance Case Base Classes

## 9 ~~8.1~~ 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.



9  
Figure 8.1 - 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.

```

attributes
+abstractionIRI : IRI [0..*]{ordered}
+citedIRI : IRI [0..*]{ordered}
+is SACMAbstract : Boolean [1] = false
+description : ExpressionLangString [0..1]
-elementId : UID [1]{id}
+elementName : ExpressionLangString [0..1]
/name : string [0..1]
    
```

## 9 8.2 SACMElement (abstract)

SACMElement is the base class for SACM.

### Superclass

MOF:Element

### Attributes

-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

~~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:

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

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

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

### Semantics

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

### Constraints:

If citedElement is populated, isCitation must be true. OCL: self.citedElement <> null implies self.isCitation = true

When +abstractForm is used to refer to another SACMElement, +isAbstract of the SACMElement is false, and the +isAbstract of the referred SACMElement should be true. The referred SACMElement should be of the same type of the SACMElement. If ImplementationConstraints are expressed on the referred SACMElement, the SACMElement should satisfy these ImplementationConstraints.

### attributes

+abstractionIRI : IRI [0..\*] {ordered}

+citedIRI : IRI [0..\*] {ordered}

+is SACMAbstract : Boolean [1] = false

+description : ExpressionLangString [0..1]

-elementId : UID [1] {id}

+elementName : ExpressionLangString [0..1]

/name : string [0..1]

/isCitation:Boolean[1]=false;

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

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

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

citedIRI:IRI[0..\*] {ordered} – An IRI reference to a cited element in another model.

### Association Ends

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

inv DerivedName : elementName->notEmpty() and elementName->content->notEmpty()  
implies name=elementName->content->first()

## 9 8.3 LangString

LangString is the format SACM uses for description. It serves the same purpose as String but with the additional 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.

18

Structured Assurance Case Metamodel, v2.3

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

## Semantics

ArtifactElement corresponds to the base class for specifying all the identifiable units of data modelled and managed in a structured assurance case effort.

### 9 ~~8.11~~ 8 **Note**

SACMComment

This class specifies a generic note that may be associated with ~~a ModelElement~~ <sup>an Element</sup>. For example a note may include a number of explanatory comments.

#### Superclass

SACMCoreElement  
UtilityElement

#### Attributes

body:ExpressionLangString[0..1]

#### Association Ends

annotatedElement:Element[0..\*] – Elements to which the SACMComment applies

#### Semantics

SACMComments

~~Notes~~ are used to specify additional (typically optional) generic, unstructured, untyped information about a ModelElement. An example of this kind of information could be a comment about a ModelElement.

### 9 ~~8.12~~ 9 **TaggedValue**

NamedValue

This class represents ~~a simple key/value pair~~ <sup>attributes</sup> that can be attached to any element in SACM. This is a simple extension mechanism to allow users to add attributes to each element beyond those already specified in SACM.

#### Superclass

UtilityElement

#### Associations

key:MultiLangString[1] (composition) ~~the key of the TaggedValue.~~

#### Semantics

NamedValue

~~TaggedValues~~ can be used to specify attributes, and their corresponding values, for ModelElements.

### 9.10 Group

Group can be used to associate a number of SACMElements to a common group (e.g., representing a common type or purpose, or being of interest to a particular stakeholder).

#### Supertype

SACMElement

#### Association End

element: SACMElement [0..\*] {ordered} – a collection of SACMElements that comprise a group