

15.5 Date Time Duration

To support ISO 15026, SACM allows SACMElements in an AssuranceCase to provide a validity time.

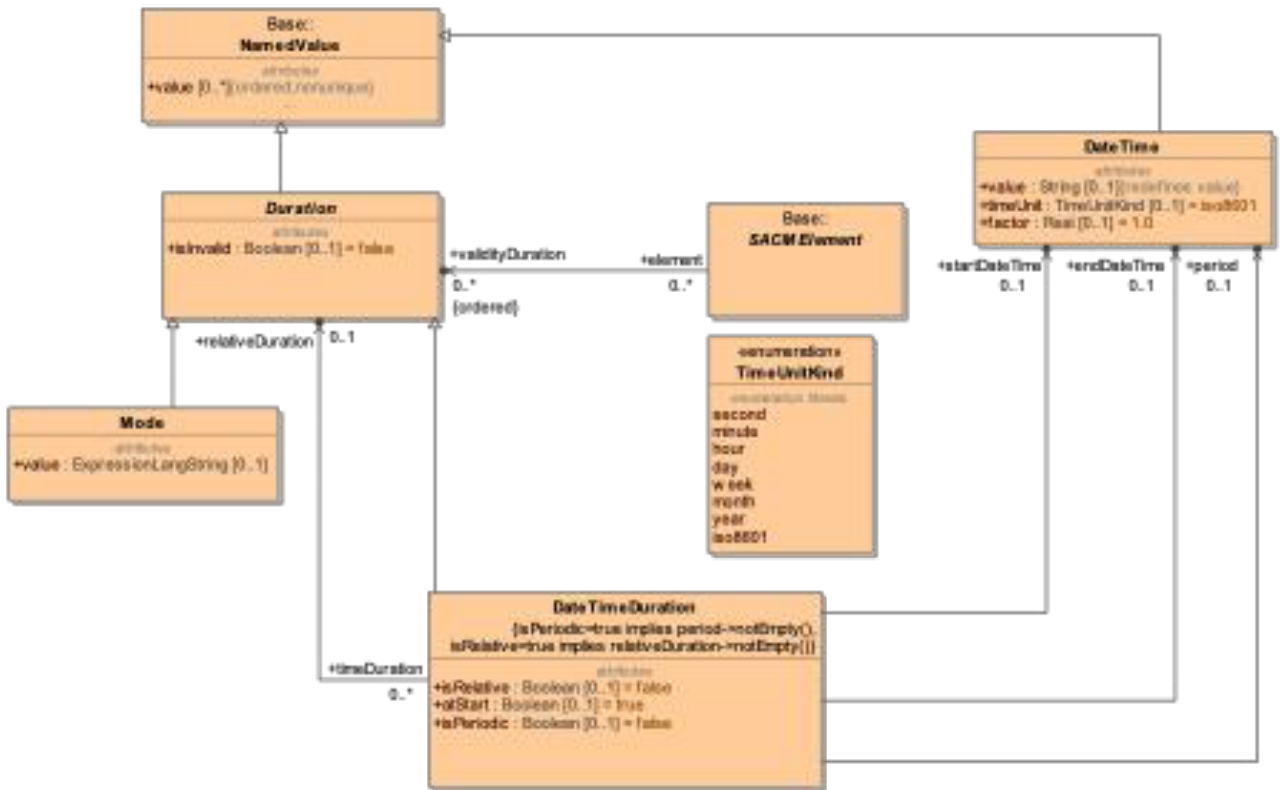


Figure 15.5.1 – Data Time Duration Diagram

15.5.1 SACMElement (abstract) [Additions to 9.2]

AssociationEnds

validityDuration : Duration [0..*] {ordered} - Specifies the time during which the SACMElement is valid (or invalid). If no validityDuration is specified then assume that the duration is somehow explicitly understood or it is valid over all time. Durations of lower index take precedence over higher index Durations. An invalid Duration, in order to invalidate a portion of a valid Duration must be of lower ordering.

15.5.2 DateTime

Specifies a particular DateTime.

Supertype

Base::NamedValue

Attributes

value : String [0..1] {redefines value} - value for the DateTime.
 timeUnit: TimeUnitKind [0..1] = iso8601
 factor : Real [0..1] = 1.0

15.5.3 Duration (abstract)

Duration specifies the valid (or invalid) times for the SACMElement.

Superclass

Structured Assurance Case Metamodel, v2.4

Base::NamedValue

Attributes

isInvalid : Boolean [0..1] = false - Can Specify when something is not a valid SACMDuration.

15.5.4 Mode

Used to define a Duration when something is in a particular Mode. Modes may be Terms in a terminology (e.g. DevelopmentPhaseTime) or computed by a Constraint (e.g. when a=6).

Supertype

Duration

Attributes

value : ExpressionLangString [0..1] - Specification of the duration. The name can be the content or one can have a name and then the value contains the content.

15.5.5 TimeUnitKind

Specifies the units that time is defined.

EnumerationLiterals

- second
- minute
- hour
- day
- week
- month
- year
- iso8601 - [default] a string based on ISO 8601

15.5.6 DateTimeDuration

DateTimeDuration

Duration based on DateTime. Allows Absolute as well as Relative durations, and periodic durations.

Supertypes

Duration

Attributes

isRelative : Boolean [0..1] = false - is this duration relative or not

atStart : Boolean [0..1] = true - atStart is only valid when isRelative=true, if atStart=true then the relative time starts at the beginning of another Duration, otherwise it starts at the end of the other Duration

isPeriodic : Boolean [0..1] = false - is this duration period or not

AssociationEnds

startDateTime : DateTime [0..1] - start of duration

endDateTime : DateTime [0..1] - end of duration

period : DateTime [0..1] - period of duration (how often it repeats). If periodic, startDateTime and endDateTime specify its start and end time for a single period.

Semantics

The name can be the content or one can have a name and then the value contains the conten

Constraints

PeriodicImpliesPeriod

If *isPeriod=true* then *period* must reference a *DateTime*.
isPeriod=true implies *period->notEmpty()*

RelativeImpliesRelativeDuration

if *isRelative=true* then *relativeDuration* must reference a *Duration*.
isRelative=true implies *relativeDuration->notEmpty()*

15.5.7 AdvancedArtifact

Certain *ArtifactAssets* have *Time* and *Duration* attributes to define them. If one has *TimeDate* and *TimeDateDuration* one has a more power mechanism to define *Time* and *Duration* in model elements. This section describes the additional *AssociationEnds* to achieve that end.

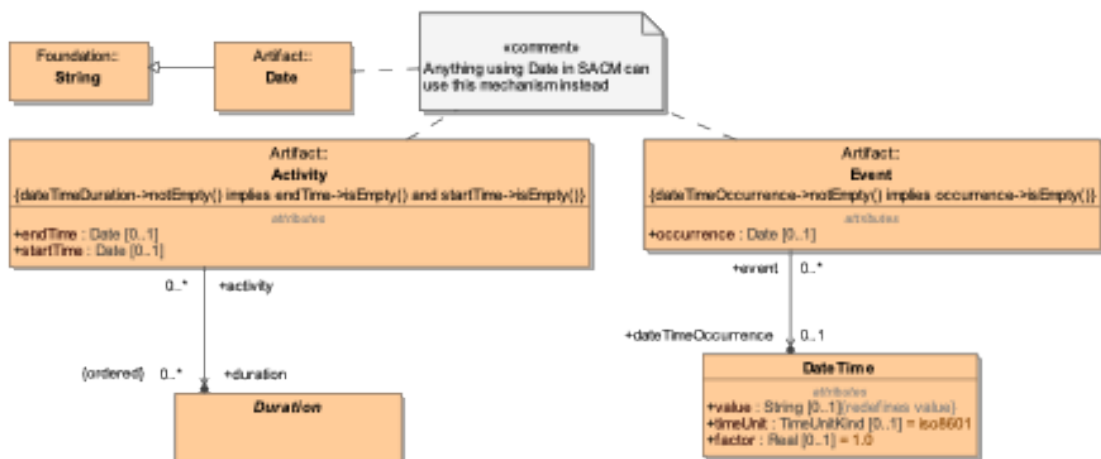


Figure 15.5.2 – Advanced Artifact Diagram

15.5.7.1 Activity [Addition to 14.9]

AssociationEnd

duration : Duration [0..*] {ordered} - duration of the Activity.

15.5.7.2 Event [Addition to 14.7]

AssociationEnd

dateTimeOccurrence : DateTime [0..1] - DateTime for the occurrence of the Event.

15.5.8 Examples

ISO 15026 allows *Argument* elements to have time durations associated with them. In the *DateTimeDuration* Example, Bill having a *Yellow Coat* during his employment should overlap with the *DateTimeDuration* “Yellow Coat Observed At Crime”, in order for the probable inference to succeed.

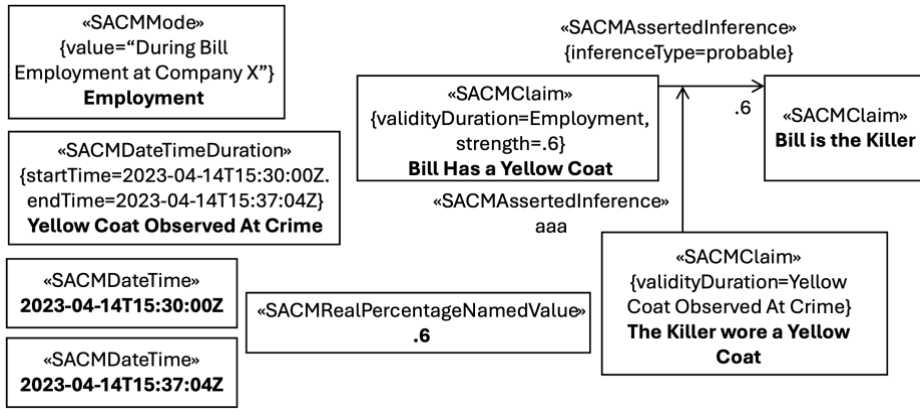


Figure 15.5.8 – DateTimeDuration Examples