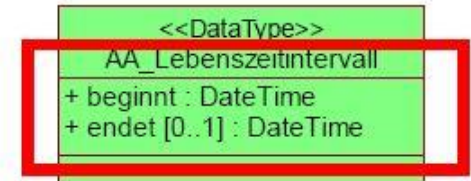# Versioning in AAA and INSPIRE

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Versioning in AAA

Every feature type inherits from AA_Objekt the attributes
- identifikator (unique identifier)
- lebenszeitintervall (lifetime interval with creation and expiry date)

Source: INSPIRE document D2.5: Generic Conceptual Model, Version 3.4

Managing Multiple Versions in AAA

► AAA Versioning Schema

Versions of an object are registered in the container by providing various information on the object (e.g. the lifetime interval)

One container for every versioned object
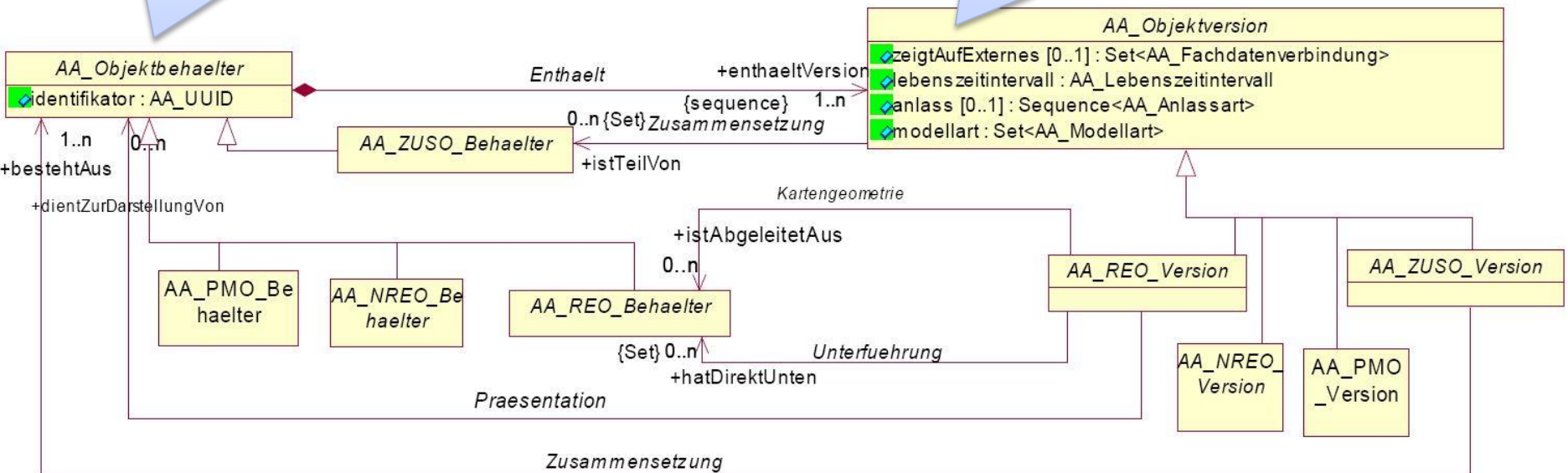
Source: AdV, GeoInfoDoc, Version 6.0.1, 2009

Managing Multiple Versions in AAA

► Inserting an object into the database:
  - An initial version of the object is created and registered in the container for feature versions.

► Updating an object:
  - A new version of the object is created and added to the container.
  - The creation date of the new version is the same as the expiry date of the previous version.

► Deleting an object:
  - The object is historicized by assigning an expiry date to the last version.

Source: AdV, GeoInfoDoc, Version 6.0.1, 2009

Managing Multiple Versions in AAA

▶ "Data is exchanged in NAS independent of the conceptual model used for versioning […], as if all object versions were independent objects. It is thus possible to define as identical both the exchange interface for locations that manage a complete history and those that do not."

▶ "In order that, during data exchange, the version of an object to be overwritten or versioned can be uniquely identified, the identifier in the exchange file is supplemented […] by creation date and time. […] In the database itself, the versions to be referenced are obtained by evaluating the lifetime interval of the versions at attributive level."

Source: AdV, GeoInfoDoc, Version 6.0.1, 2009

Versioning in INSPIRE

Several requirements and recommendations have been defined in document D2.5 for modelling life-cycle information of spatial objects. The most important ones are:

► Requirement 35:
"A property that is considered to be part of the life-cycle information of a spatial object shall receive the stereotype <<lifeCycleInfo>>."

► Requirement 36:
"An association role that [...] has the stereotype <<version>> [...] shall imply that the value of the property is a specific version of the target spatial object."

Source: INSPIRE document D2.5: Generic Conceptual Model, Version 3.4

Versioning in INSPIRE

► Recommendation 17:
"In the Annex I data themes several standard attributes were used across the themes. Their use in other themes is recommended, too, wherever applicable. These attributes are:

- **«lifeCycleInfo,voidable» beginLifespanVersion : DateTime**
  Date and time at which this version of the spatial object was inserted or changed in the spatial data set.

- **«lifeCycleInfo,voidable» endLifespanVersion : DateTime [0..1]**
  Date and time at which this version of the spatial object was superseded or retired in the spatial data set.

- **«voidable» validFrom : DateTime**
  The time when the phenomenon started to exist in the real world.

- **«voidable» validTo : DateTime**
 The time from which the phenomenon no longer exists in the real world."

Source: INSPIRE document D2.5: Generic Conceptual Model, Version 3.4

Versioning in INSPIRE

► Section 14.5 Versions of spatial objects:

"Whenever the application schema contains life-cycle information for a spatial object type with an external object identifier, the version identifier property specified in 9.8.2.3.1 allows to distinguish between the different versions of a spatial object.

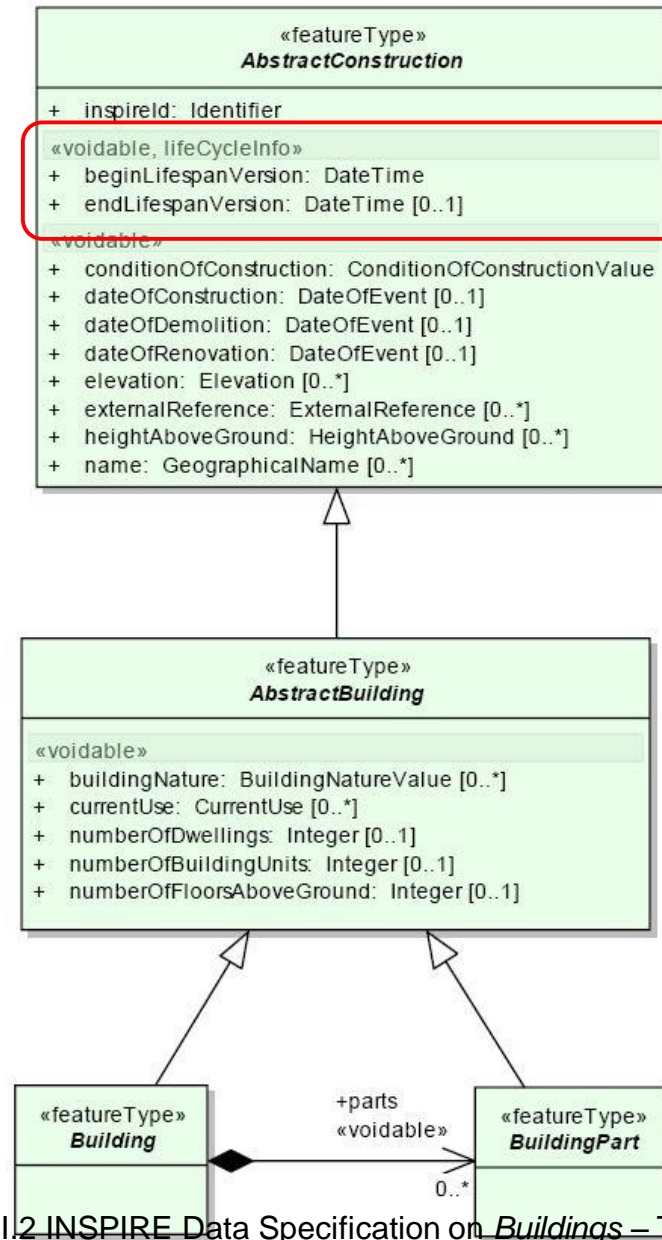The version identifier is not part of the unique identifier of a spatial object. "
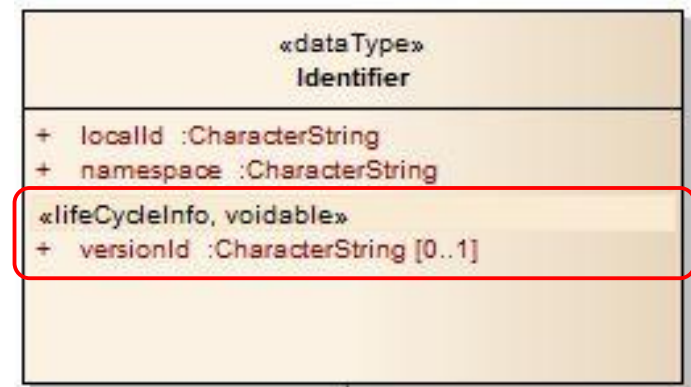
Source: INSPIRE document D2.5: Generic Conceptual Model, Version 3.4

Life-cycle Properties

► Example:

INSPIRE Buildings Base application schema

«featureType»
AbstractConstruction

+ inspireId: Identifier

«voidable, lifeCycleInfo»
+ beginLifespanVersion: DateTime
+ endLifespanVersion: DateTime [0..1]

«voidable»
+ conditionOfConstruction: ConditionOfConstructionValue
+ dateOfConstruction: DateOfEvent [0..1]
+ dateOfDemolition: DateOfEvent [0..1]
+ dateOfRenovation: DateOfEvent [0..1]
+ elevation: Elevation [0..*]
+ externalReference: ExternalReference [0..*]
+ heightAboveGround: HeightAboveGround [0..*]
+ name: GeographicalName [0..*]

«featureType»
AbstractBuilding

«voidable»
+ buildingNature: BuildingNatureValue [0..*]
+ currentUse: CurrentUse [0..*]
+ numberOfDwellings: Integer [0..1]
+ numberOfBuildingUnits: Integer [0..1]
+ numberOfFloorsAboveGround: Integer [0..1]

«featureType»
Building

+parts
«voidable»

«featureType»
BuildingPart

0..*

Source: INSPIRE document D2.8.III.2 INSPIRE Data Specification on *Buildings* – Technical Guidelines

Managing Multiple Versions in INSPIRE

► However, document D2.5 also states that:
"The topic of managing and publishing multiple versions of a spatial object in a consistent way is not fully addressed by the relevant international standards and, consequently, neither by this document. <u>The current INSPIRE data specifications are therefore only fully specified for spatial data sets that only publish the last version of a spatial object (valid or retired)</u>. If historic versions are maintained and provided, additional specification work is needed with regard to the consistency of the spatial objects at any time."

Source: INSPIRE document D2.5: Generic Conceptual Model, Version 3.4