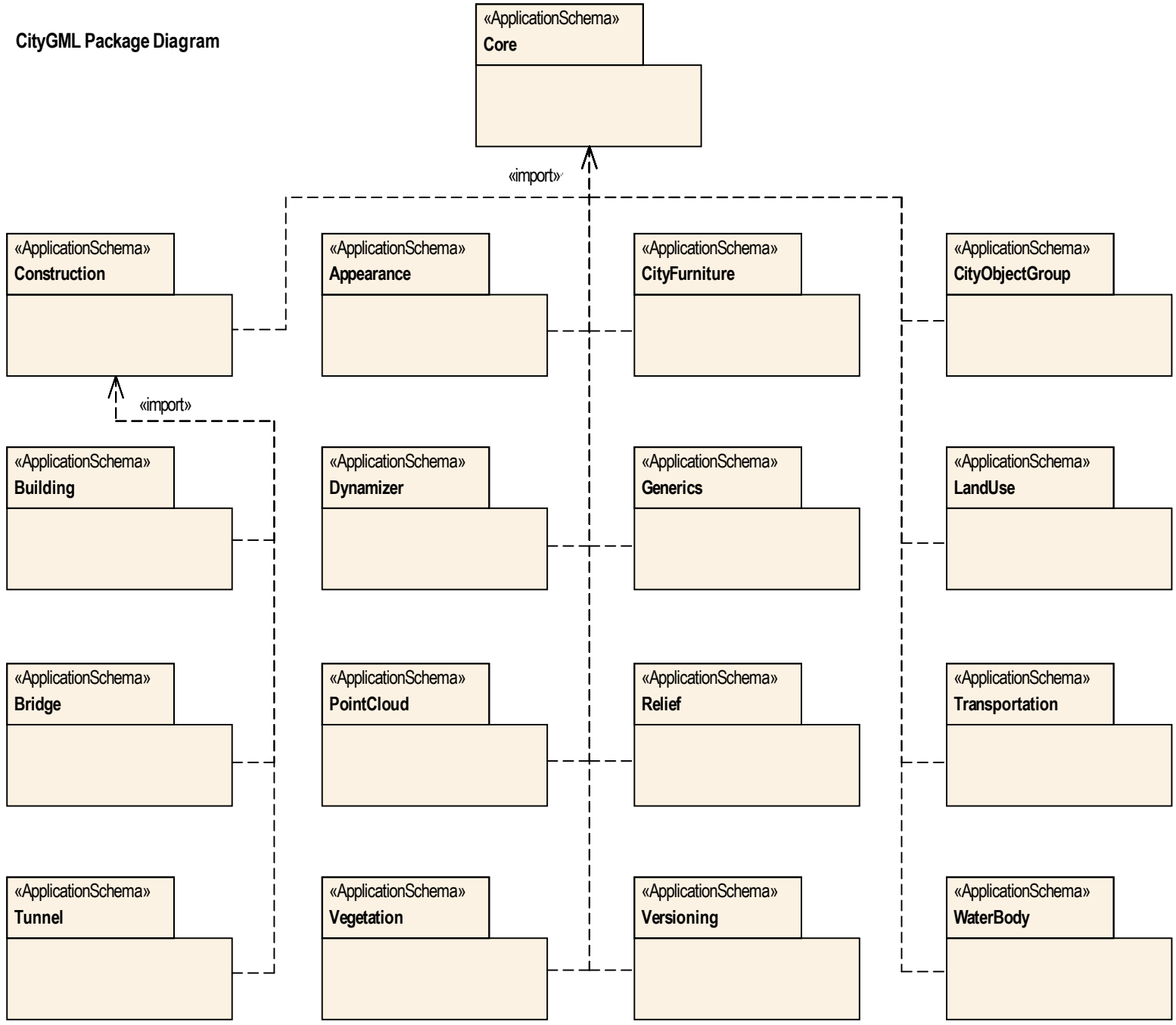
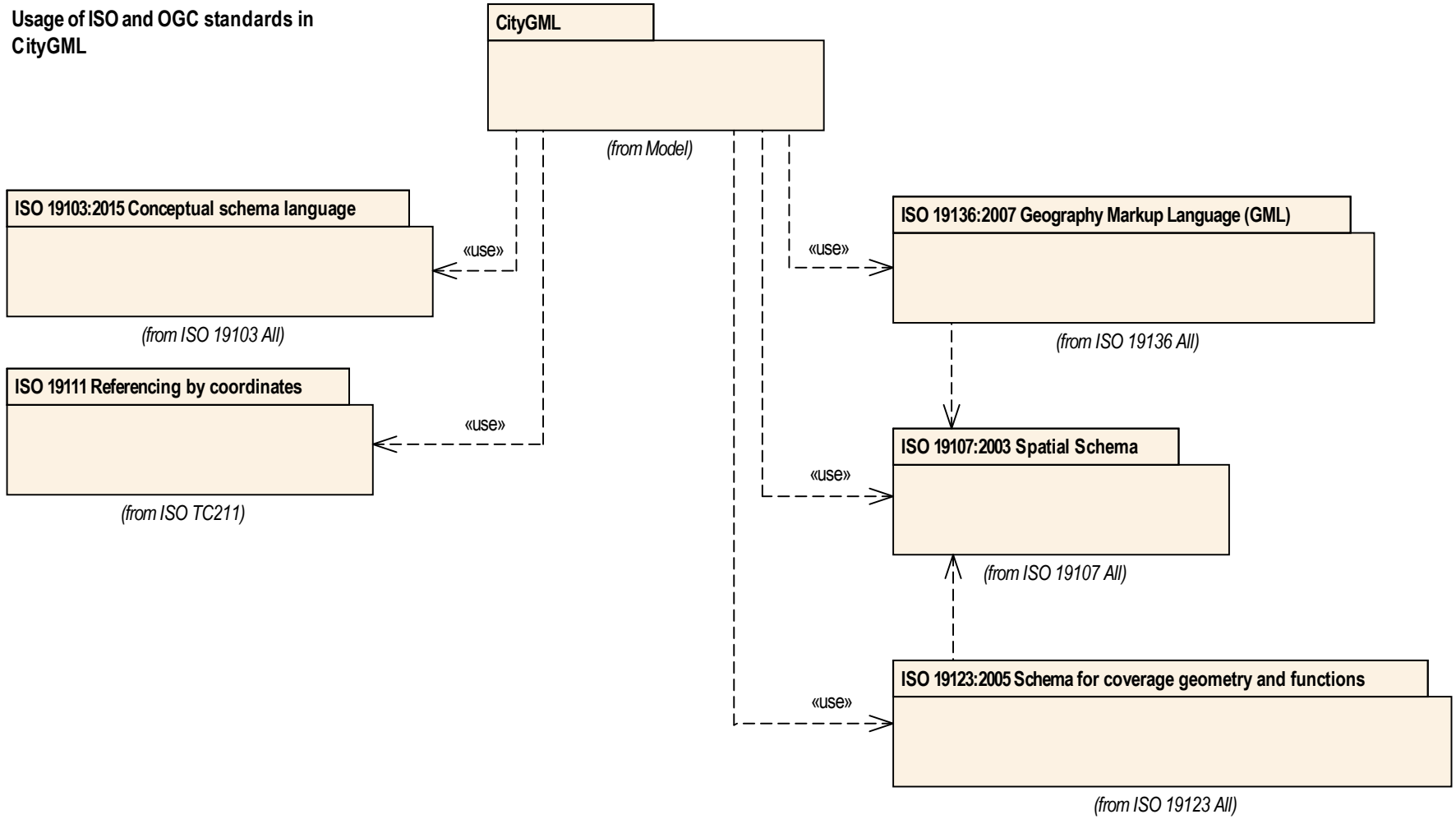
CityGML Package Diagram



Usage of ISO and OGC standards in CityGML



Core module - Overview

«FeatureType»
AbstractFeatureWithLifespan
«Property»
+ creationDate: DateTime [0..1]
+ terminationDate: DateTime [0..1]
+ validFrom: DateTime [0..1]
+ validTo: DateTime [0..1]

The class *AbstractFeatureWithLifespan* has the stereotype <<*FeatureType*>>. When encoding the class in a GML application schema, it inherits the attributes description, descriptionReference, name, identifier, and boundedBy from the classes *AbstractGML* and *AbstractFeature*.

+featureMember «Property» * — «FeatureType» ***General Feature Model:: AnyFeature***

«FeatureType» ***AbstractVersion***
«FeatureType» ***AbstractVersionTransition***
«FeatureType» ***AbstractAppearance***
«FeatureType» ***AbstractDynamizer***
«DataType» **ExternalReference**
«Property»
+ targetResource: URI
+ informationSystem: URI [0..1]
+ relationType: URI [0..1]

0..* +versionMember «Property»
0..* +versionTransitionMember «Property»
+appearance «Property» * * *
+appearance «Property» *
+appearanceMember «Property» *
+dynamizer «Property» *
+externalReference «Property» *
1

«FeatureType» **CityModel**
«Property»
+ engineeringCRS: EngineeringCRS [0..1]

«FeatureType» ***AbstractCityObject***
«Property»
+ relativeToTerrain: RelativeToTerrain [0..1]
+ relativeToWater: RelativeToWater [0..1]

+cityObjectMember «Property» * *
0..1
+genericAttribute «Property» *
«DataType» **AbstractGenericAttribute**
+genericAttribute «Property» *

+generalizesTo «Property» *
+relatedTo «Property» *
CityObjectRelation
«Property»
+ relationType: RelationTypeValue
0..1

GM_Primitive «type» **Geometric primitive:: GM_Solid**
GM_Primitive «type» **Geometric primitive:: GM_Point**
GM_Primitive «type» **Geometric aggregates:: GM_MultiSurface**
GM_MultiPrimitive «type» **Geometric aggregates:: GM_MultiCurve**
GM_MultiPrimitive «type» **Geometric aggregates:: GM_MultiPoint**

+lod1Solid «Property» * 0..1
+lod2Solid «Property» *
+lod3Solid «Property» *
+lod0Point «Property» * 0..1
1 +referencePoint «Property»

«FeatureType» ***AbstractSpace***
«Property»
+ spaceType: SpaceType [0..1]
+ volume: QualifiedVolume [0..*]
+ area: QualifiedArea [0..*]

+bounds «Property» * *
+lod0MultiSurface «Property» * 0..1
+lod2MultiSurface «Property» *
+lod3MultiSurface «Property» *
+lod0MultiCurve «Property» * 0..1
+lod2MultiCurve «Property» *
+lod3MultiCurve «Property» *

+boundary «Property» *
«FeatureType» ***AbstractSpaceBoundary***
«FeatureType» ***AbstractThematicSurface***
«Property»
+ area: QualifiedArea [0..*]
«FeatureType» **ClosureSurface**

+lod0MultiSurface «Property» * 0..1
+lod1MultiSurface «Property» *
+lod2MultiSurface «Property» *
+lod3MultiSurface «Property» *
+lod0MultiCurve «Property» * 0..1
0..1 *

«DataType» **QualifiedVolume**
«Property»
+ volume: Volume
+ typeOfVolume: QualifiedVolumeValue

«DataType» **QualifiedArea**
«Property»
+ area: Area
+ typeOfArea: QualifiedAreaValue

«type» ***Geometry root:: GM_Object***
+relativeGMLGeometry «Property» 0..1 * 0..1 *

«ObjectType» **ImplicitGeometry**
«Property»
+ transformationMatrix: TransformationMatrix4x4
+ mimeType: MimeValue [0..1]
+ libraryObject: URI [0..1]

«FeatureType» ***AbstractLogicalSpace***
«FeatureType» ***AbstractPhysicalSpace***
+lod1TerrainIntersectionCurve «Property» *
+lod2TerrainIntersectionCurve «Property» *
+lod3TerrainIntersectionCurve «Property» *

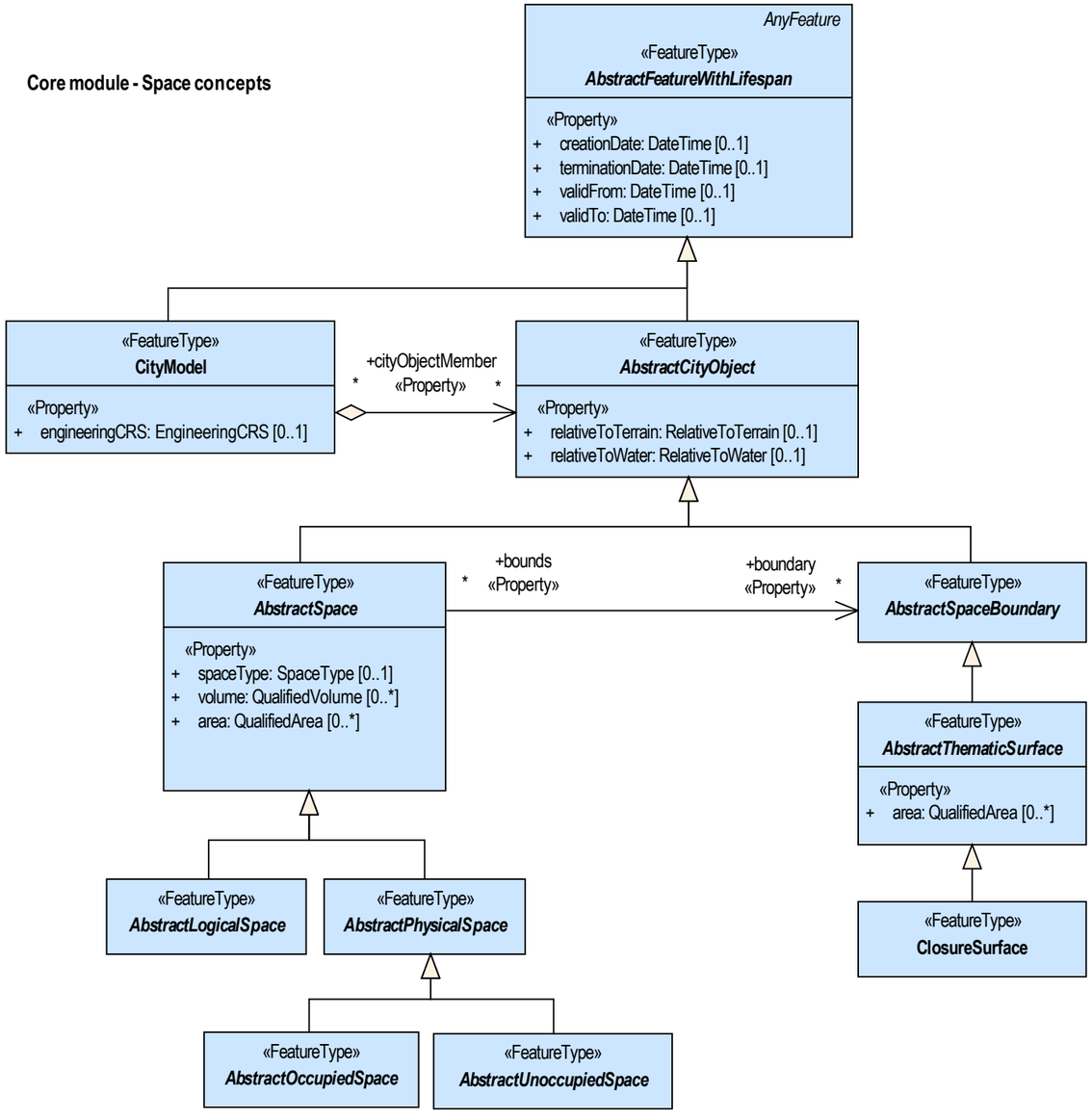
+pointCloud «Property» 0..1
«FeatureType» ***AbstractPointCloud***
+pointCloud «Property» 0..1

0..1 +lod1ImplicitRepresentation «Property» *
+lod2ImplicitRepresentation «Property» * *
+lod3ImplicitRepresentation «Property»

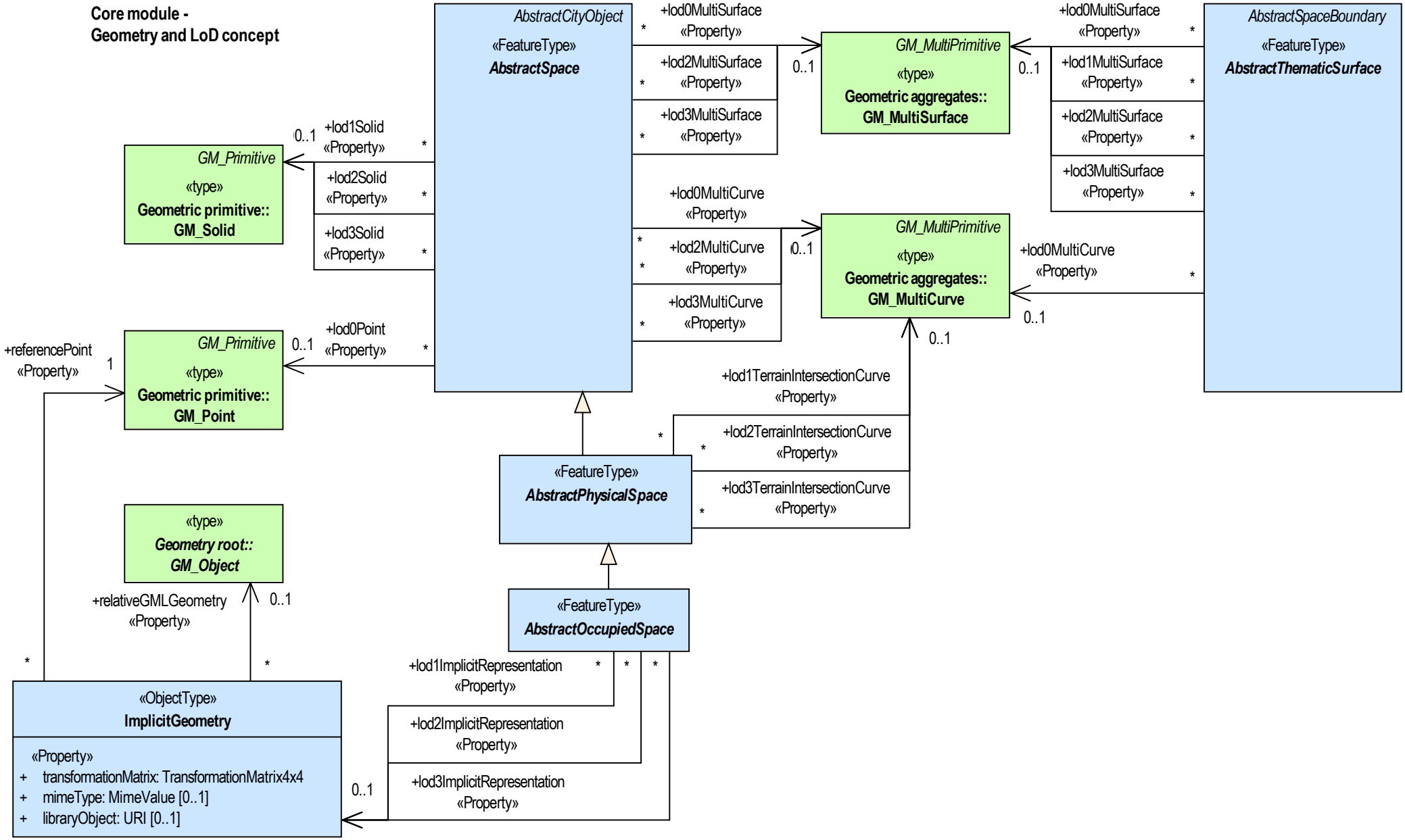
«FeatureType» ***AbstractOccupiedSpace***
«FeatureType» ***AbstractUnoccupiedSpace***

+multiPoint «Property» 0..1
«FeatureType» **Address** * +xalAddress «Property» 1
«DataType» **XALAddressDetails**

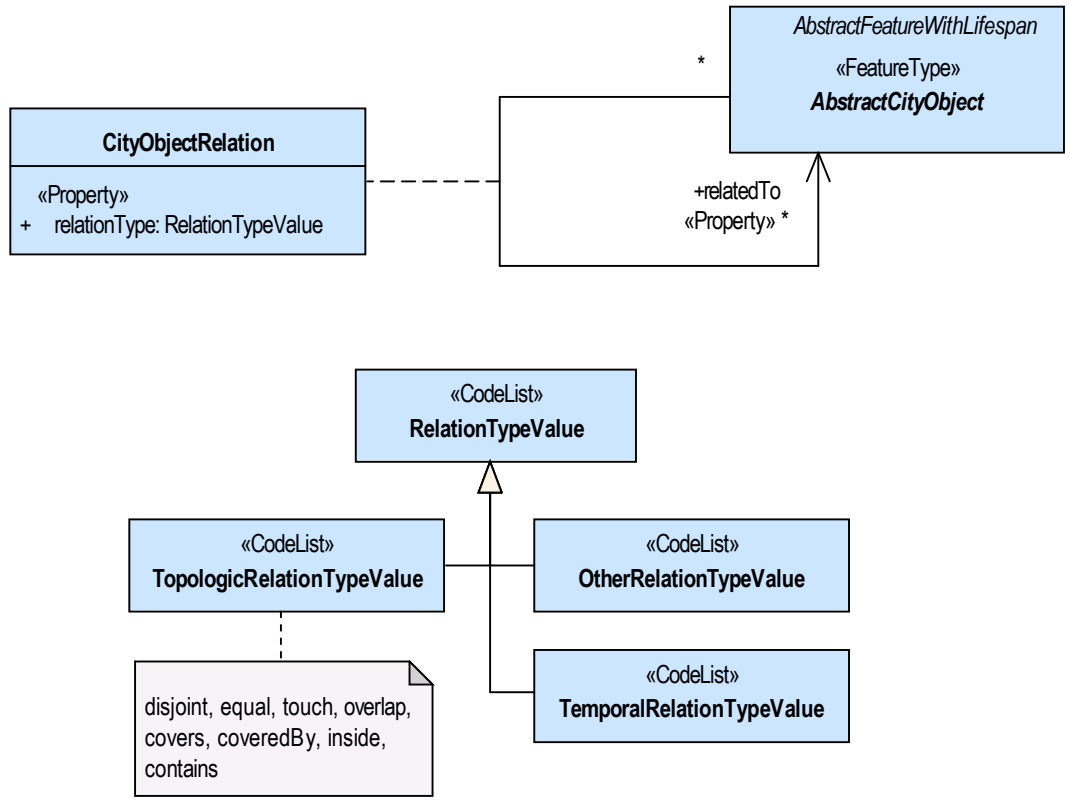
Core module - Space concepts



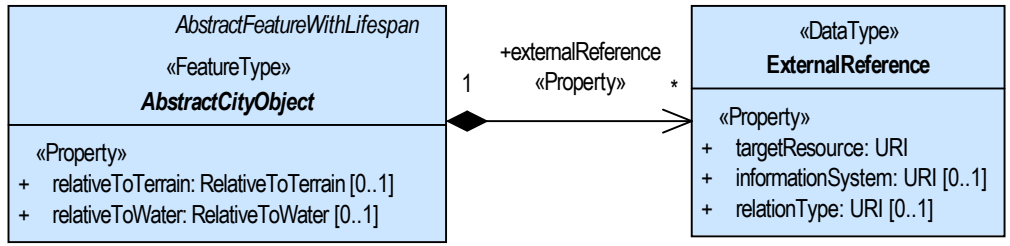
Core module -
Geometry and LoD concept



Core module - City object relations

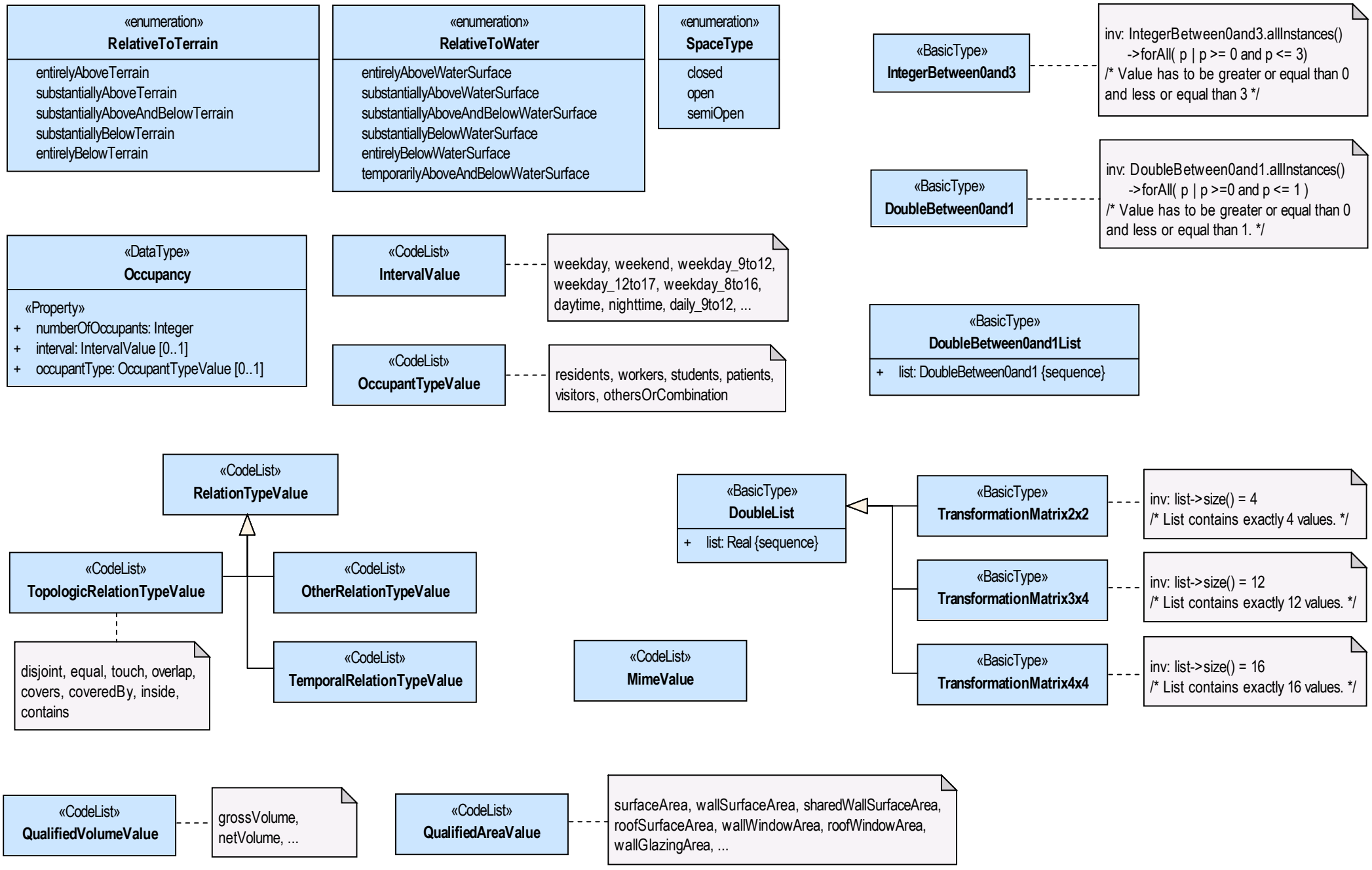


Core module - Miscellaneous



ExternalReference is now extended by an optional ***relationType*** which can link to some external definition of the type of relation (e.g. the *sameAs* relation from OWL). Hence, ***ExternalReferences*** can now be used to express relations similar to RDF.

Core module - Basic Types, Enumerations, and Code lists



Appearance module

AnyFeature
«FeatureType»
Core::
AbstractFeatureWithLifespan

«FeatureType»
Core::CityModel

+cityObjectMember
«Property»

«FeatureType»
Core::AbstractCityObject

+appearance
«Property»

«FeatureType»
Core::AbstractAppearance

«ObjectType»
Core::ImplicitGeometry

+appearanceMember
«Property»

+appearance
«Property»
0..1

«FeatureType»
AbstractSurfaceData
«Property»
+ isFront: Boolean [0..1] = true

+surfaceData
«Property»

«FeatureType»
Appearance
«Property»
+ theme: CharacterString [0..1]

+referencePoint
«Property»
1

GM_Primitive
«type»
Geometric primitive::
GM_Point

+referencePoint
«Property»
0..1

«FeatureType»
X3DMaterial
«Property»
+ ambientIntensity: DoubleBetween0and1 [0..1] = 0.2
+ diffuseColor: Color [0..1] = 0.8 0.8 0.8
+ emissiveColor: Color [0..1] = 0.0 0.0 0.0
+ specularColor: Color [0..1] = 1.0 1.0 1.0
+ shininess: DoubleBetween0and1 [0..1] = 0.2
+ transparency: DoubleBetween0and1 [0..1] = 0.0
+ isSmooth: Boolean [0..1] = false
+ target: URI [0..*]

«FeatureType»
AbstractTexture
«Property»
+ imageURI: URI
+ mimeType: Code [0..1]
+ textureType: TextureType [0..1]
+ wrapMode: WrapMode [0..1]
+ borderColor: ColorPlusOpacity [0..1]

«FeatureType»
ParameterizedTexture

«FeatureType»
GeoreferencedTexture
«Property»
+ preferWorldFile: Boolean [0..1] = true
+ orientation: TransformationMatrix2x2 [0..1]
+ target: URI [0..*]

«ObjectType»
TextureAssociation
«Property»
+ uri: URI

+textureParameterization
«Property»

«DataType»
AbstractTextureParameterization

IO_IdentifiedObjectBase
RS_ReferenceSystem
«type»
Coordinate Reference
Systems::SC_CRS

+crs
«Property»
0..1

«DataType»
TexCoordGen
«Property»
+ worldToTexture: TransformationMatrix3x4

«DataType»
TexCoordList
«Property»
+ textureCoordinates: DoubleList [1..*]
+ ring: URI [1..*]

«BasicType»
Core::DoubleBetween0and1List
+ list: DoubleBetween0and1 {sequence}

«BasicType»
Color

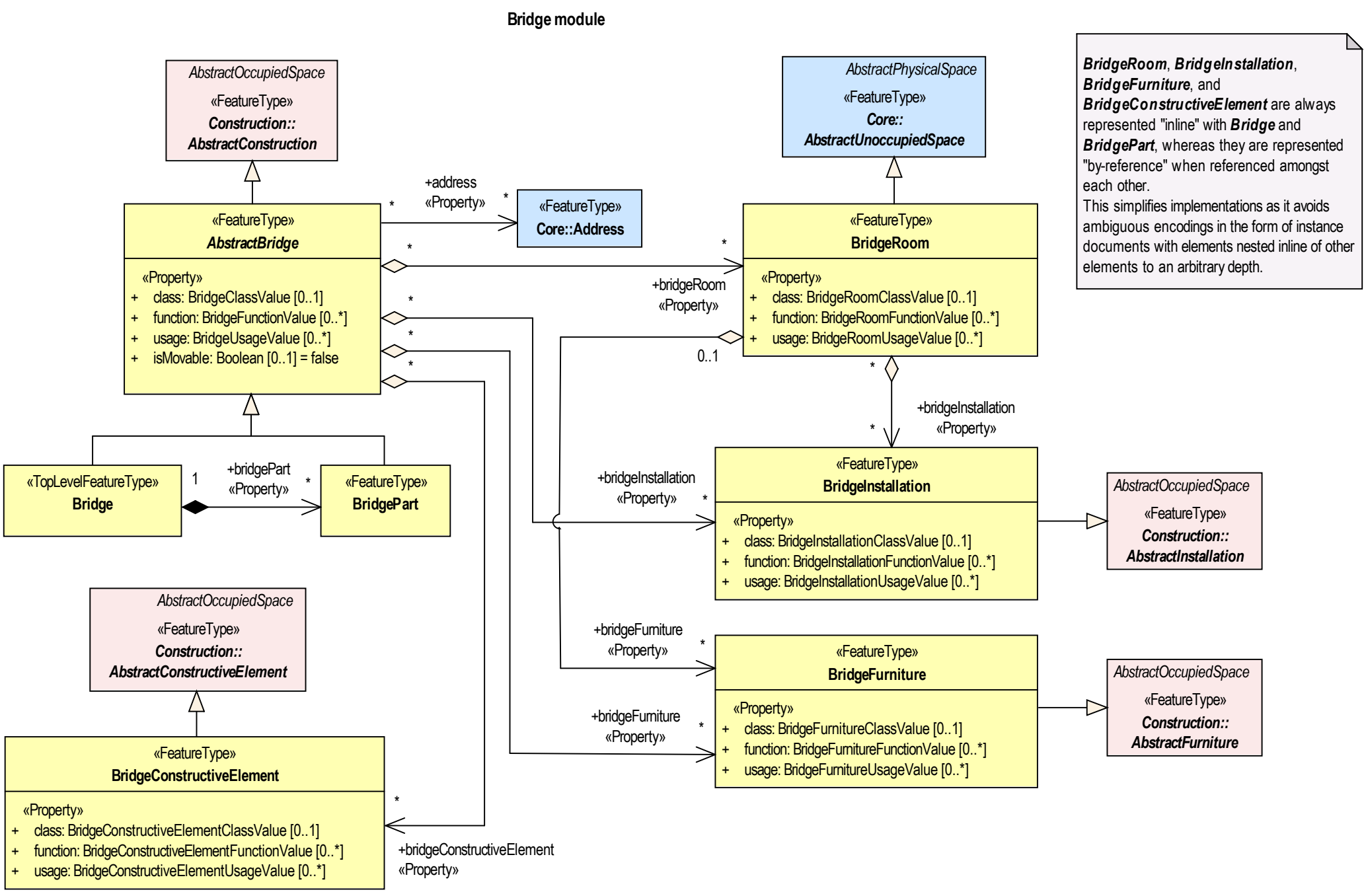
inv: list->size() = 3
/* List contains exactly 3 values. */

«BasicType»
ColorPlusOpacity

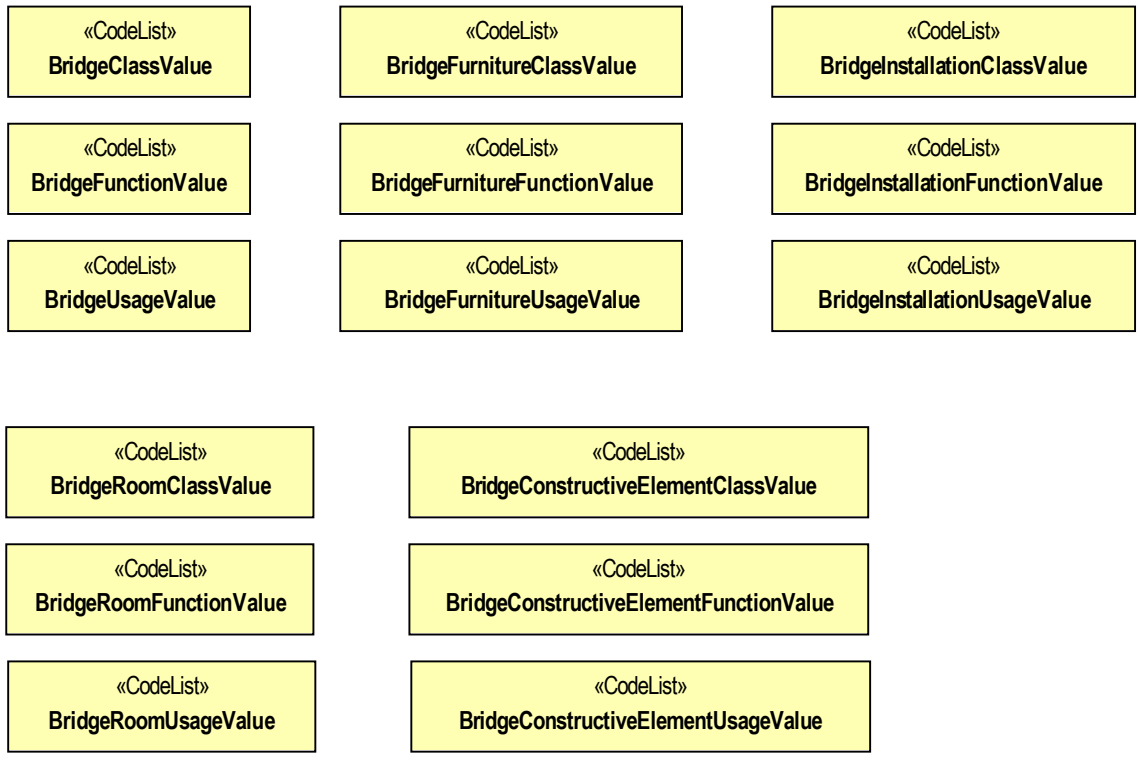
inv: list->size() = 3 or list->size() = 4
/* List contains exactly 3 to 4 values. */

«enumeration»
TextureType
specific
typical
unknown

«enumeration»
WrapMode
none
wrap
mirror
clamp
border


Bridge module
AbstractOccupiedSpace
«FeatureType»
Construction::
AbstractConstruction
AbstractPhysicalSpace
«FeatureType»
Core::
AbstractUnoccupiedSpace
BridgeRoom, BridgeInstallation, BridgeFurniture, and BridgeConstructiveElement are always represented "inline" with Bridge and BridgePart, whereas they are represented "by-reference" when referenced amongst each other.
This simplifies implementations as it avoids ambiguous encodings in the form of instance documents with elements nested inline of other elements to an arbitrary depth.
+address
«Property»
«FeatureType»
Core::Address
«FeatureType»
AbstractBridge
«Property»
+ class: BridgeClassValue [0..1]
+ function: BridgeFunctionValue [0..*]
+ usage: BridgeUsageValue [0..*]
+ isMovable: Boolean [0..1] = false
«FeatureType»
BridgeRoom
«Property»
+ class: BridgeRoomClassValue [0..1]
+ function: BridgeRoomFunctionValue [0..*]
+ usage: BridgeRoomUsageValue [0..*]
+bridgeRoom
«Property»
0..1
+bridgeInstallation
«Property»
«TopLevelFeatureType»
Bridge
1
+bridgePart
«Property»
«FeatureType»
BridgePart
«FeatureType»
BridgeInstallation
«Property»
+ class: BridgeInstallationClassValue [0..1]
+ function: BridgeInstallationFunctionValue [0..*]
+ usage: BridgeInstallationUsageValue [0..*]
+bridgeInstallation
«Property»
AbstractOccupiedSpace
«FeatureType»
Construction::
AbstractInstallation
AbstractOccupiedSpace
«FeatureType»
Construction::
AbstractConstructiveElement
+bridgeFurniture
«Property»
«FeatureType»
BridgeFurniture
«Property»
+ class: BridgeFurnitureClassValue [0..1]
+ function: BridgeFurnitureFunctionValue [0..*]
+ usage: BridgeFurnitureUsageValue [0..*]
+bridgeFurniture
«Property»
AbstractOccupiedSpace
«FeatureType»
Construction::
AbstractFurniture
«FeatureType»
BridgeConstructiveElement
«Property»
+ class: BridgeConstructiveElementClassValue [0..1]
+ function: BridgeConstructiveElementFunctionValue [0..*]
+ usage: BridgeConstructiveElementUsageValue [0..*]
+bridgeConstructiveElement
«Property»

Bridge module - Code lists



Building module

AbstractOccupiedSpace
«FeatureType»
Construction::
AbstractConstruction

+boundary
«Property»

AbstractSpaceBoundary
«FeatureType»
Core::
AbstractThematicSurface

+boundary
«Property»

AbstractSpace
«FeatureType»
Core::
AbstractLogicalSpace

«FeatureType»
AbstractBuilding

«Property»
+ class: BuildingClassValue [0..1]
+ function: BuildingFunctionValue [0..*]
+ usage: BuildingUsageValue [0..*]
+ roofType: RoofTypeValue [0..1]
+ storeysAboveGround: Integer [0..1]
+ storeysBelowGround: Integer [0..1]
+ storeyHeightsAboveGround: MeasureOrNilReasonList [0..1]
+ storeyHeightsBelowGround: MeasureOrNilReasonList [0..1]

+buildingSubdivision
«Property»

+address
«Property»

«FeatureType»
Core::Address

«FeatureType»
AbstractBuildingSubdivision

«Property»
+ class: BuildingSubdivisionClassValue [0..1]
+ function: BuildingSubdivisionFunctionValue [0..*]
+ usage: BuildingSubdivisionUsageValue [0..*]
+ elevation: Elevation [0..*]
+ sortKey: Real [0..1]

AbstractPhysicalSpace
«FeatureType»
Core::
AbstractUnoccupiedSpace

+buildingRoom
«Property»

«FeatureType»
BuildingRoom

«Property»
+ class: BuildingRoomClassValue [0..1]
+ function: BuildingRoomFunctionValue [0..*]
+ usage: BuildingRoomUsageValue [0..*]
+ roomHeight: RoomHeight [0..*]

«FeatureType»
BuildingUnit

«FeatureType»
Storey

+buildingUnit
«Property»

+storey
«Property»

«TopLevelFeatureType»
Building

1

+buildingPart
«Property»

«FeatureType»
BuildingPart

+buildingInstallation
«Property»

«FeatureType»
BuildingInstallation

«Property»
+ class: BuildingInstallationClassValue [0..1]
+ function: BuildingInstallationFunctionValue [0..*]
+ usage: BuildingInstallationUsageValue [0..*]

AbstractOccupiedSpace
«FeatureType»
Construction::
AbstractInstallation

AbstractOccupiedSpace
«FeatureType»
Construction::
AbstractConstructiveElement

«FeatureType»
BuildingConstructiveElement

«Property»
+ class: BuildingConstructiveElementClassValue [0..1]
+ function: BuildingConstructiveElementFunctionValue [0..*]
+ usage: BuildingConstructiveElementUsageValue [0..*]

+buildingConstructiveElement
«Property»

+buildingConstructiveElement
«Property»

+buildingFurniture
«Property»

«FeatureType»
BuildingFurniture

«Property»
+ class: BuildingFurnitureClassValue [0..1]
+ function: BuildingFurnitureFunctionValue [0..*]
+ usage: BuildingFurnitureUsageValue [0..*]

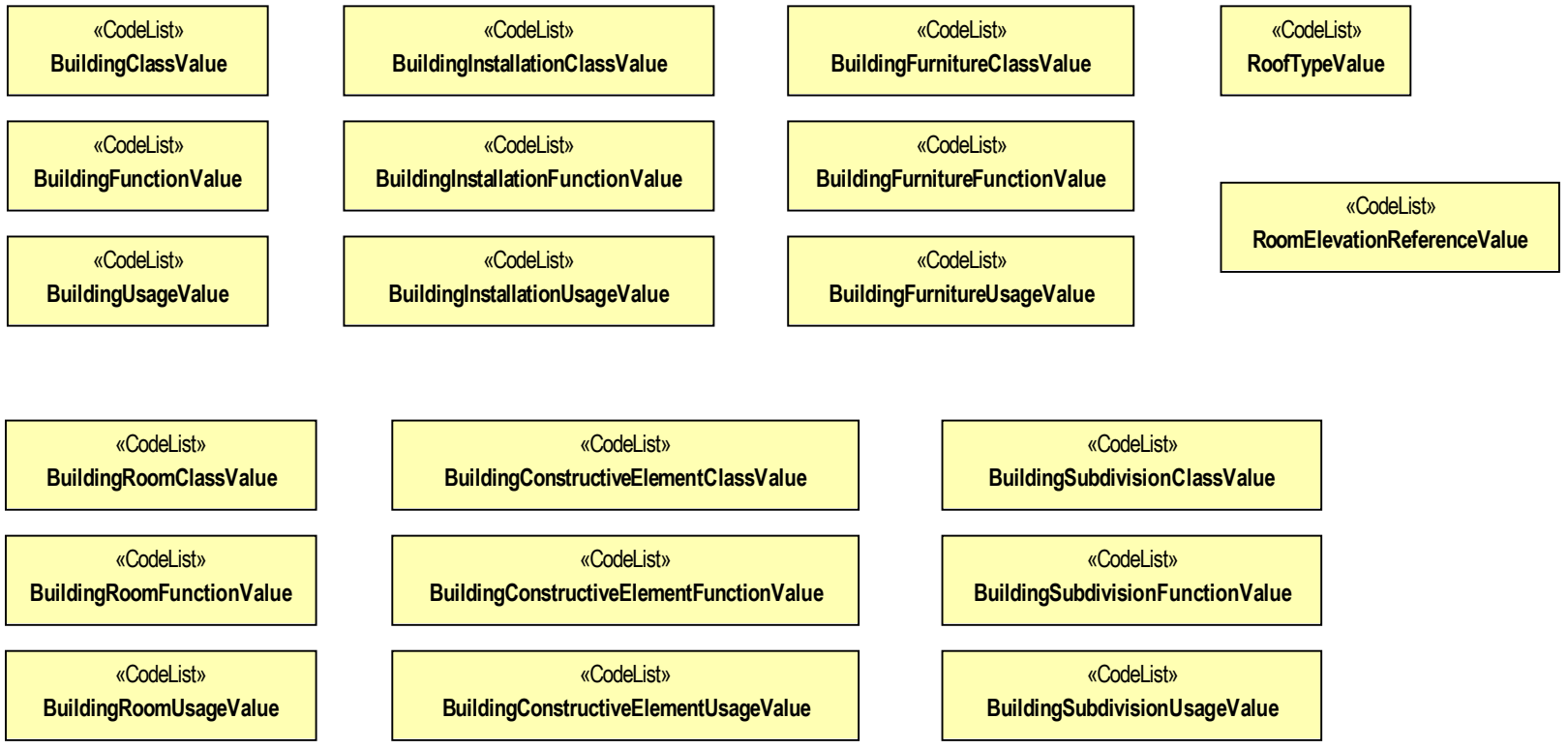
AbstractOccupiedSpace
«FeatureType»
Construction::
AbstractFurniture

BuildingRoom, ***BuildingInstallation***, ***BuildingFurniture***, and ***BuildingConstructiveElement*** are always represented "inline" with ***Building*** and ***BuildingPart***, whereas they are represented "by-reference" when referenced amongst each other.
This simplifies implementations as it avoids ambiguous encodings in the form of instance documents with elements nested inline of other elements to an arbitrary depth.

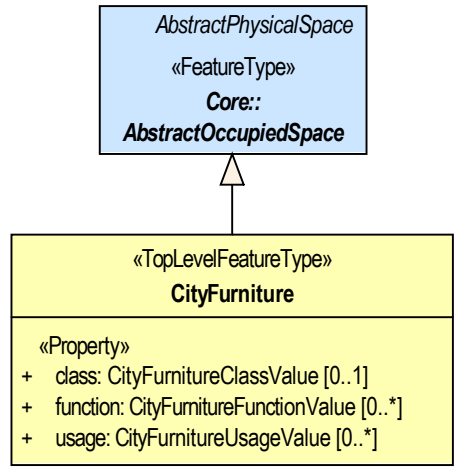
«DataType»
RoomHeight

«Property»
+ highReference: RoomElevationReferenceValue
+ lowReference: RoomElevationReferenceValue
+ status: HeightStatusValue
+ value: Length

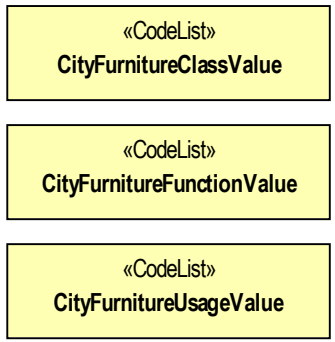
Building module - Code lists



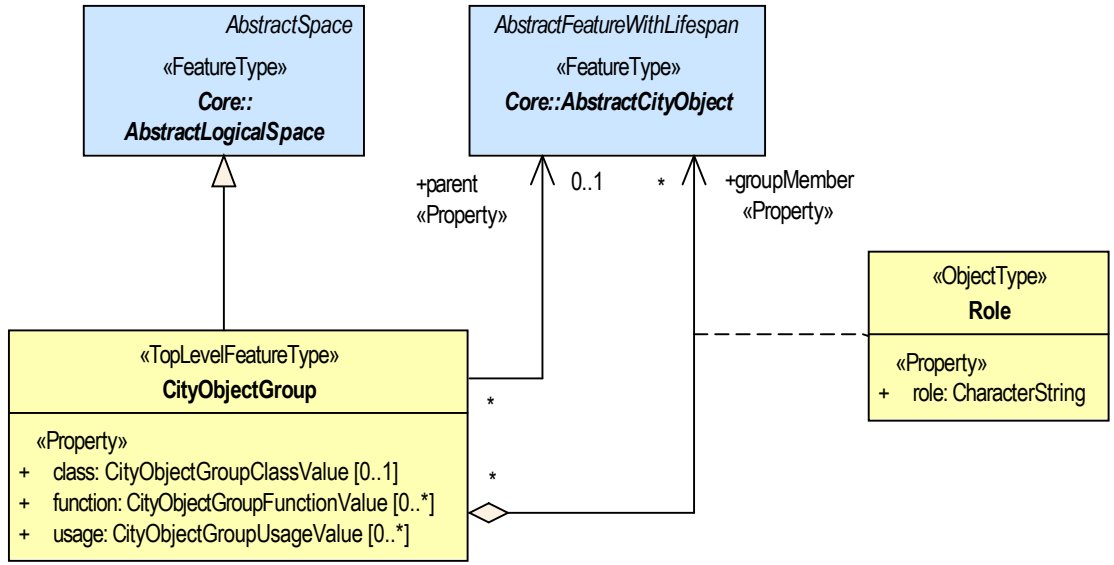
CityFurniture module



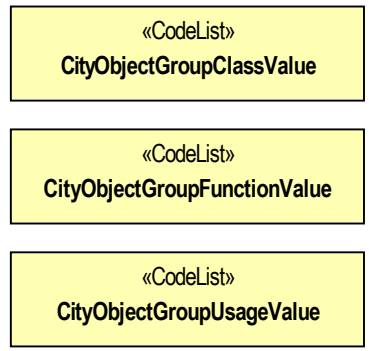
CityFurniture module - Code lists



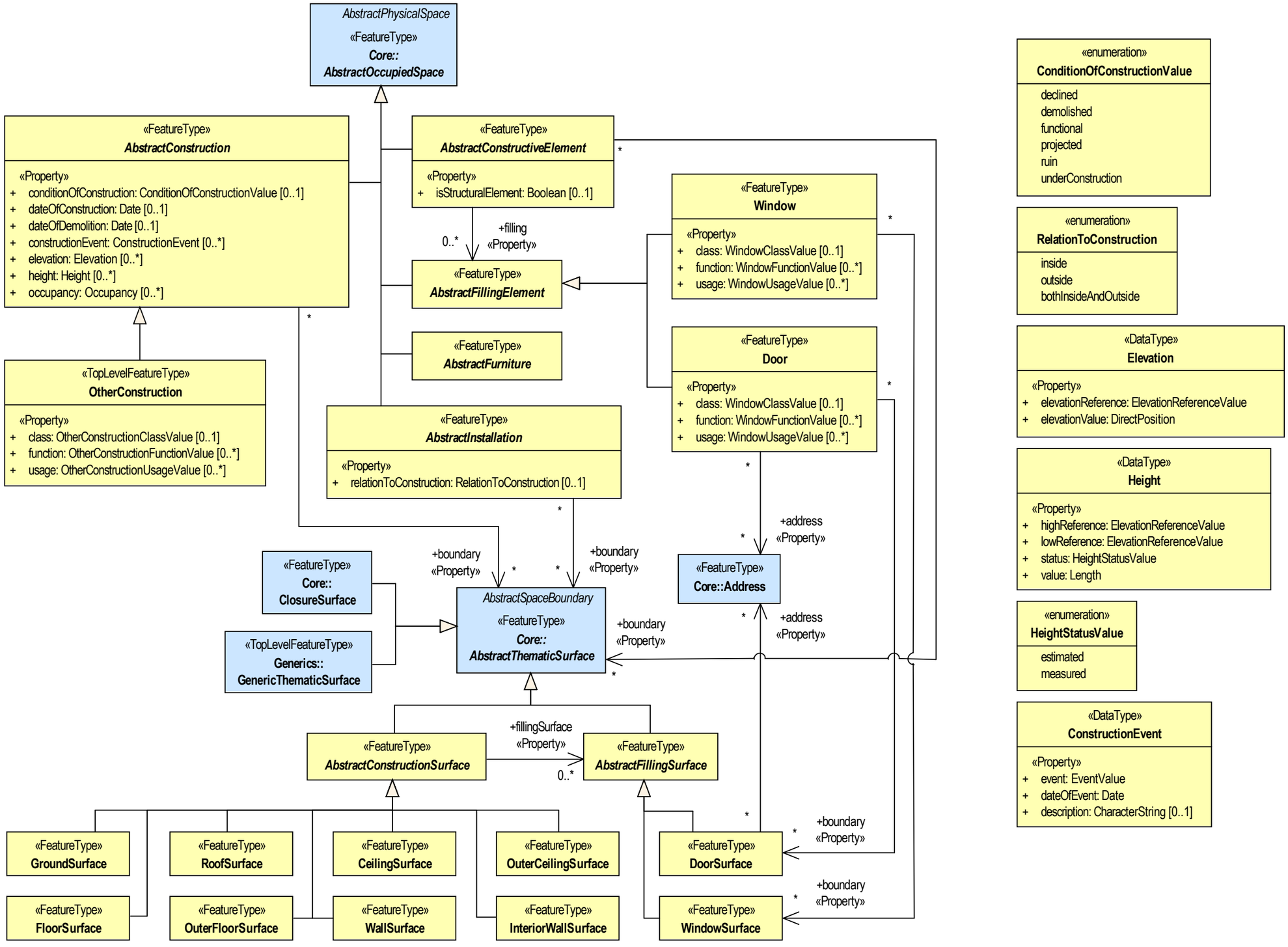
CityObjectGroup module



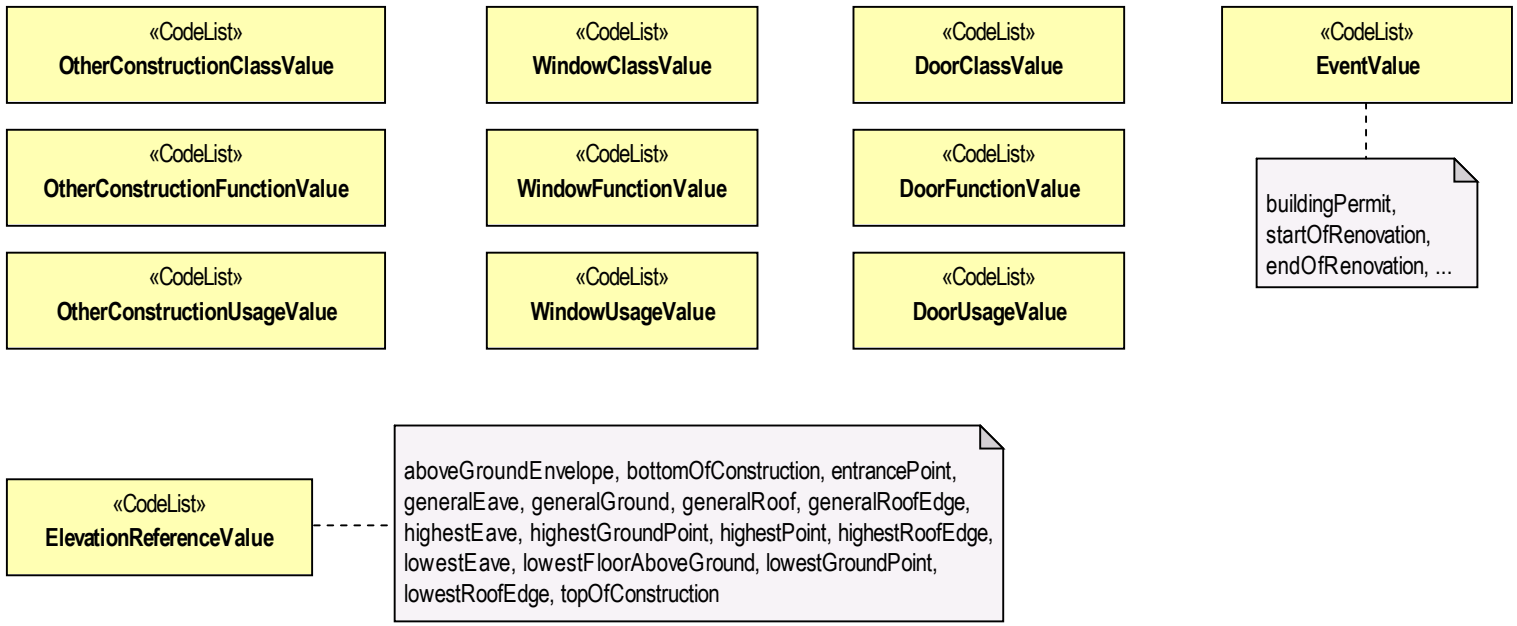
CityObjectGroup module - Code lists



Construction module



Construction module - Code lists



Dynamizer module

AnyFeature
«FeatureType»
Core::
AbstractFeatureWithLifespan

«FeatureType»
Core::AbstractCityObject

+dynamizer
«Property»
*

«FeatureType»
Core::AbstractDynamizer

+sensorLocation
«Property»
0..1
0..*

«DataType»
SensorConnection

«Property»
+ connectionType: SensorConnectionValue
+ observationProperty: CharacterString
+ uom: CharacterString [0..1]
+ sensorID: CharacterString [0..1]
+ sensorName: CharacterString [0..1]
+ observationID: CharacterString [0..1]
+ datastreamID: CharacterString [0..1]
+ baseURL: URI [0..1]
+ authType: AuthenticationValue [0..1]
+ mqttServer: CharacterString [0..1]
+ mqttTopic: CharacterString [0..1]
+ linkToObservation: CharacterString [0..1]
+ linkToSensorDescription: CharacterString [0..1]

+sensorConnection
«Property»
0..1

«FeatureType»
Dynamizer

«Property»
+ attributeRef: CharacterString
+ startTime: TM_Position [0..1]
+ endTime: TM_Position [0..1]

+dynamicData
«Property»
*
0..1

«FeatureType»
AbstractTimeseries

«Property»
+ firstTimestamp: TM_Position [0..1]
+ lastTimestamp: TM_Position [0..1]

+timeseries
«Property»
1
0..1

«DataType»
TimeseriesComponent

«Property»
+ repetitions: Integer
+ additionalGap: TM_Duration [0..1]

+component
«Property»
1..*
{ordered}

«FeatureType»
AbstractAtomicTimeseries

«Property»
+ observationProperty: CharacterString
+ uom: CharacterString [0..1]

«FeatureType»
CompositeTimeseries

«FeatureType»
TabulatedFileTimeseries

«Property»
+ fileLocation: URI
+ fileType: TabulatedFileValue
+ mimeType: MimeValue [0..1]
+ valueType: TimeseriesValue
+ numberOfHeaderLines: Integer [0..1]
+ fieldSeparator: CharacterString
+ decimalSymbol: Character [0..1]
+ idColumnNo: Integer [0..1]
+ idColumnName: CharacterString [0..1]
+ idValue: CharacterString [0..1]
+ timeColumnNo: Integer [0..1]
+ timeColumnName: CharacterString [0..1]
+ valueColumnNo: Integer [0..1]
+ valueColumnName: CharacterString [0..1]

«FeatureType»
StandardFileTimeseries

«Property»
+ fileLocation: URI
+ fileType: StandardFileValue
+ mimeType: MimeValue [0..1]

«FeatureType»
GenericTimeseries

«Property»
+ valueType: TimeseriesValue

«enumeration»
TimeseriesValue

integer
double
string
geometry
uri
bool
implicitGeometry
appearance

+timeValuePair
«Property»
1..*

«DataType»
TimeValuePair

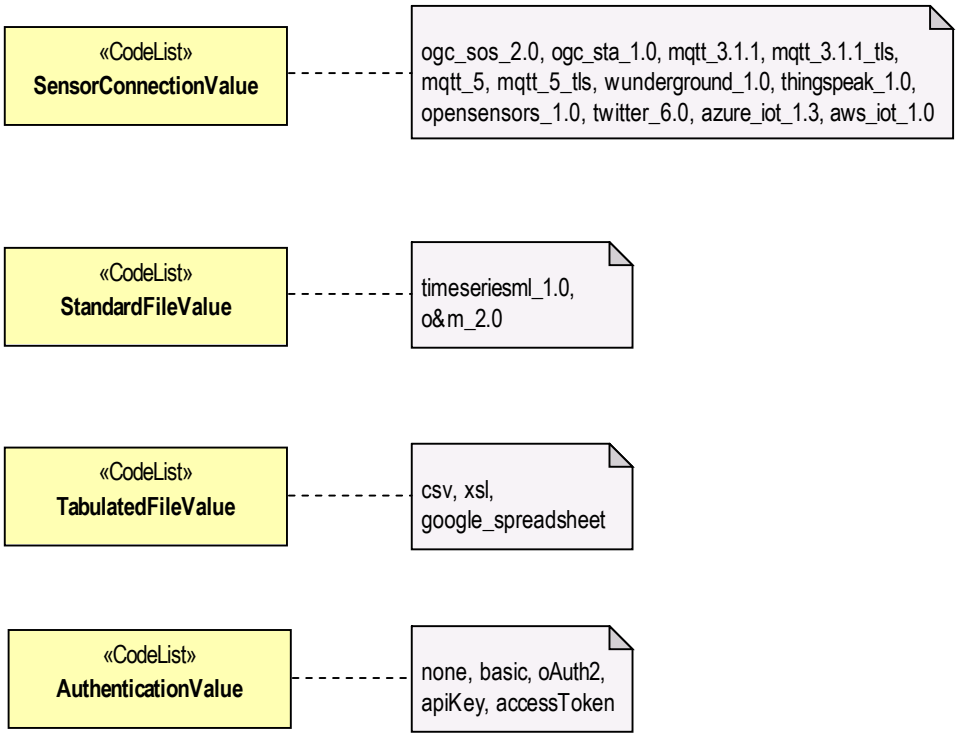
«Property»
+ timestamp: TM_Position
+ intValue: Integer [0..1]
+ doubleValue: Real [0..1]
+ stringValue: CharacterString [0..1]
+ geometryValue: GM_Object [0..1]
+ uriValue: URI [0..1]
+ boolValue: Boolean [0..1]
+ implicitGeometryValue: ImplicitGeometry [0..1]
+ appearanceValue: AbstractAppearance [0..1]

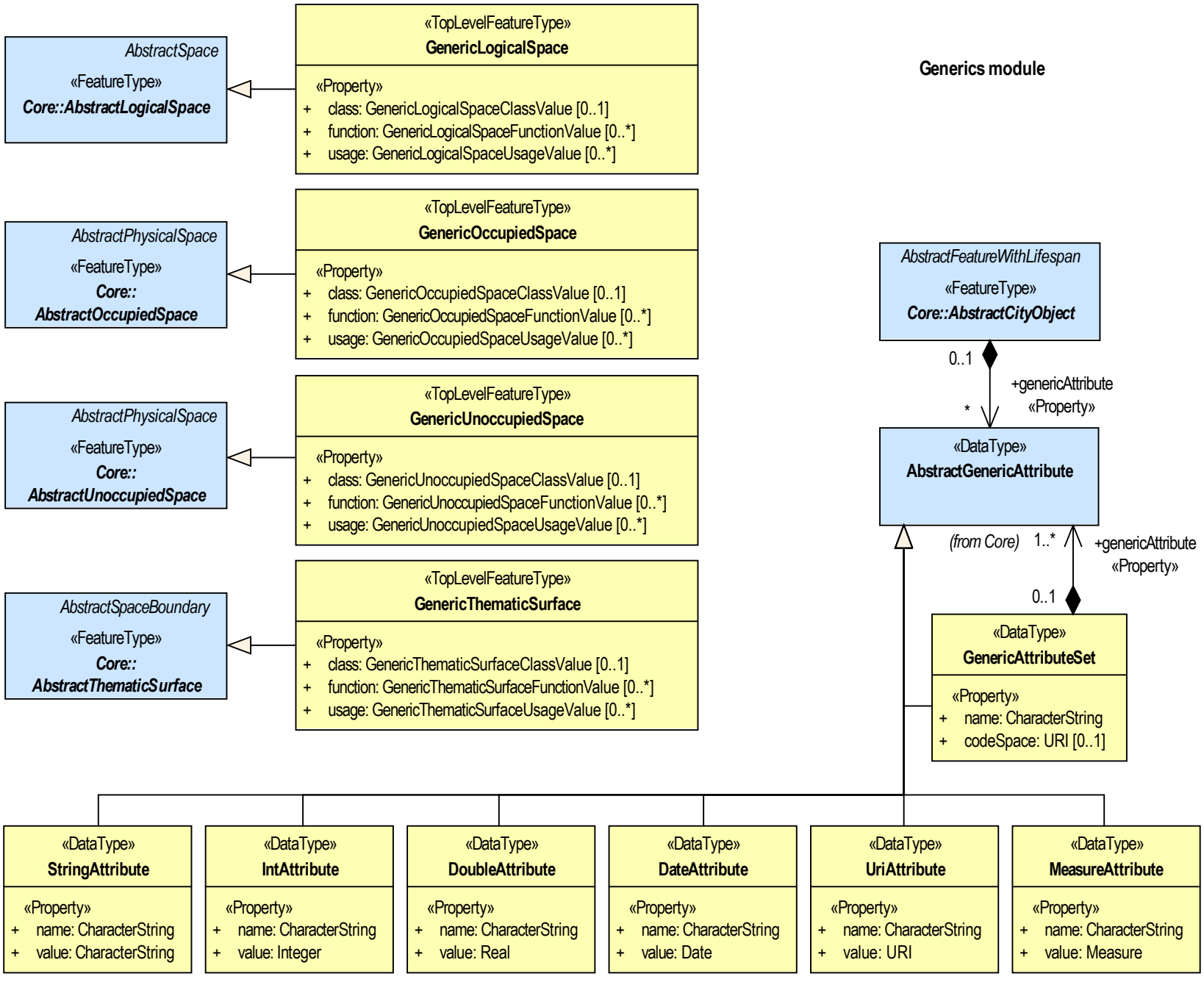
```
context GenericTimeseries inv:
  if valueType = TimeseriesValueType::integer then
    TimeValuePair->forAll(c|c.intValue->size()=1)
  else
    if valueType = TimeseriesValueType::double then
      TimeValuePair->forAll(c|c.doubleValue->size()=1)
    else
      if valueType = TimeseriesValueType::string then
        TimeValuePair->forAll(c|c.stringValue->size()=1)
      else
        if valueType = TimeseriesValueType::geometry then
          TimeValuePair->forAll(c|c.geometryValue->size()=1)
        else
          if valueType = TimeseriesValueType::uri then
            TimeValuePair->forAll(c|c.uriValue->size()=1)
          else
            if valueType = TimeseriesValueType::bool then
              TimeValuePair->forAll(c|c.boolValue->size()=1)
            else
              if valueType = TimeseriesValueType::implicitGeometry then
                TimeValuePair->forAll(c|c.implicitGeometryValue->size()=1)
              else
                TimeValuePair->forAll(c|c.appearanceValue->size()=1)
              endif
            endif
          endif
        endif
      endif
    endif
  endif
```

```
context TabulatedFileTimeseries inv:
  (timeColumnNo->notEmpty() or timeColumnName->notEmpty()) and
  (valueColumnNo->notEmpty() or valueColumnName->notEmpty()) and
  (idValue->notEmpty() implies idColumnNo->notEmpty() or idColumnName->notEmpty())
```

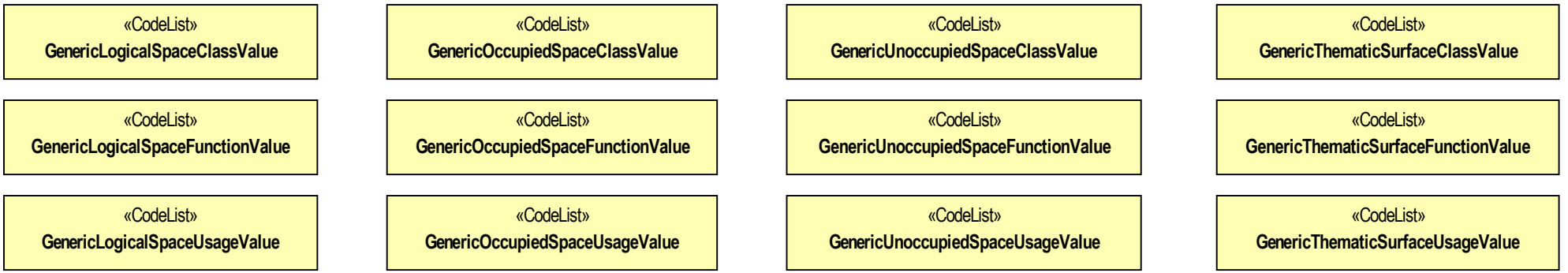
```
context TimeValuePair inv:
  intValue->size() + doubleValue->size() + stringValue->size() +
  geometryValue->size() + uriValue->size() + boolValue->size() +
  implicitGeometryValue->size() + appearanceValue->size() = 1
```

Dynamizer module - Code lists

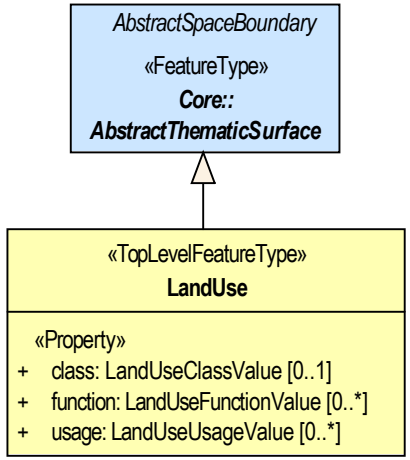



Generics module
AbstractSpace
«FeatureType»
Core::AbstractLogicalSpace
«TopLevelFeatureType»
GenericLogicalSpace
«Property»
+ class: GenericLogicalSpaceClassValue [0..1]
+ function: GenericLogicalSpaceFunctionValue [0..*]
+ usage: GenericLogicalSpaceUsageValue [0..*]
AbstractPhysicalSpace
«FeatureType»
Core::
AbstractOccupiedSpace
«TopLevelFeatureType»
GenericOccupiedSpace
«Property»
+ class: GenericOccupiedSpaceClassValue [0..1]
+ function: GenericOccupiedSpaceFunctionValue [0..*]
+ usage: GenericOccupiedSpaceUsageValue [0..*]
AbstractPhysicalSpace
«FeatureType»
Core::
AbstractUnoccupiedSpace
«TopLevelFeatureType»
GenericUnoccupiedSpace
«Property»
+ class: GenericUnoccupiedSpaceClassValue [0..1]
+ function: GenericUnoccupiedSpaceFunctionValue [0..*]
+ usage: GenericUnoccupiedSpaceUsageValue [0..*]
AbstractSpaceBoundary
«FeatureType»
Core::
AbstractThematicSurface
«TopLevelFeatureType»
GenericThematicSurface
«Property»
+ class: GenericThematicSurfaceClassValue [0..1]
+ function: GenericThematicSurfaceFunctionValue [0..*]
+ usage: GenericThematicSurfaceUsageValue [0..*]
AbstractFeatureWithLifespan
«FeatureType»
Core::AbstractCityObject
0..1
*
+genericAttribute
«Property»
«DataType»
AbstractGenericAttribute
(from Core)
1..*
+genericAttribute
«Property»
0..1
«DataType»
GenericAttributeSet
«Property»
+ name: CharacterString
+ codeSpace: URI [0..1]
«DataType»
StringAttribute
«Property»
+ name: CharacterString
+ value: CharacterString
«DataType»
IntAttribute
«Property»
+ name: CharacterString
+ value: Integer
«DataType»
DoubleAttribute
«Property»
+ name: CharacterString
+ value: Real
«DataType»
DateAttribute
«Property»
+ name: CharacterString
+ value: Date
«DataType»
UriAttribute
«Property»
+ name: CharacterString
+ value: URI
«DataType»
MeasureAttribute
«Property»
+ name: CharacterString
+ value: Measure

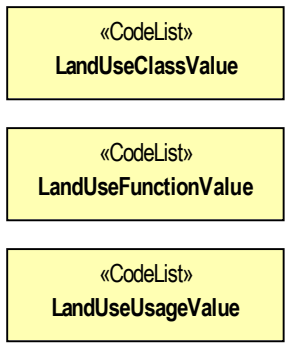
Generics module - Code lists



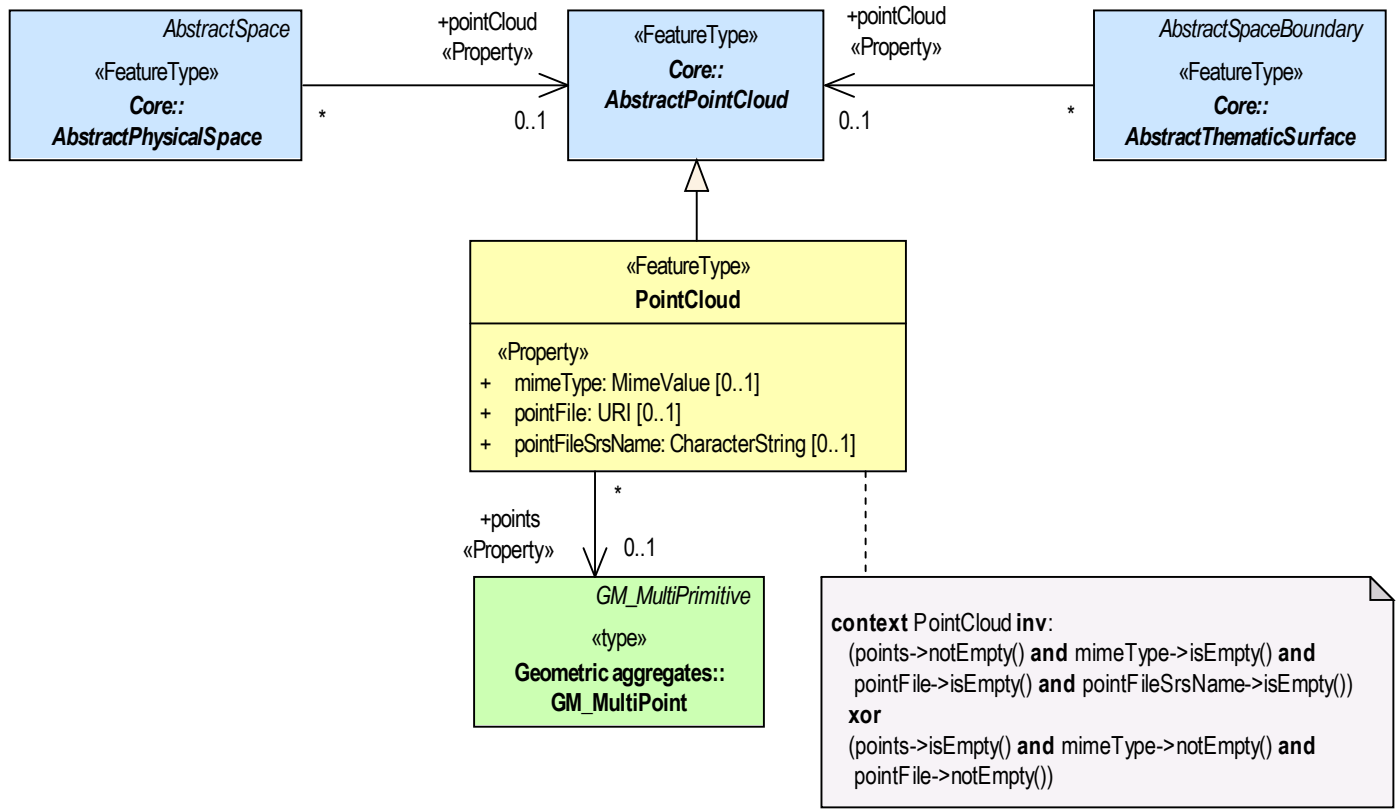
LandUse module

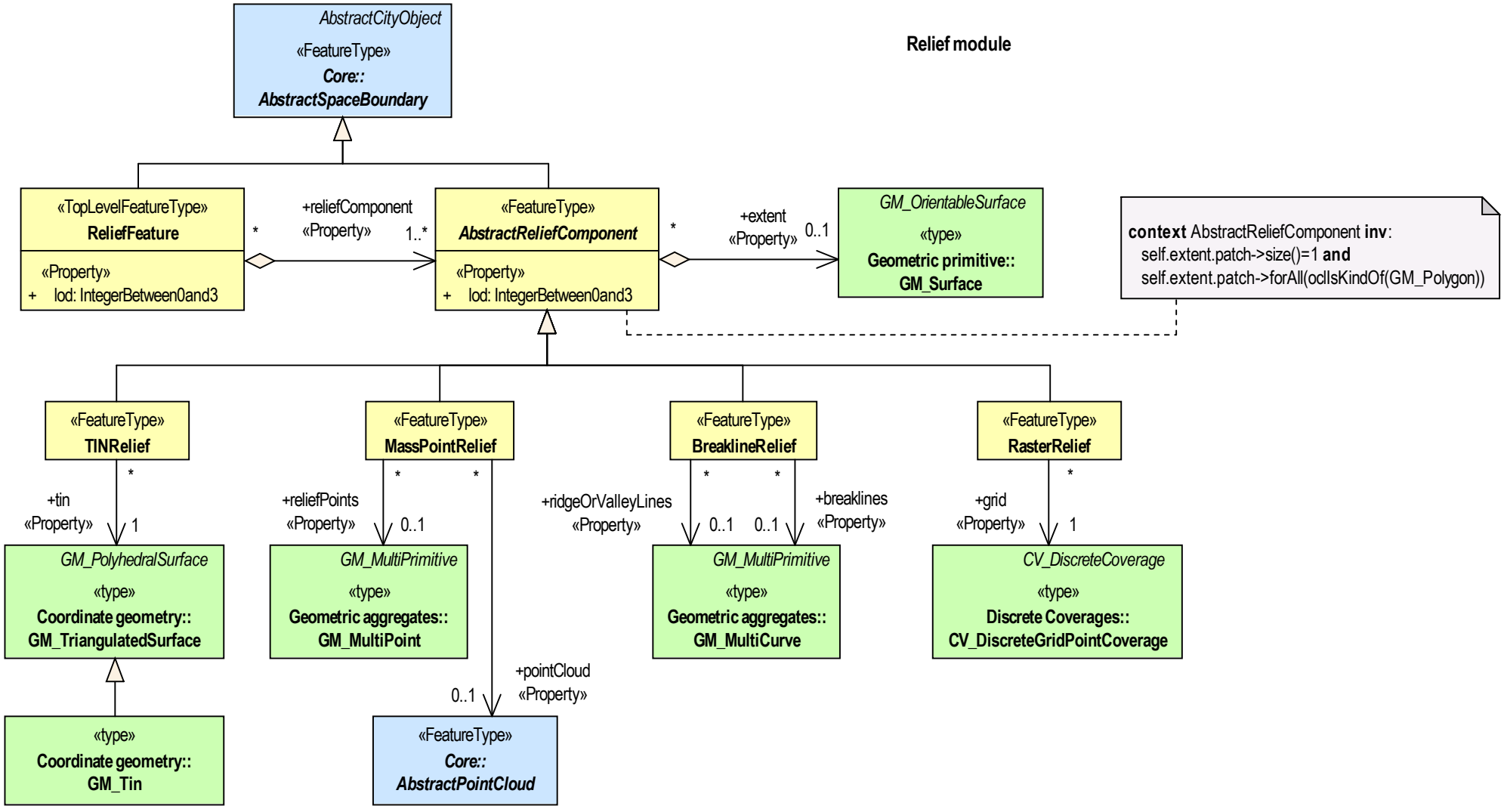


LandUse module - Code lists

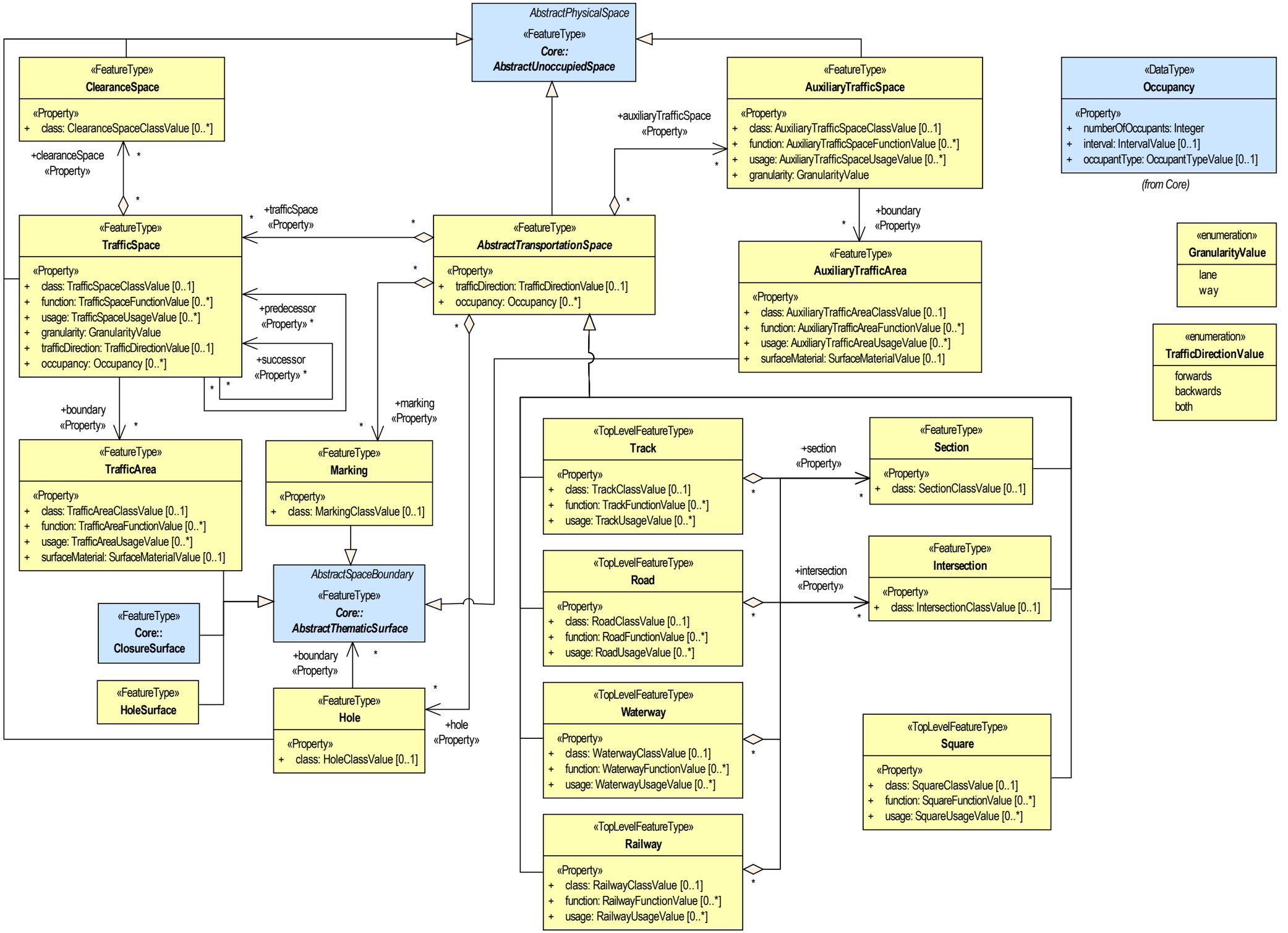


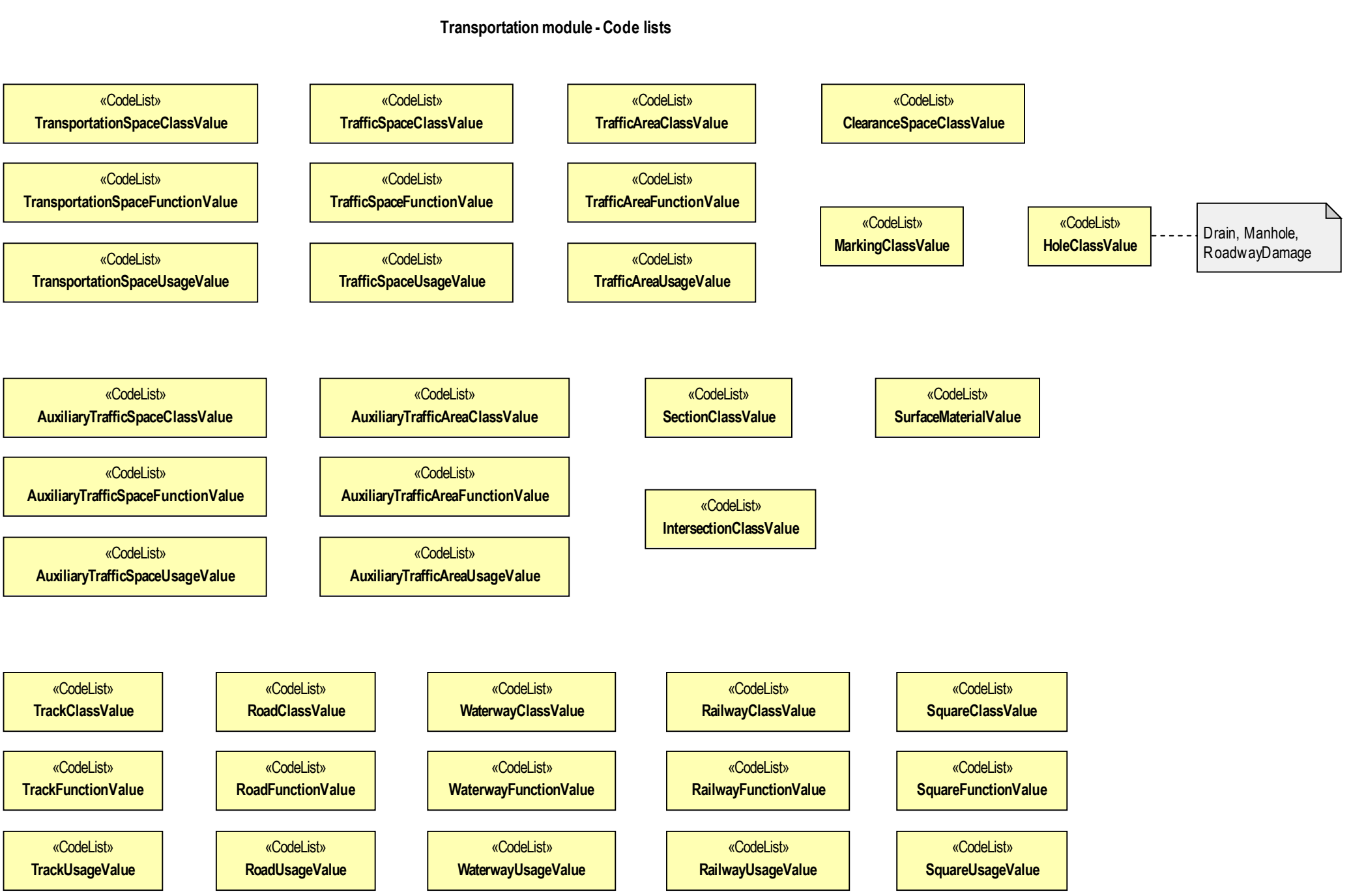
PointCloud module



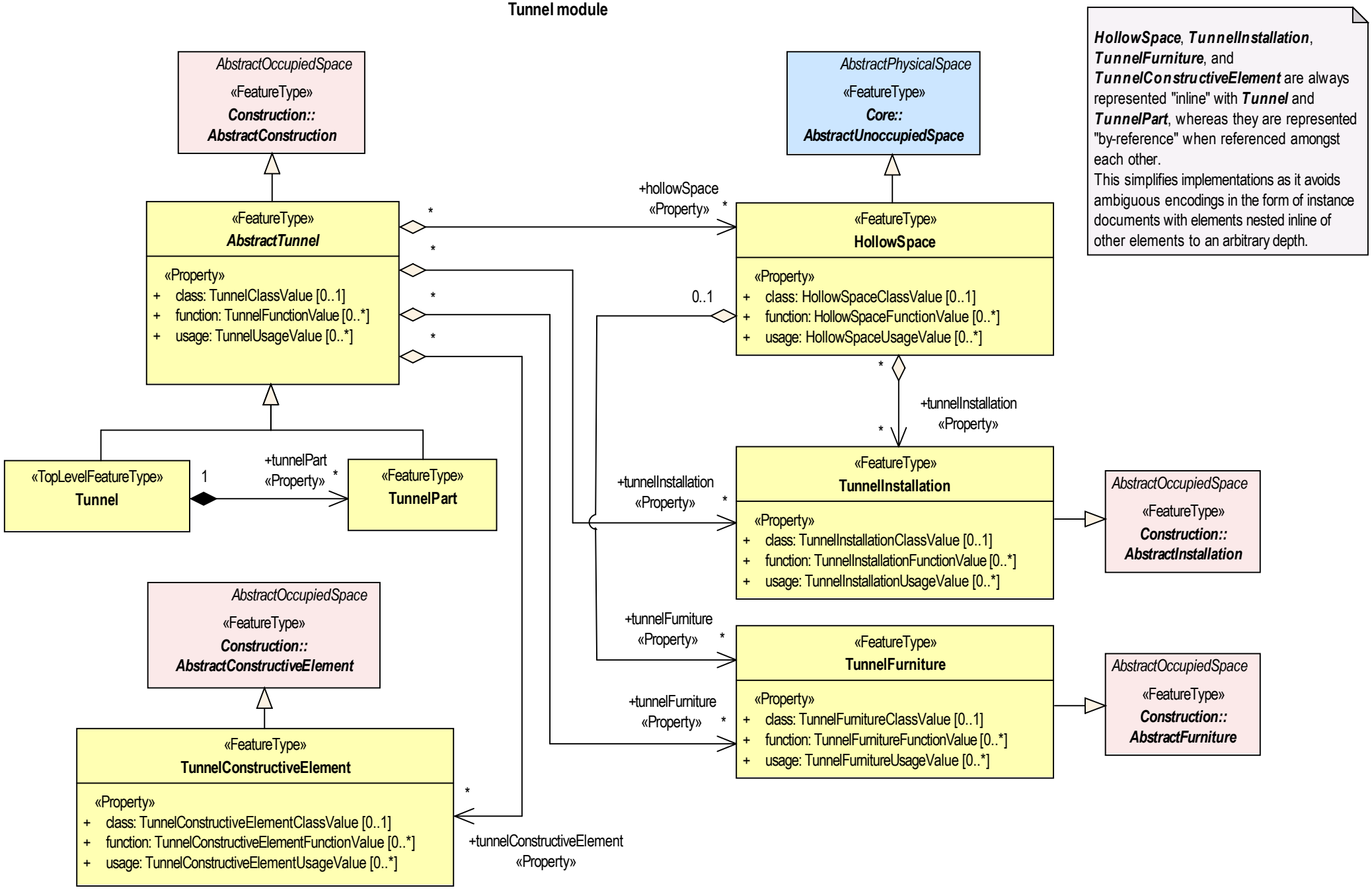

Relief module
AbstractCityObject
«FeatureType»
Core::
AbstractSpaceBoundary
«TopLevelFeatureType»
ReliefFeature
«Property»
+ lod: IntegerBetween0and3
*
+reliefComponent
«Property»
1..*
«FeatureType»
AbstractReliefComponent
«Property»
+ lod: IntegerBetween0and3
*
+extent
«Property»
0..1
GM_OrientableSurface
«type»
Geometric primitive::
GM_Surface
context AbstractReliefComponent inv:
self.extent.patch->size()=1 and
self.extent.patch->forAll(oclIsKindOf(GM_Polygon))
«FeatureType»
TINRelief
«FeatureType»
MassPointRelief
«FeatureType»
BreaklineRelief
«FeatureType»
RasterRelief
+tin
«Property»
1
+reliefPoints
«Property»
0..1
+ridgeOrValleyLines
«Property»
0..1
0..1
+breaklines
«Property»
+grid
«Property»
1
GM_PolyhedralSurface
«type»
Coordinate geometry::
GM_TriangulatedSurface
GM_MultiPrimitive
«type»
Geometric aggregates::
GM_MultiPoint
GM_MultiPrimitive
«type»
Geometric aggregates::
GM_MultiCurve
CV_DiscreteCoverage
«type»
Discrete Coverages::
CV_DiscreteGridPointCoverage
0..1
+pointCloud
«Property»
«type»
Coordinate geometry::
GM_Tin
«FeatureType»
Core::
AbstractPointCloud

Transportation module

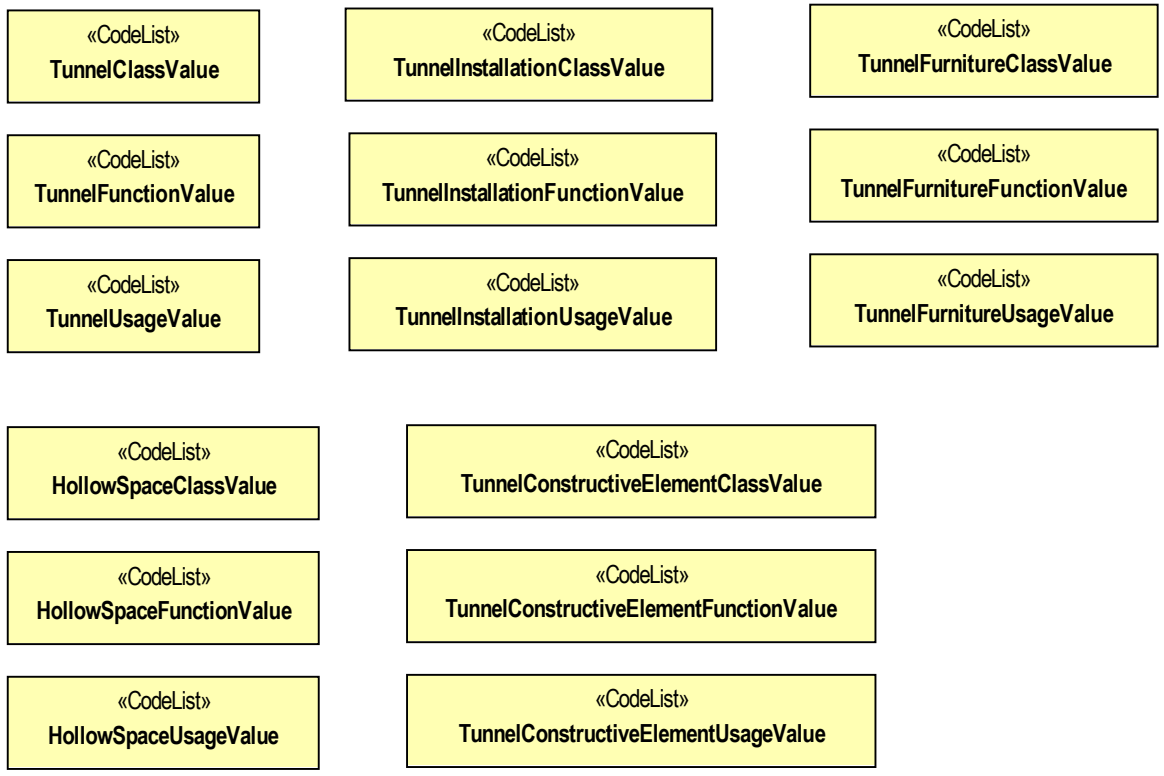



Transportation module - Code lists
«CodeList»
TransportationSpaceClassValue
«CodeList»
TrafficSpaceClassValue
«CodeList»
TrafficAreaClassValue
«CodeList»
ClearanceSpaceClassValue
«CodeList»
TransportationSpaceFunctionValue
«CodeList»
TrafficSpaceFunctionValue
«CodeList»
TrafficAreaFunctionValue
«CodeList»
MarkingClassValue
«CodeList»
HoleClassValue
Drain, Manhole, RoadwayDamage
«CodeList»
TransportationSpaceUsageValue
«CodeList»
TrafficSpaceUsageValue
«CodeList»
TrafficAreaUsageValue
«CodeList»
AuxiliaryTrafficSpaceClassValue
«CodeList»
AuxiliaryTrafficAreaClassValue
«CodeList»
SectionClassValue
«CodeList»
SurfaceMaterialValue
«CodeList»
AuxiliaryTrafficSpaceFunctionValue
«CodeList»
AuxiliaryTrafficAreaFunctionValue
«CodeList»
IntersectionClassValue
«CodeList»
AuxiliaryTrafficSpaceUsageValue
«CodeList»
AuxiliaryTrafficAreaUsageValue
«CodeList»
TrackClassValue
«CodeList»
RoadClassValue
«CodeList»
WaterwayClassValue
«CodeList»
RailwayClassValue
«CodeList»
SquareClassValue
«CodeList»
TrackFunctionValue
«CodeList»
RoadFunctionValue
«CodeList»
WaterwayFunctionValue
«CodeList»
RailwayFunctionValue
«CodeList»
SquareFunctionValue
«CodeList»
TrackUsageValue
«CodeList»
RoadUsageValue
«CodeList»
WaterwayUsageValue
«CodeList»
RailwayUsageValue
«CodeList»
SquareUsageValue

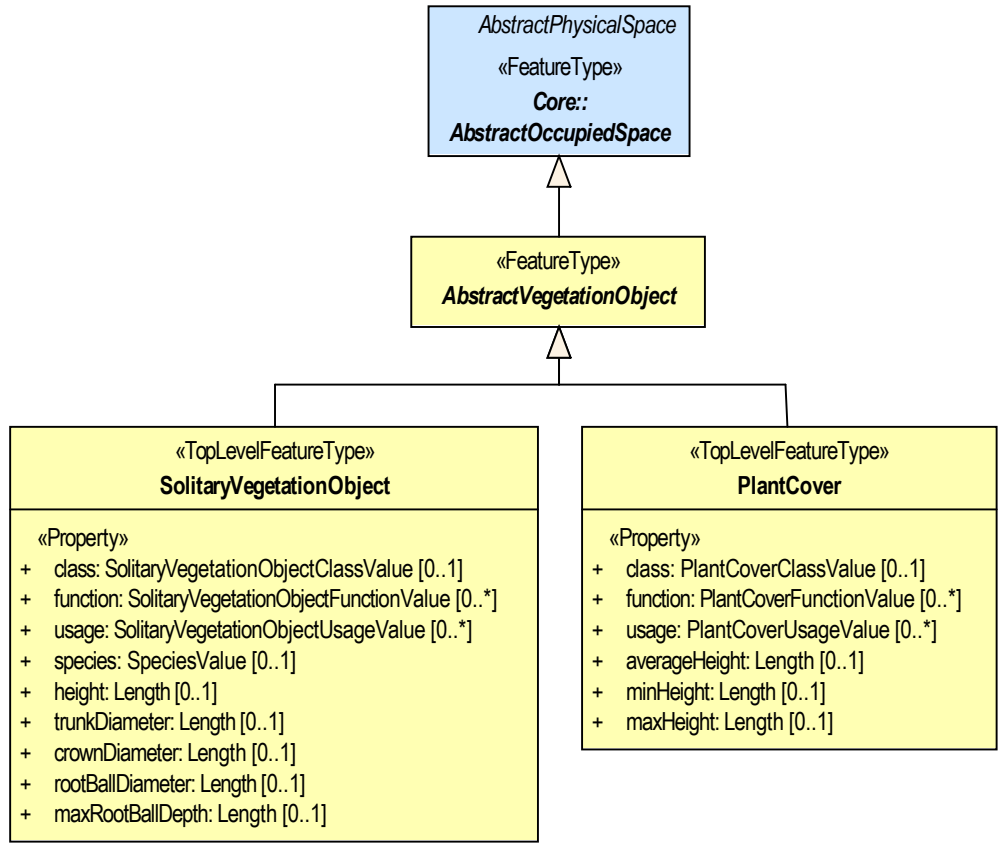
Tunnel module



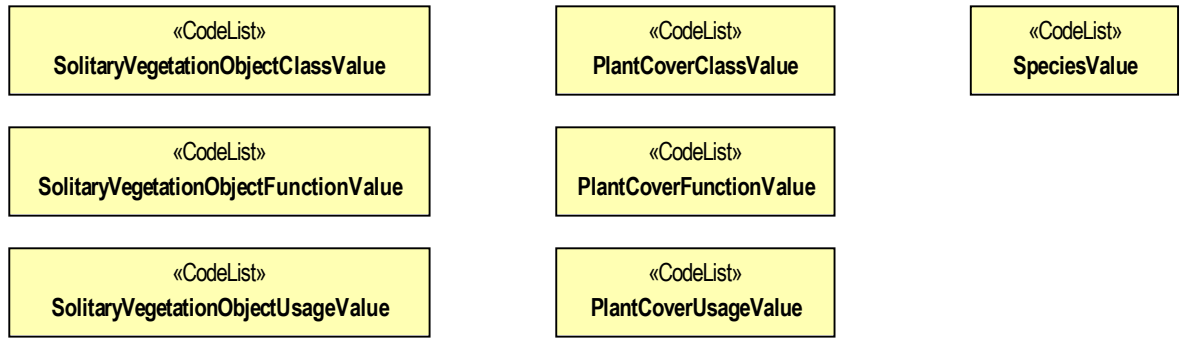
Tunnel module - Code lists



Vegetation module

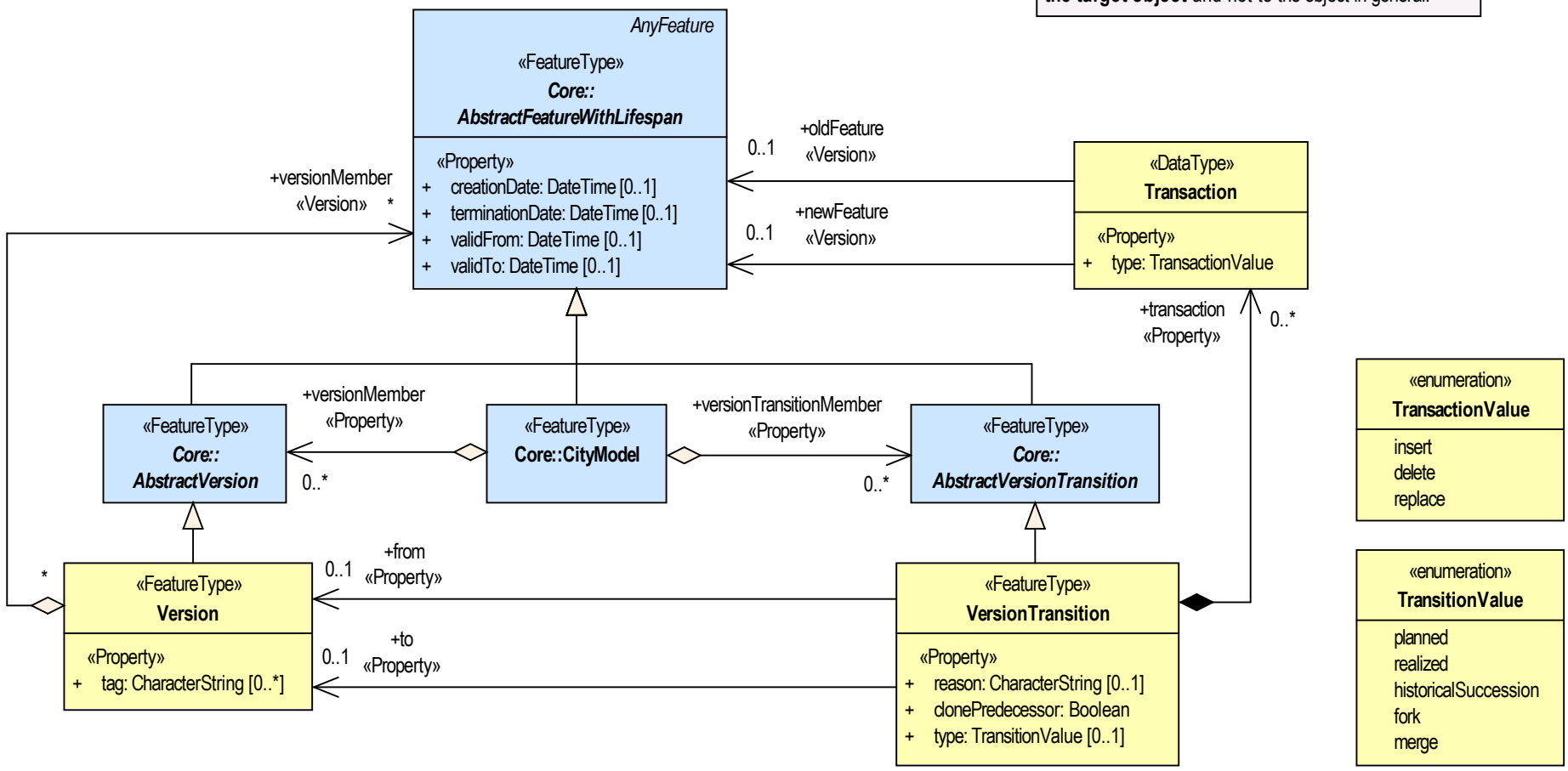


Vegetation module - Code lists

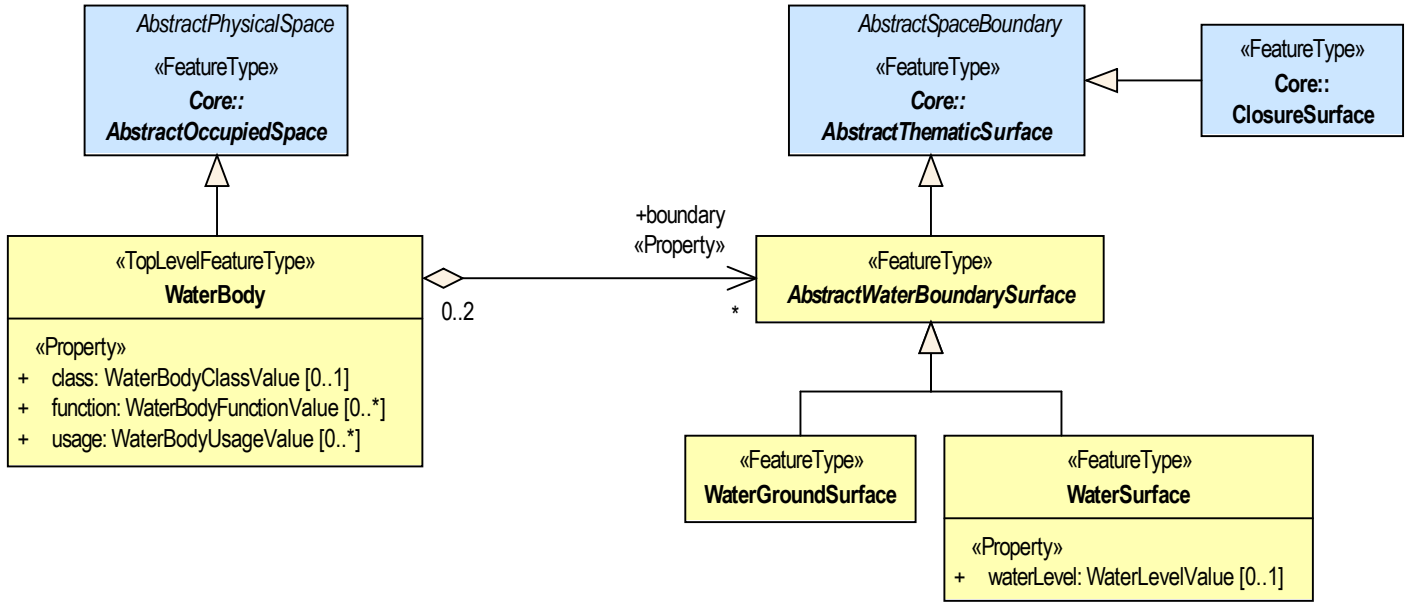


Versioning module

The **stereotype «Version»** is adopted from INSPIRE. The stereotype is used for association roles to express that the **association refers to a specific version of the target object** and not to the object in general.



WaterBody module



WaterBody module - Code lists