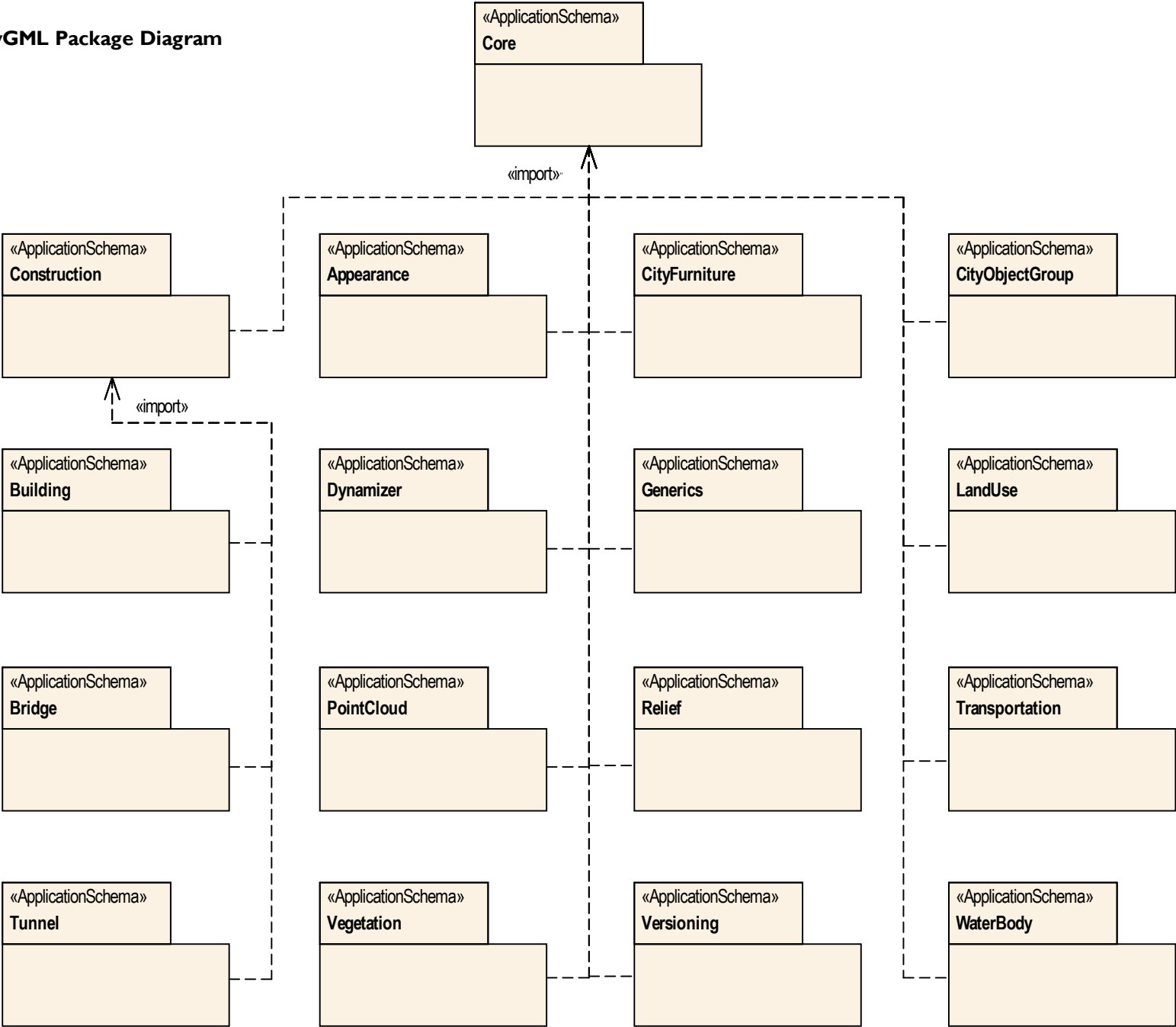
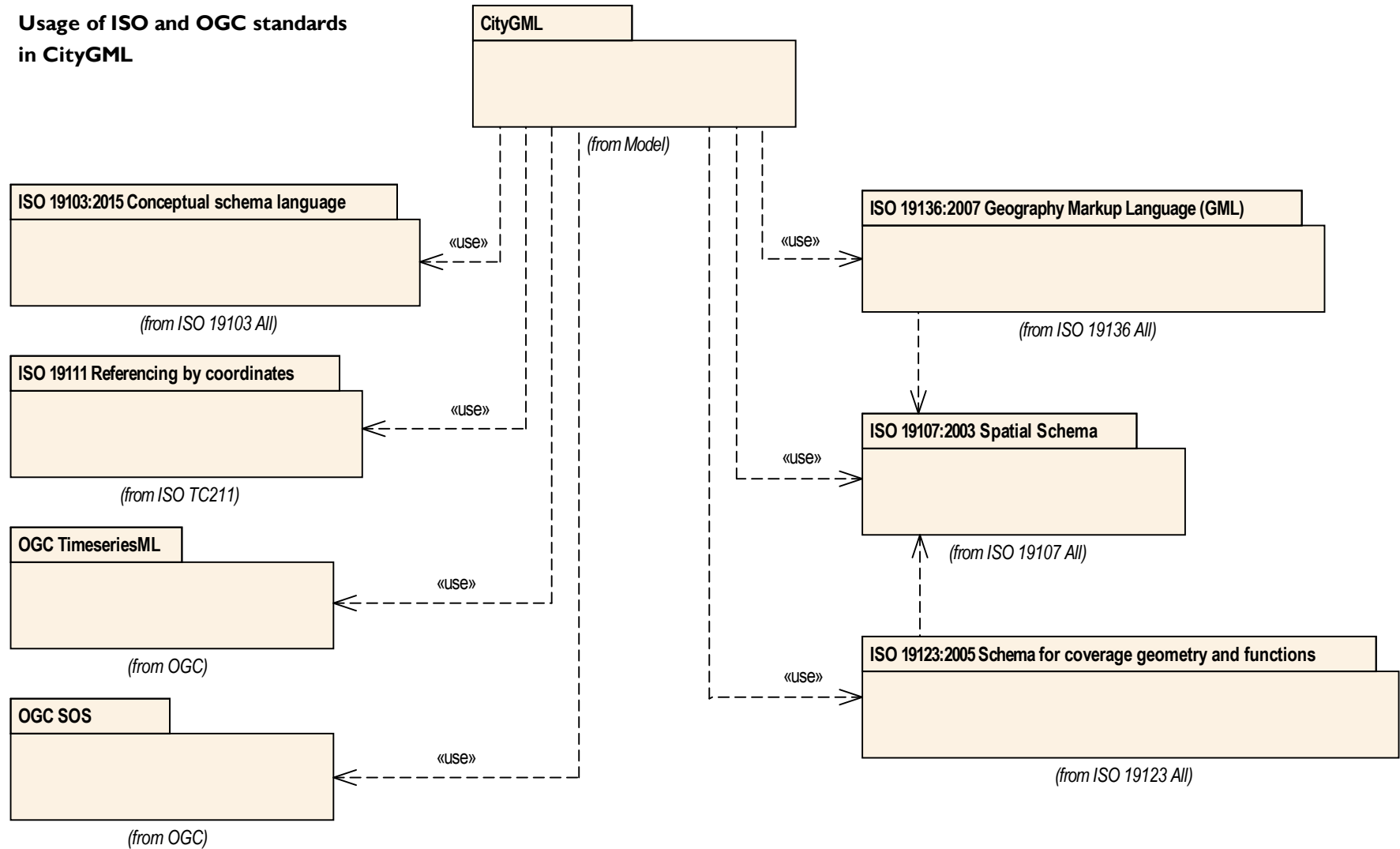
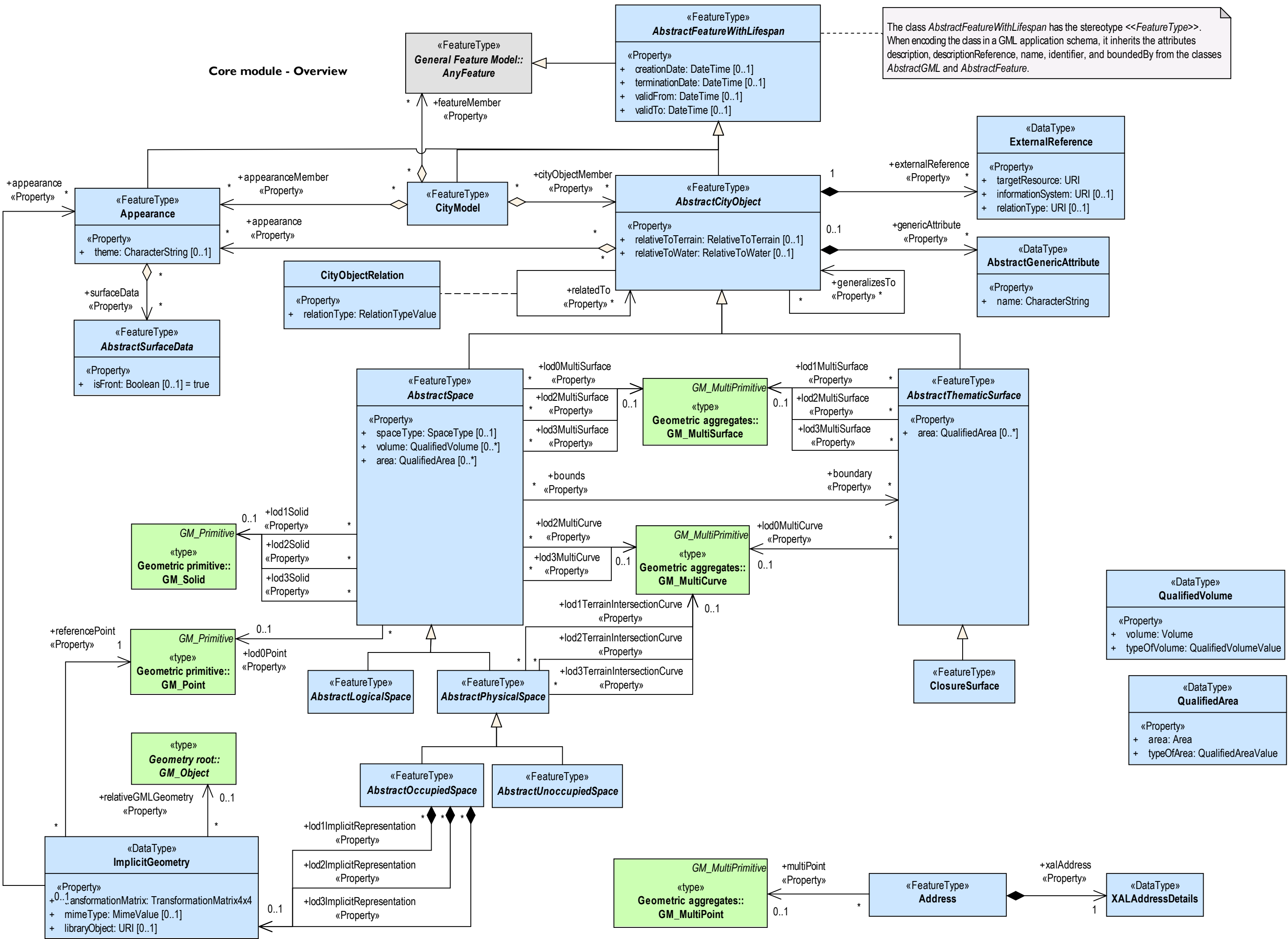


CityGML Package Diagram

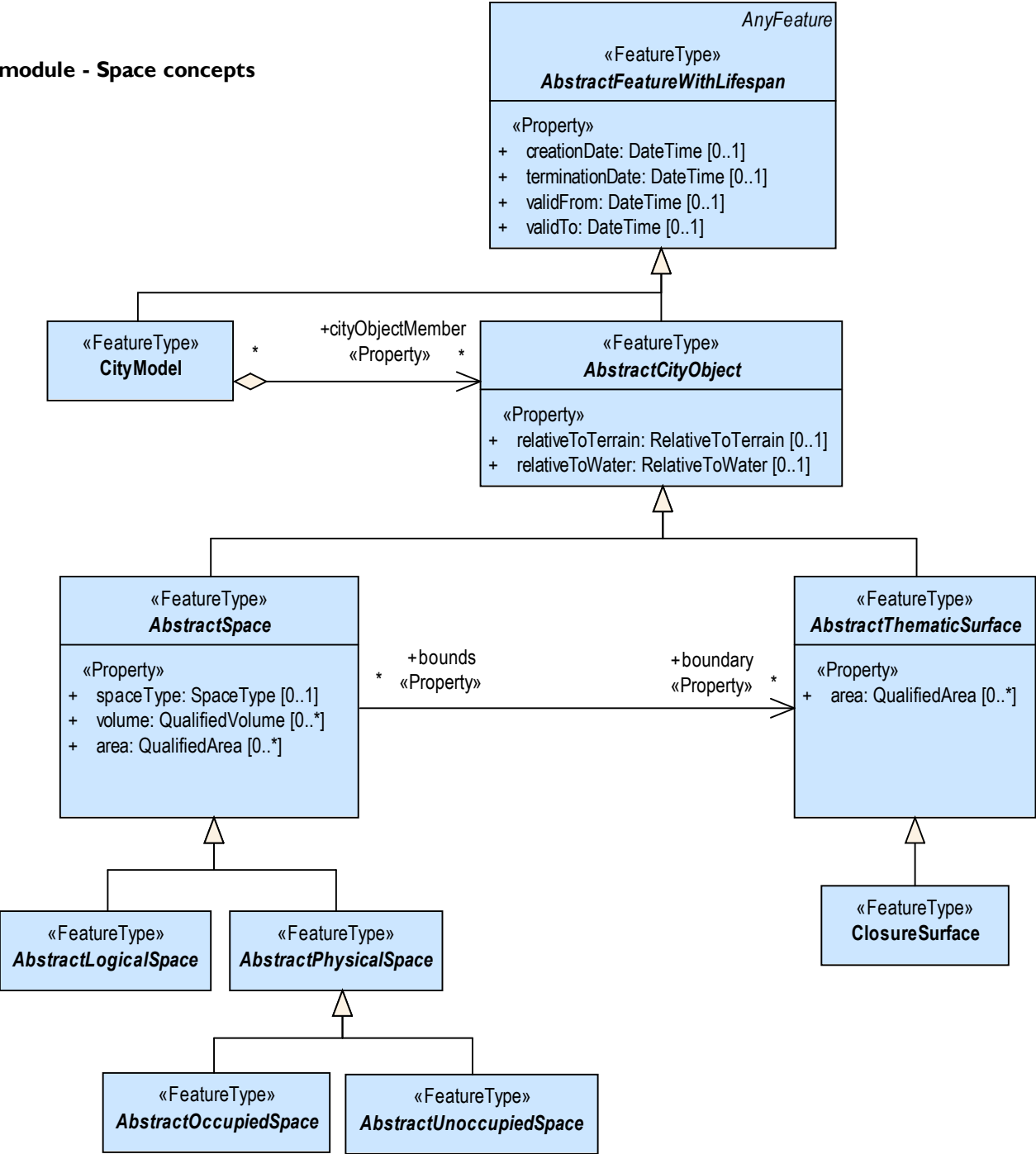


Usage of ISO and OGC standards in CityGML

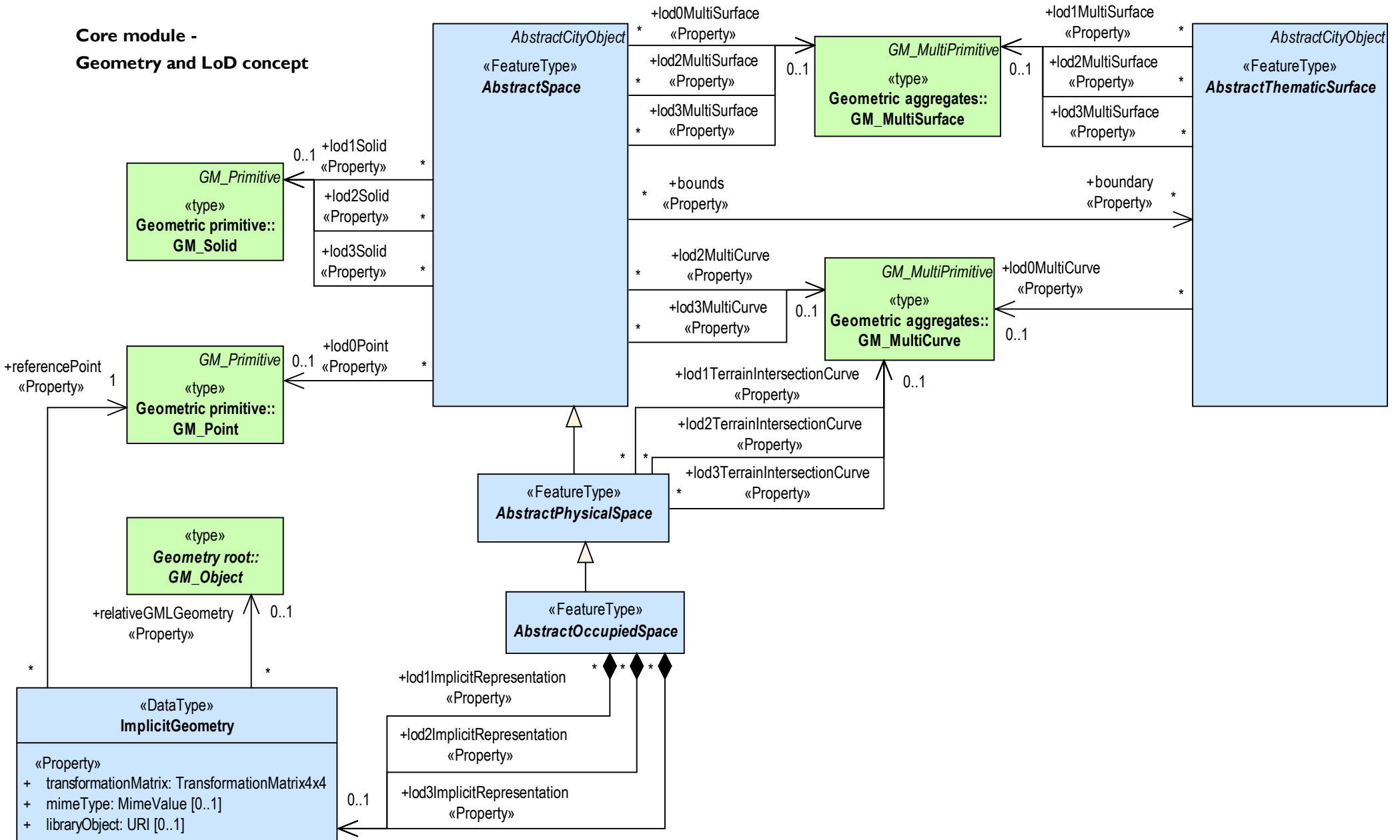




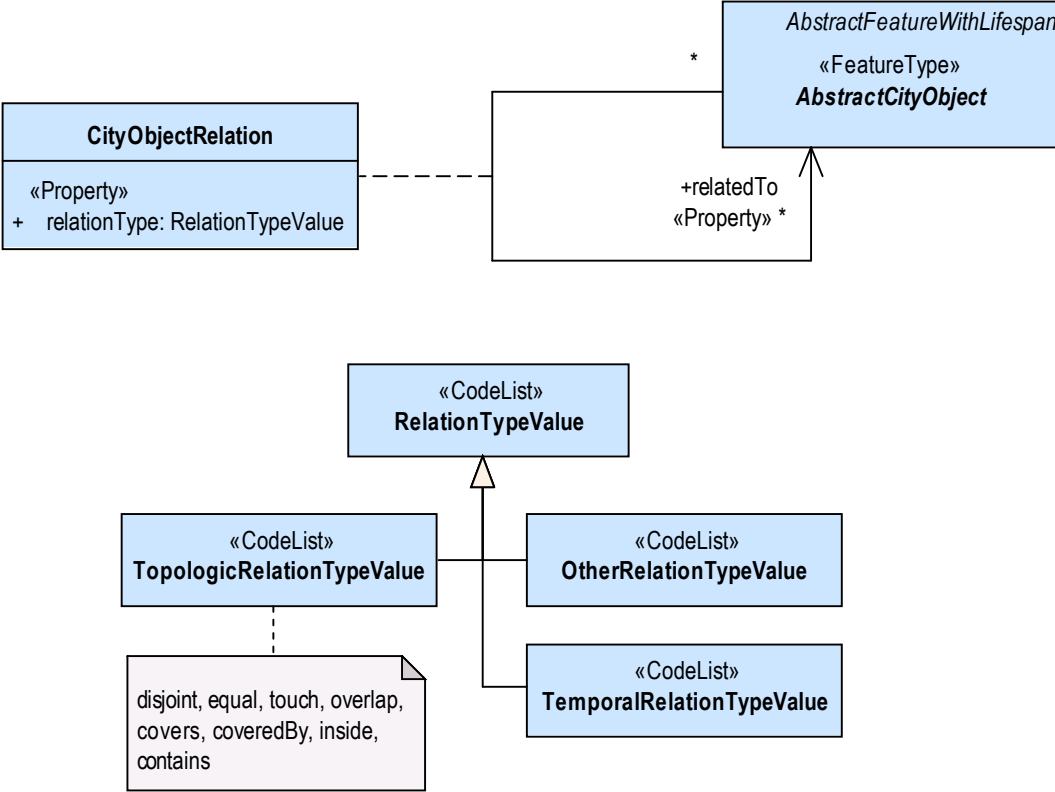
Core module - Space concepts



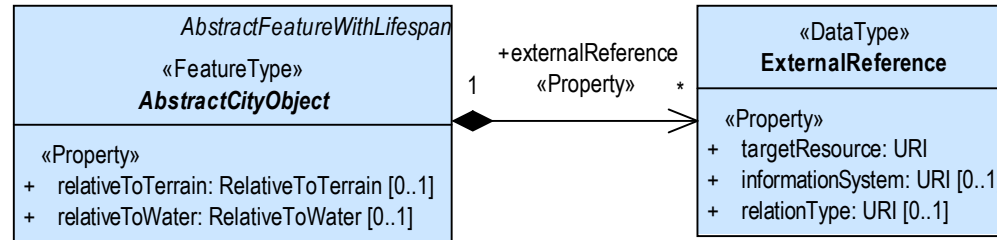
Core module - Geometry and LoD concept



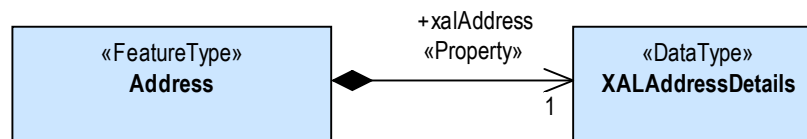
Core module - City object relations



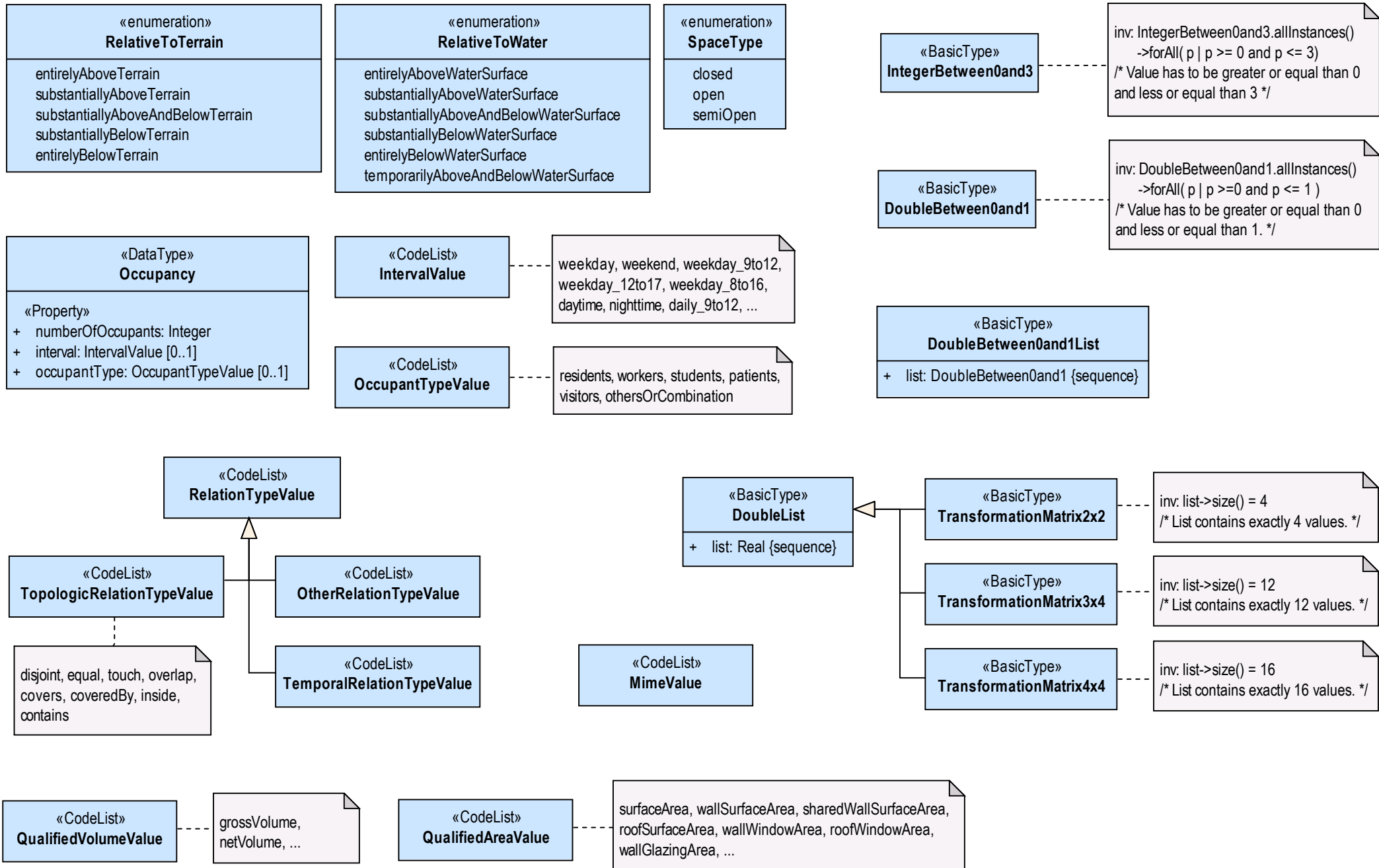
Core module - Miscellaneous

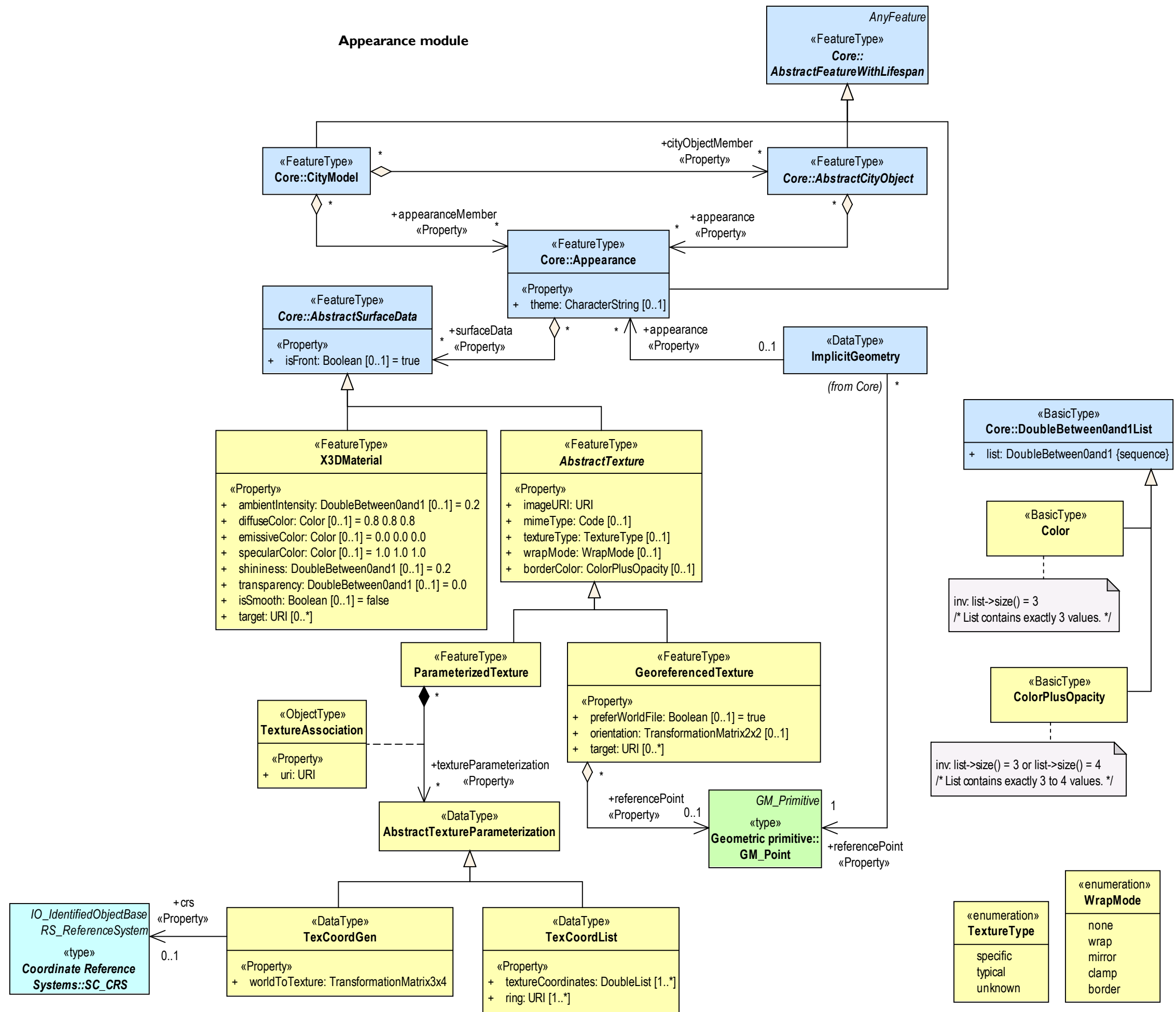


ExternalReference is now extended by an optional **relationType** which can link to some external definition of the type of relation (e.g. the *sameAs* relation from OWL). Hence, **ExternalReferences** can now be used to express relations similar to RDF.

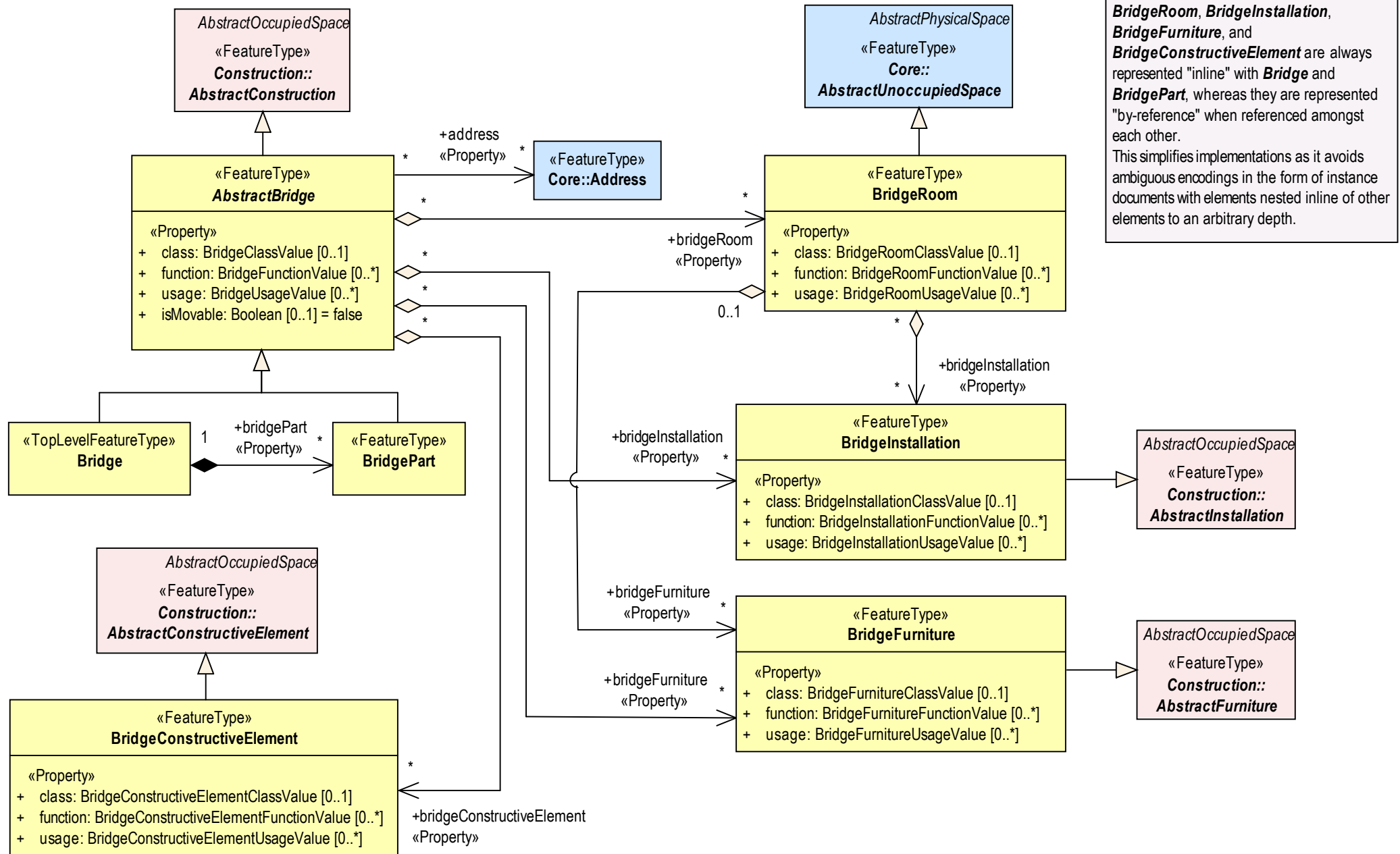


Core module - Basic Types, Enumerations, and Code lists

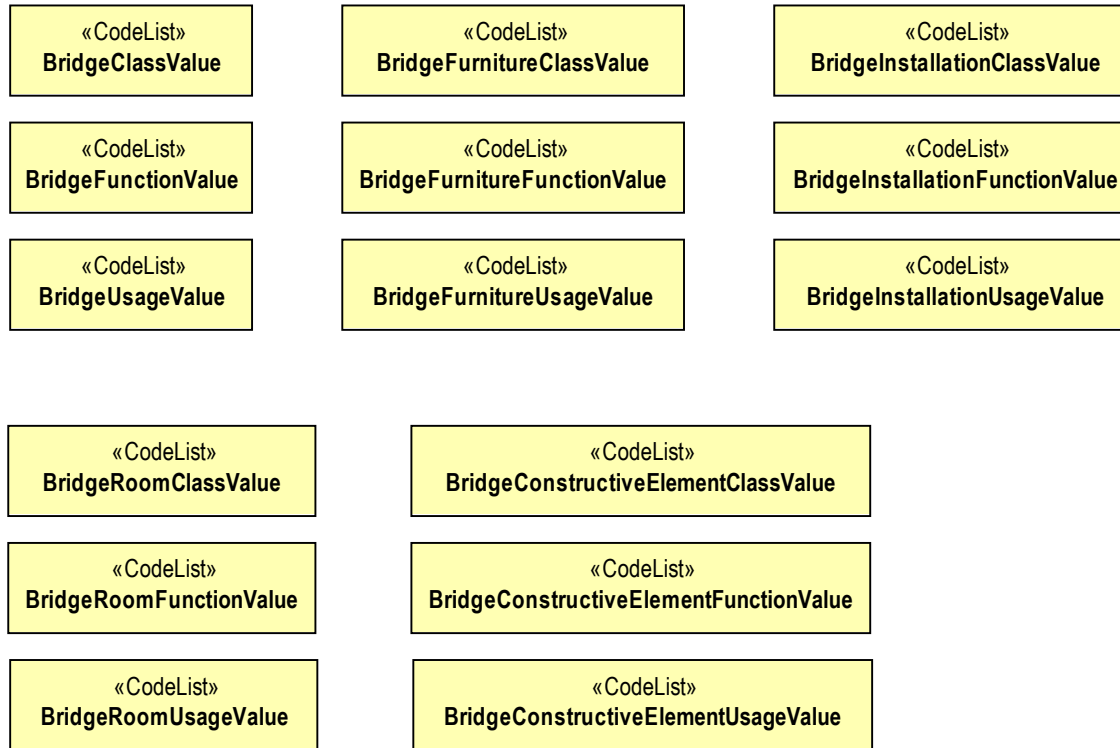


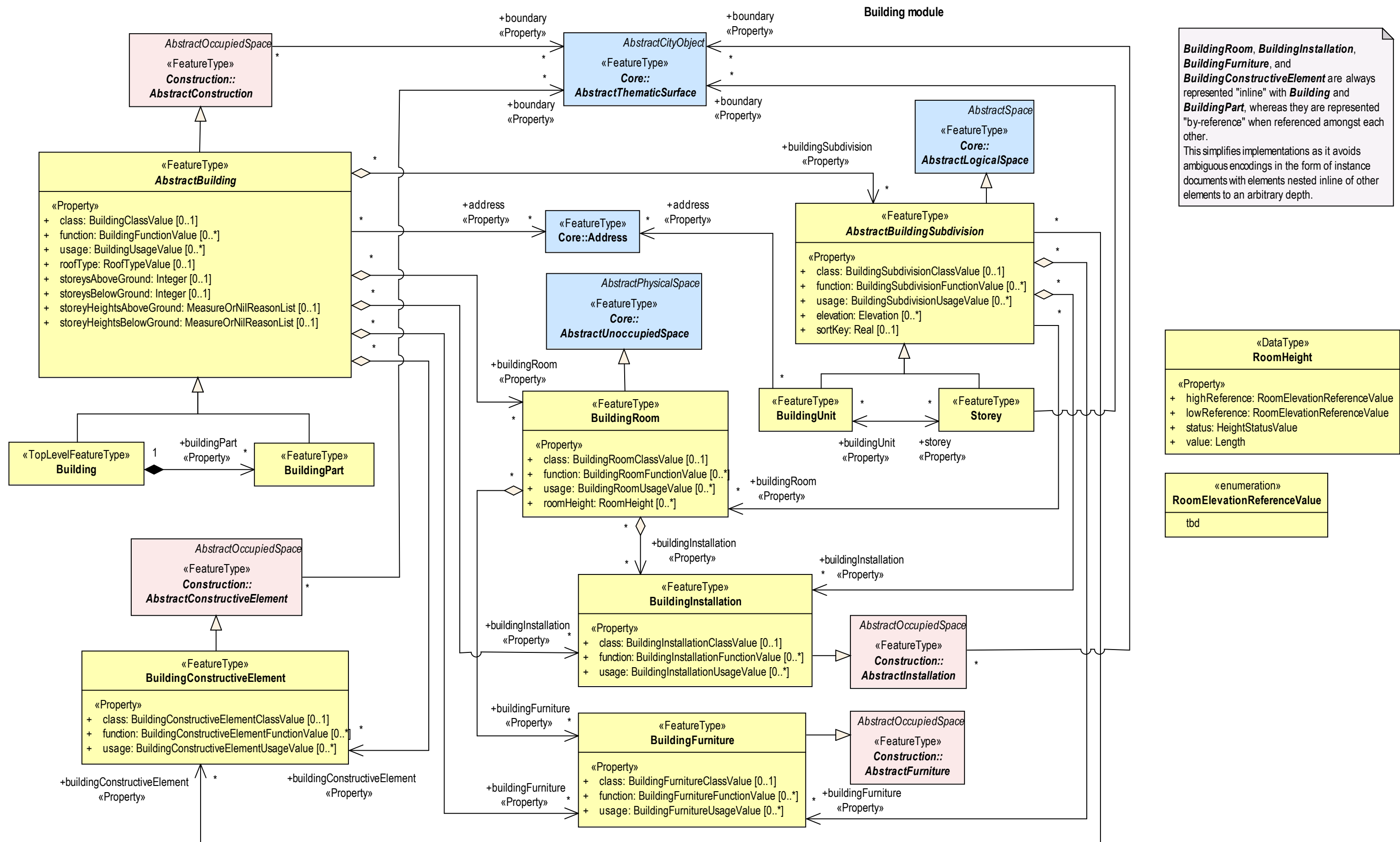


Bridge module



Bridge module - Code lists

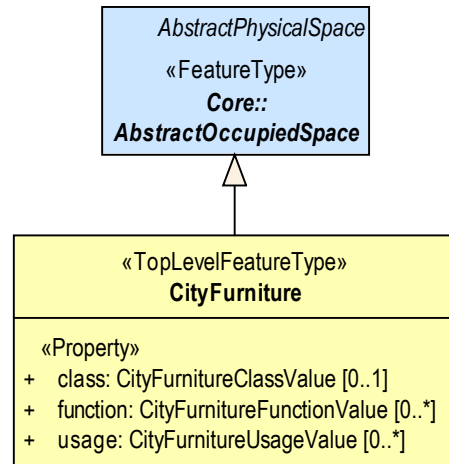




Building module - Code lists

«CodeList» BuildingClassValue	«CodeList» BuildingInstallationClassValue	«CodeList» BuildingFurnitureClassValue	«CodeList» RoofTypeValue
«CodeList» BuildingFunctionValue	«CodeList» BuildingInstallationFunctionValue	«CodeList» BuildingFurnitureFunctionValue	
«CodeList» BuildingUsageValue	«CodeList» BuildingInstallationUsageValue	«CodeList» BuildingFurnitureUsageValue	
«CodeList» BuildingRoomClassValue	«CodeList» BuildingConstructiveElementClassValue	«CodeList» BuildingSubdivisionClassValue	
«CodeList» BuildingRoomFunctionValue	«CodeList» BuildingConstructiveElementFunctionValue	«CodeList» BuildingSubdivisionFunctionValue	
«CodeList» BuildingRoomUsageValue	«CodeList» BuildingConstructiveElementUsageValue	«CodeList» BuildingSubdivisionUsageValue	

CityFurniture module



CityFurniture module - Code lists

«CodeList»

CityFurnitureClassValue

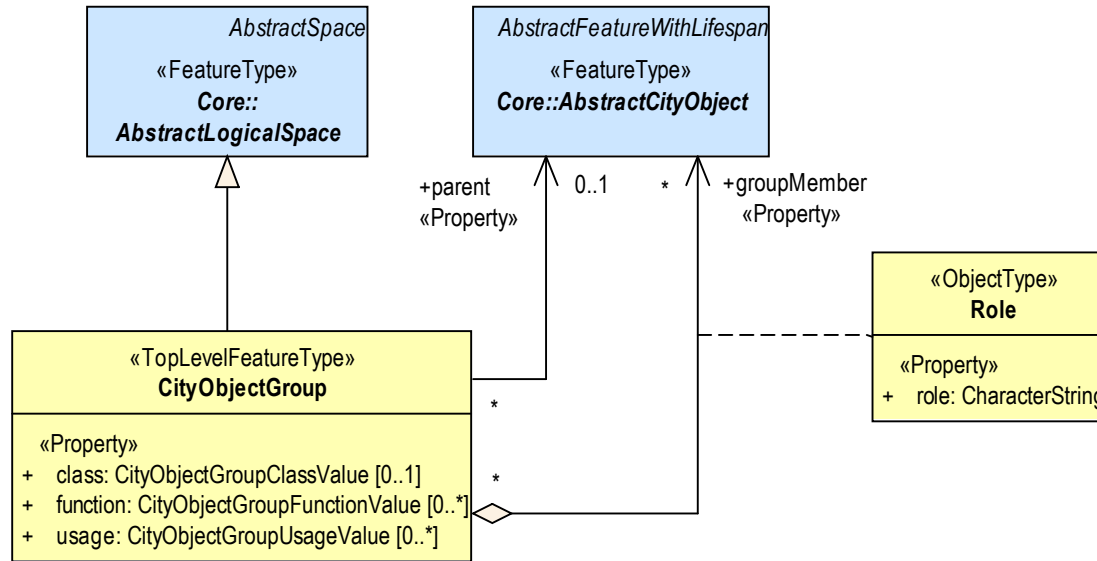
«CodeList»

CityFurnitureFunctionValue

«CodeList»

CityFurnitureUsageValue

CityObjectGroup module



CityObjectGroup module - Code lists

«CodeList»

CityObjectGroupClassValue

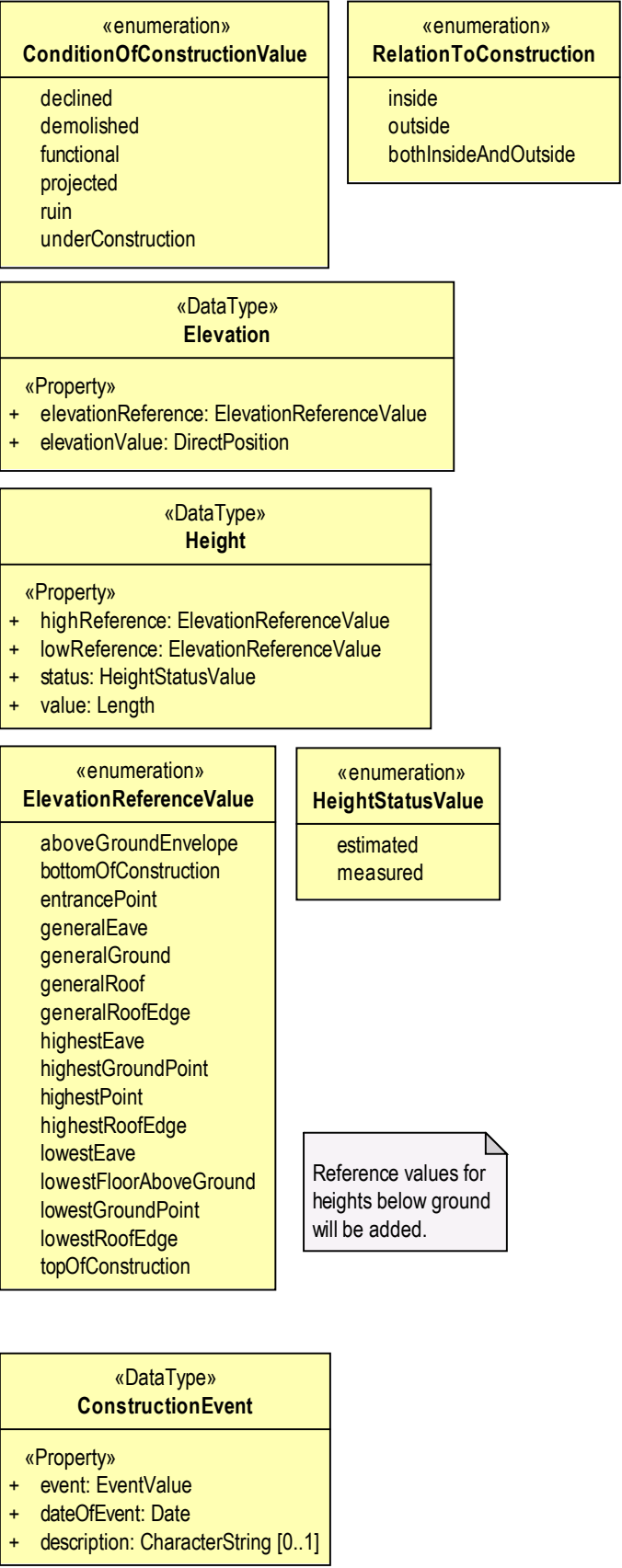
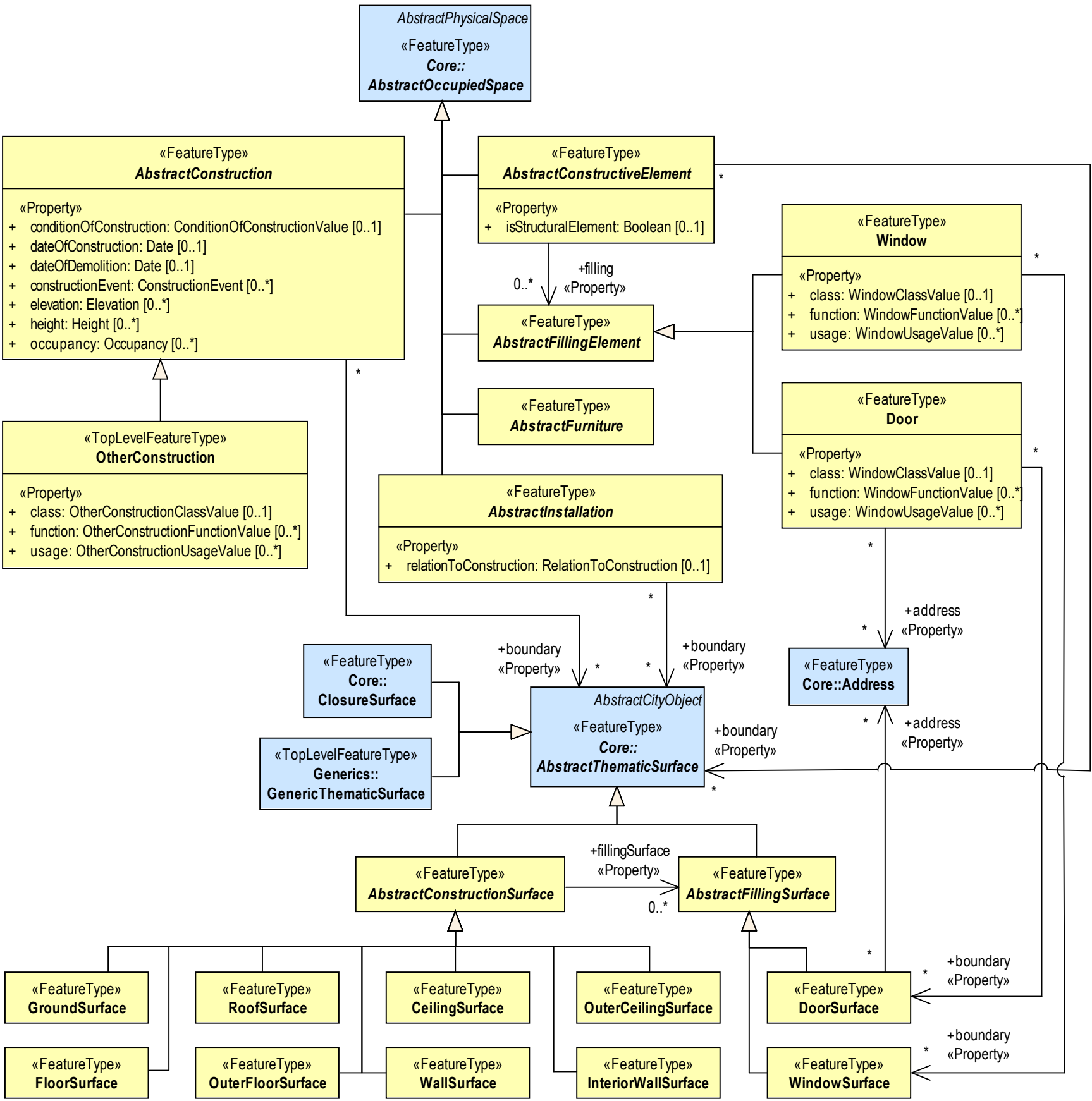
«CodeList»

CityObjectGroupFunctionValue

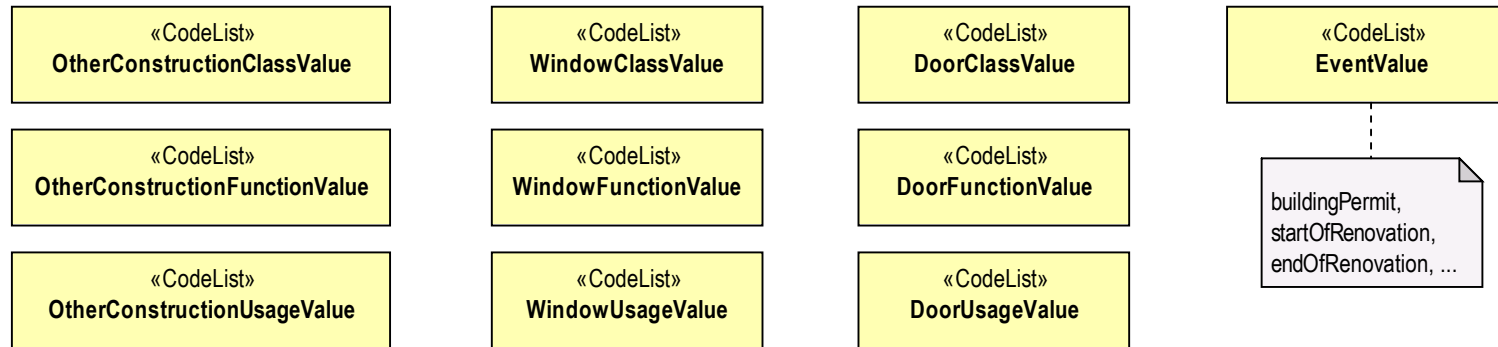
«CodeList»

CityObjectGroupUsageValue

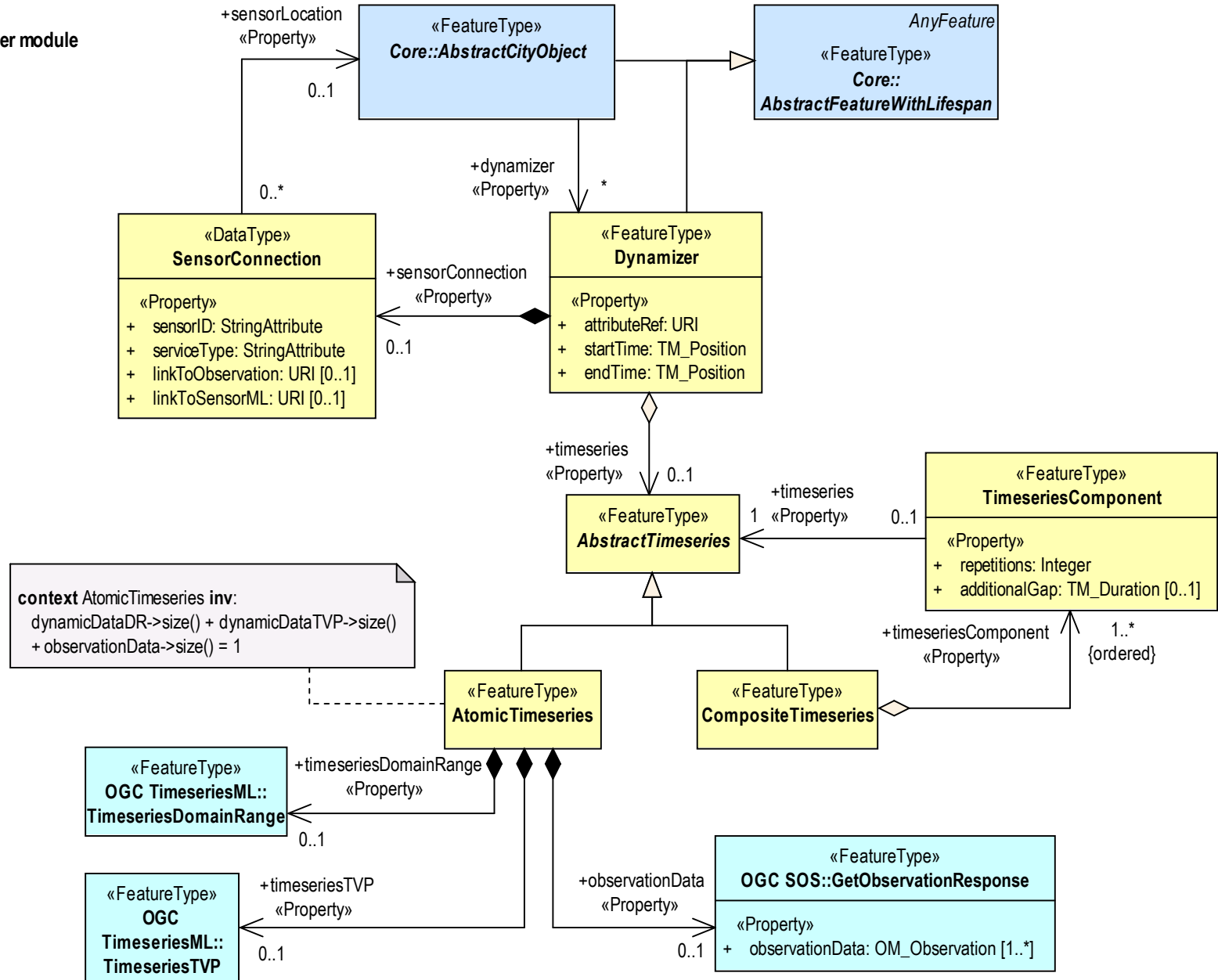
Construction module

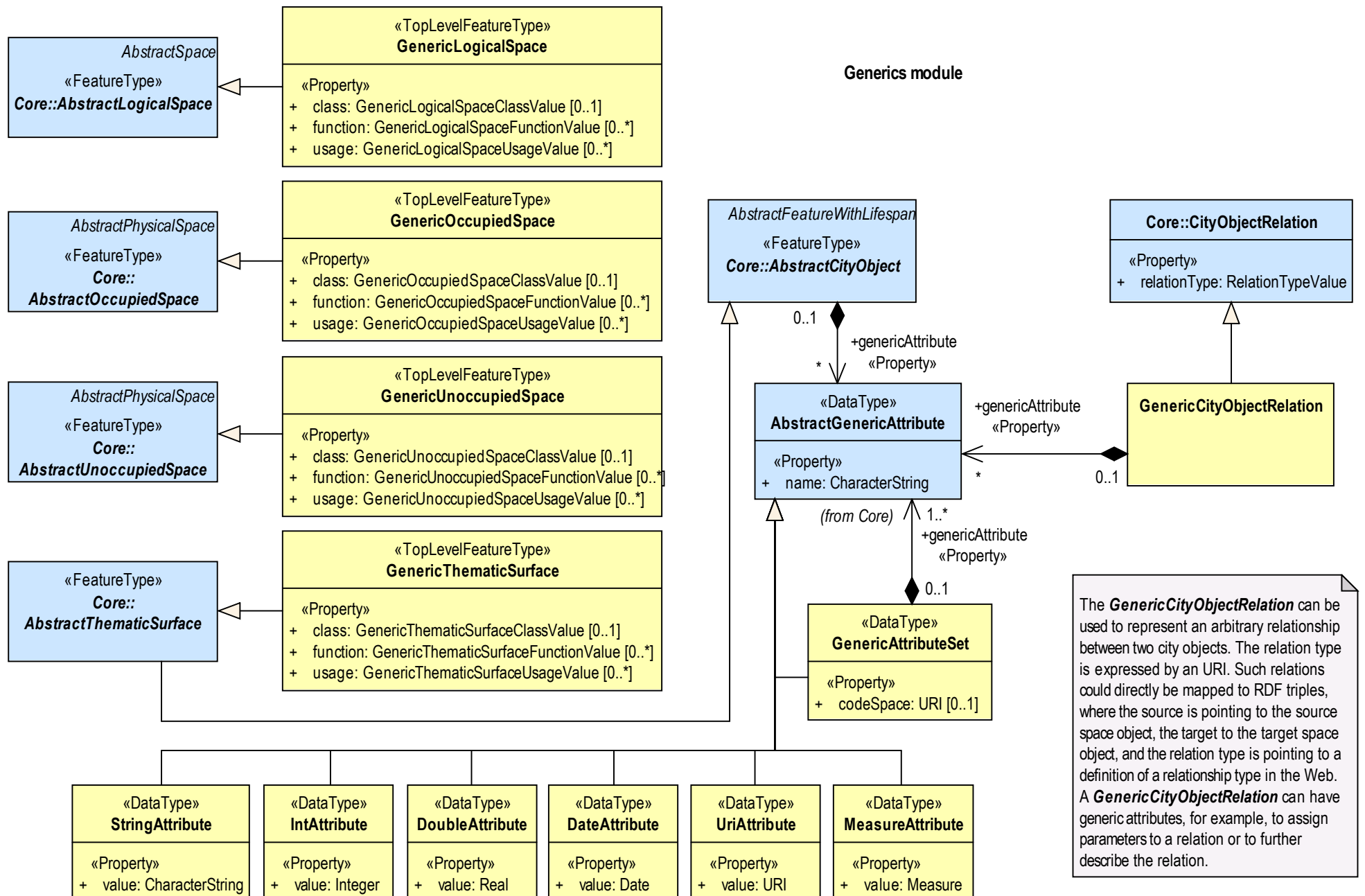


Construction module - Code lists



Dynamizer module





Generics module - Code lists

«CodeList»
GenericLogicalSpaceClassValue

«CodeList»
GenericOccupiedSpaceClassValue

«CodeList»
GenericUnoccupiedSpaceClassValue

«CodeList»
GenericThematicSurfaceClassValue

«CodeList»
GenericLogicalSpaceFunctionValue

«CodeList»
GenericOccupiedSpaceFunctionValue

«CodeList»
GenericUnoccupiedSpaceFunctionValue

«CodeList»
GenericThematicSurfaceFunctionValue

«CodeList»
GenericLogicalSpaceUsageValue

«CodeList»
GenericOccupiedSpaceUsageValue

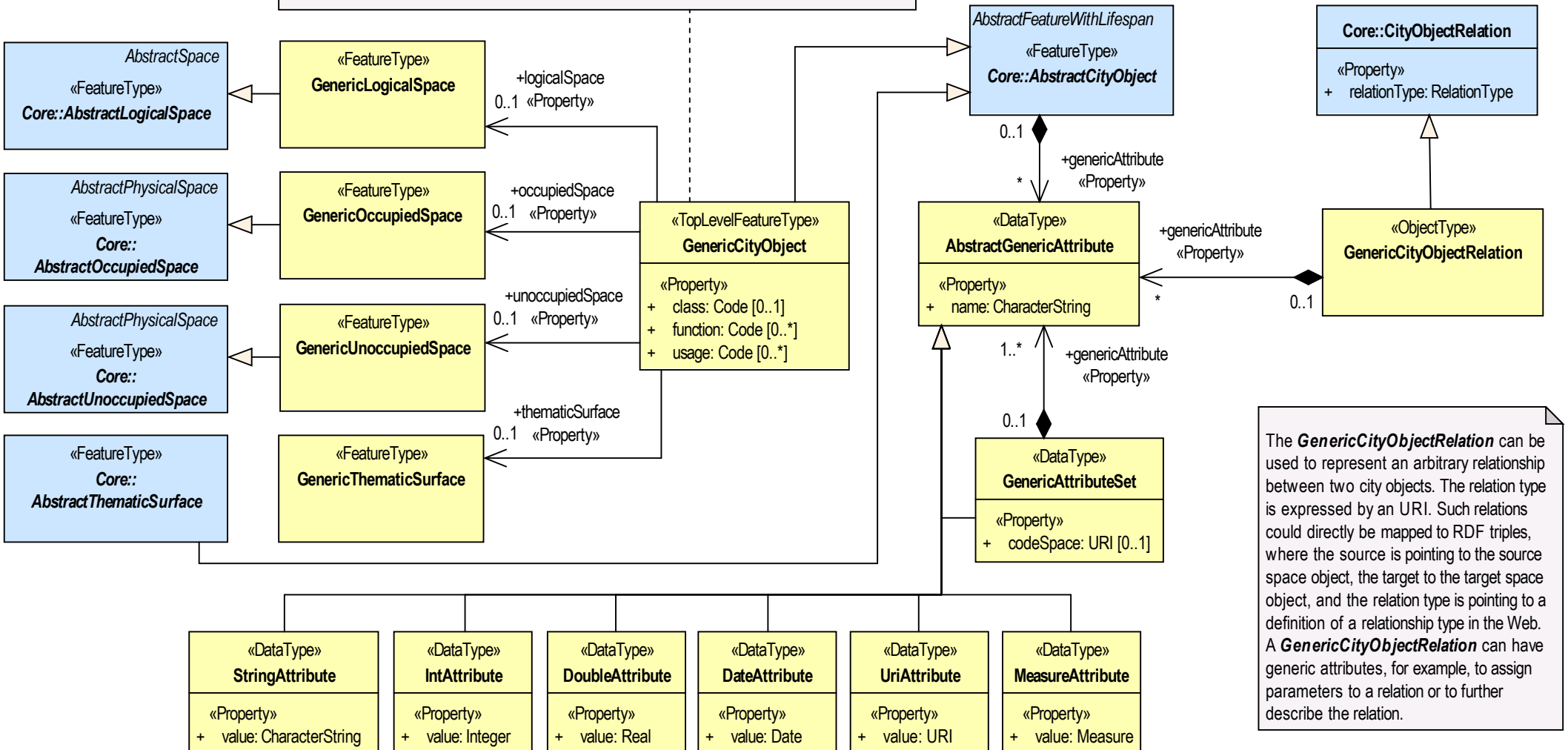
«CodeList»
GenericUnoccupiedSpaceUsageValue

«CodeList»
GenericThematicSurfaceUsageValue

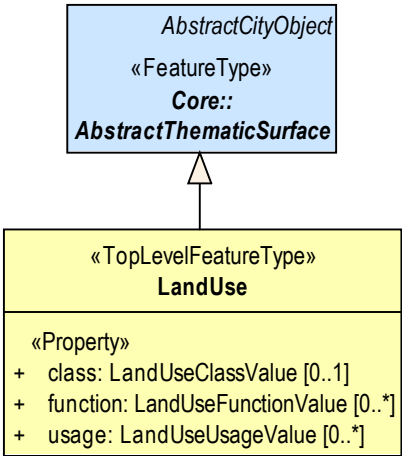
Generics module - Alternative I

context GenericCityObject inv:
 logicalSpace->size() + occupiedSpace->size()
 + unoccupiedSpace->size() + thematicSurface->size() = 1

An instance of **GenericCityObject** can only be associated either with one instance of one of the Space classes or with one instance of **GenericThematicSurface**.
 If several city objects are to be modelled at the same time, CityObjectGroup should be used.



LandUse module



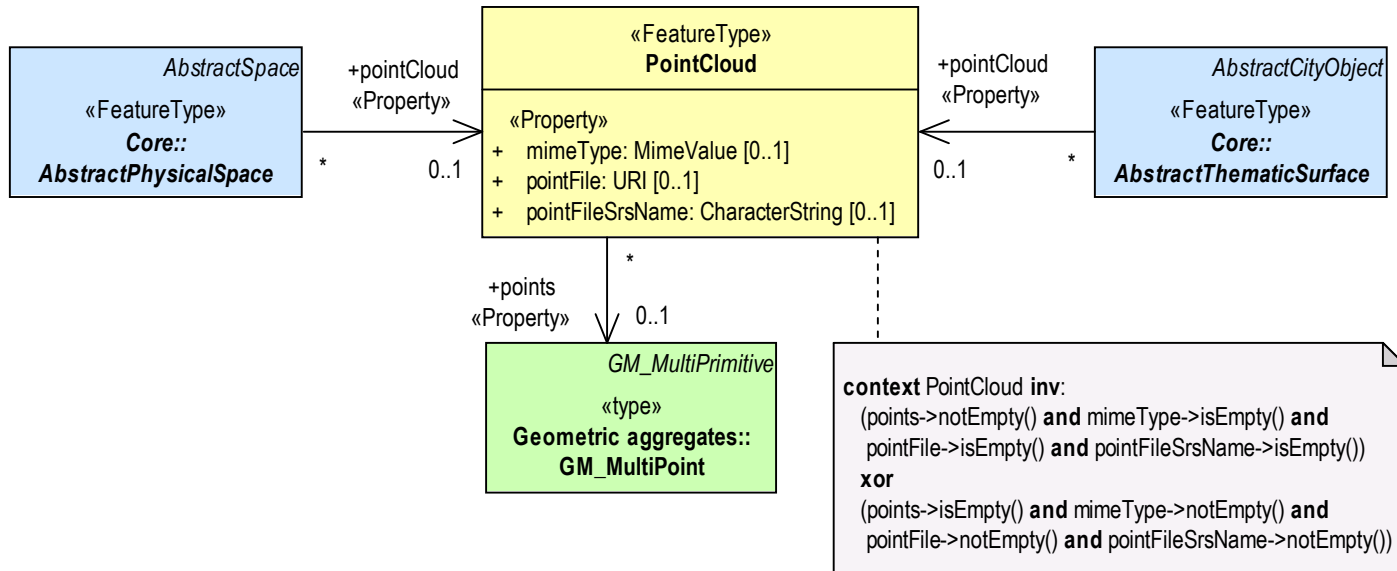
LandUse module - Code lists

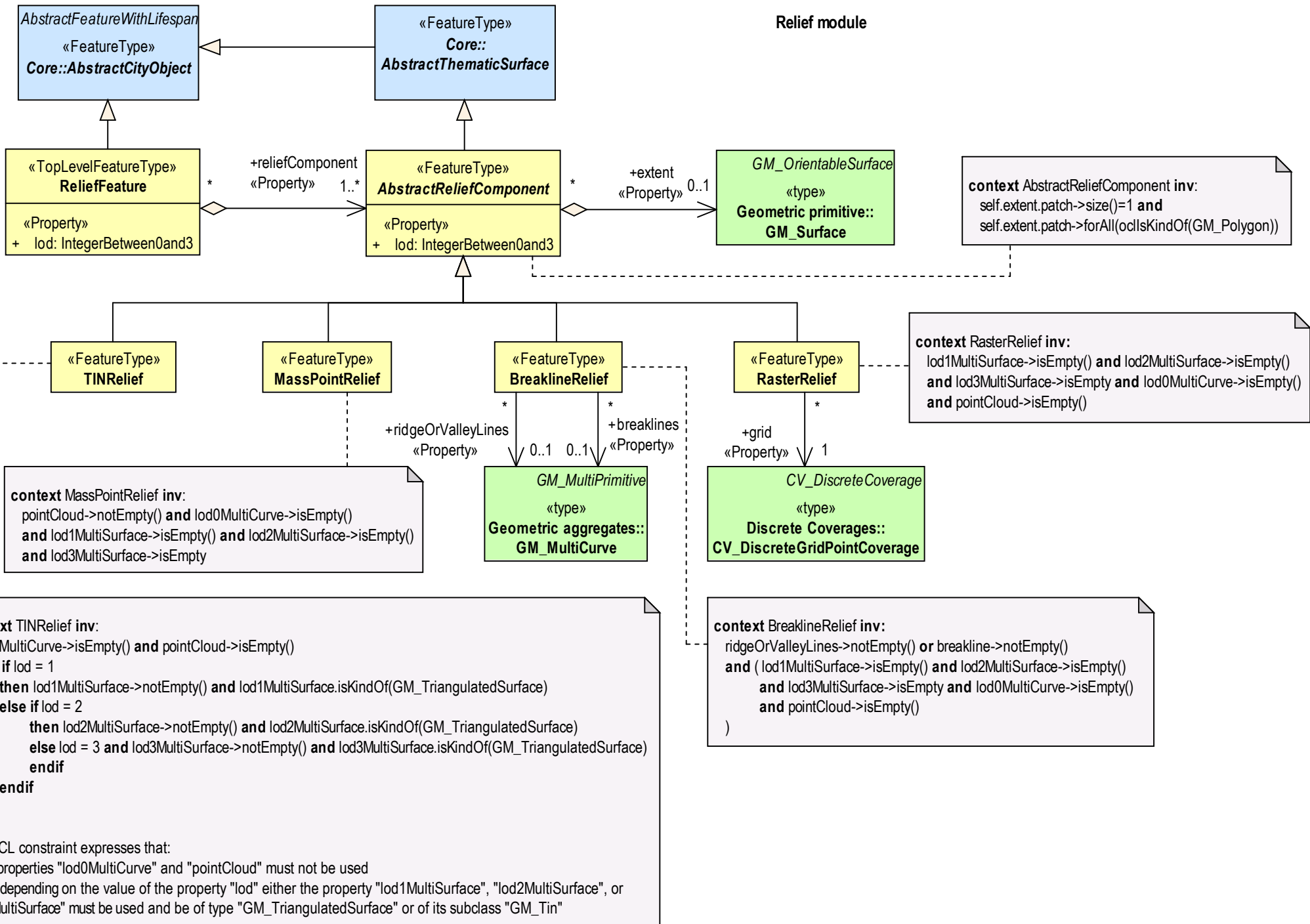
«CodeList»
LandUseClassValue

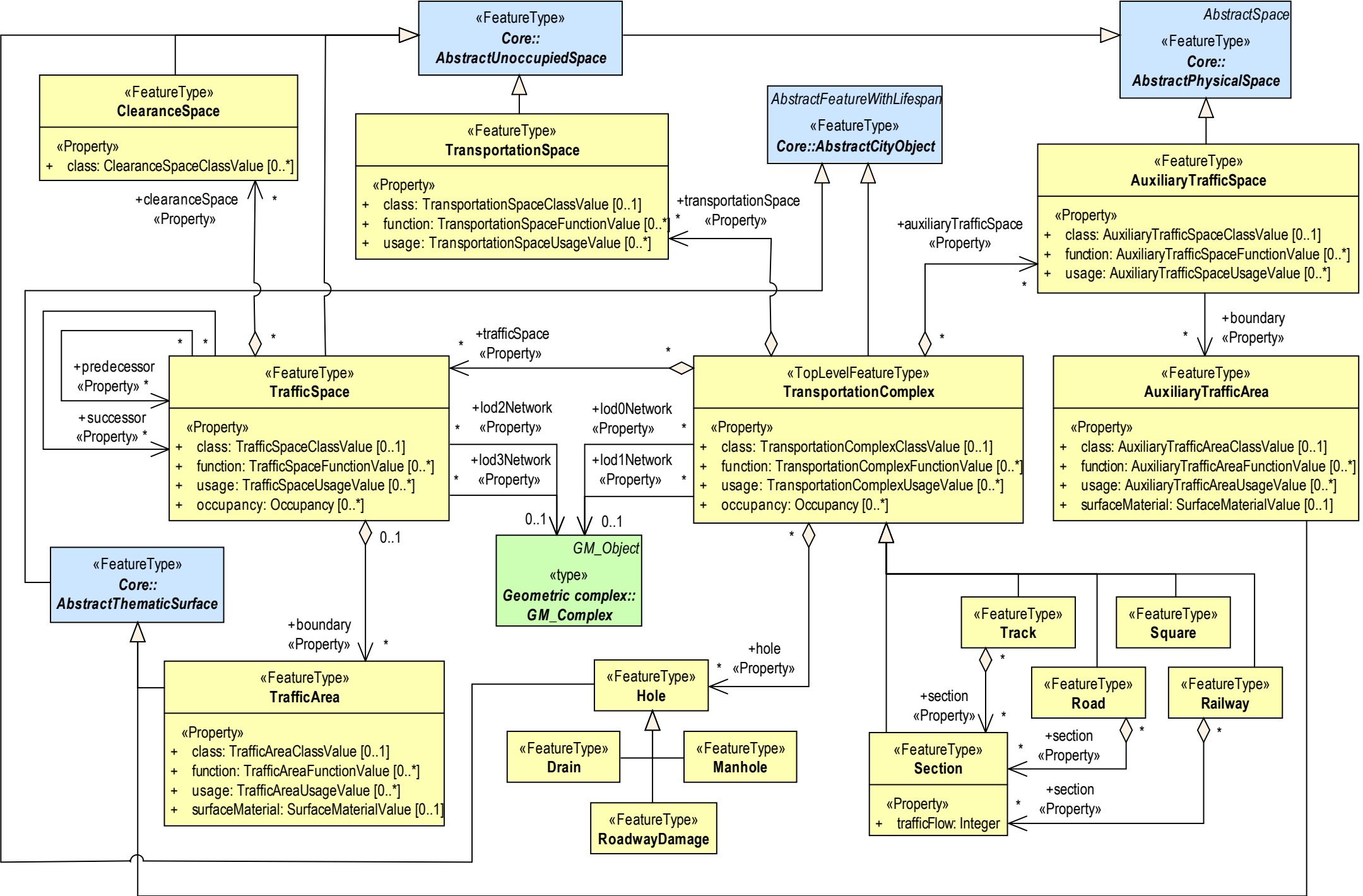
«CodeList»
LandUseFunctionValue

«CodeList»
LandUseUsageValue

PointCloud module



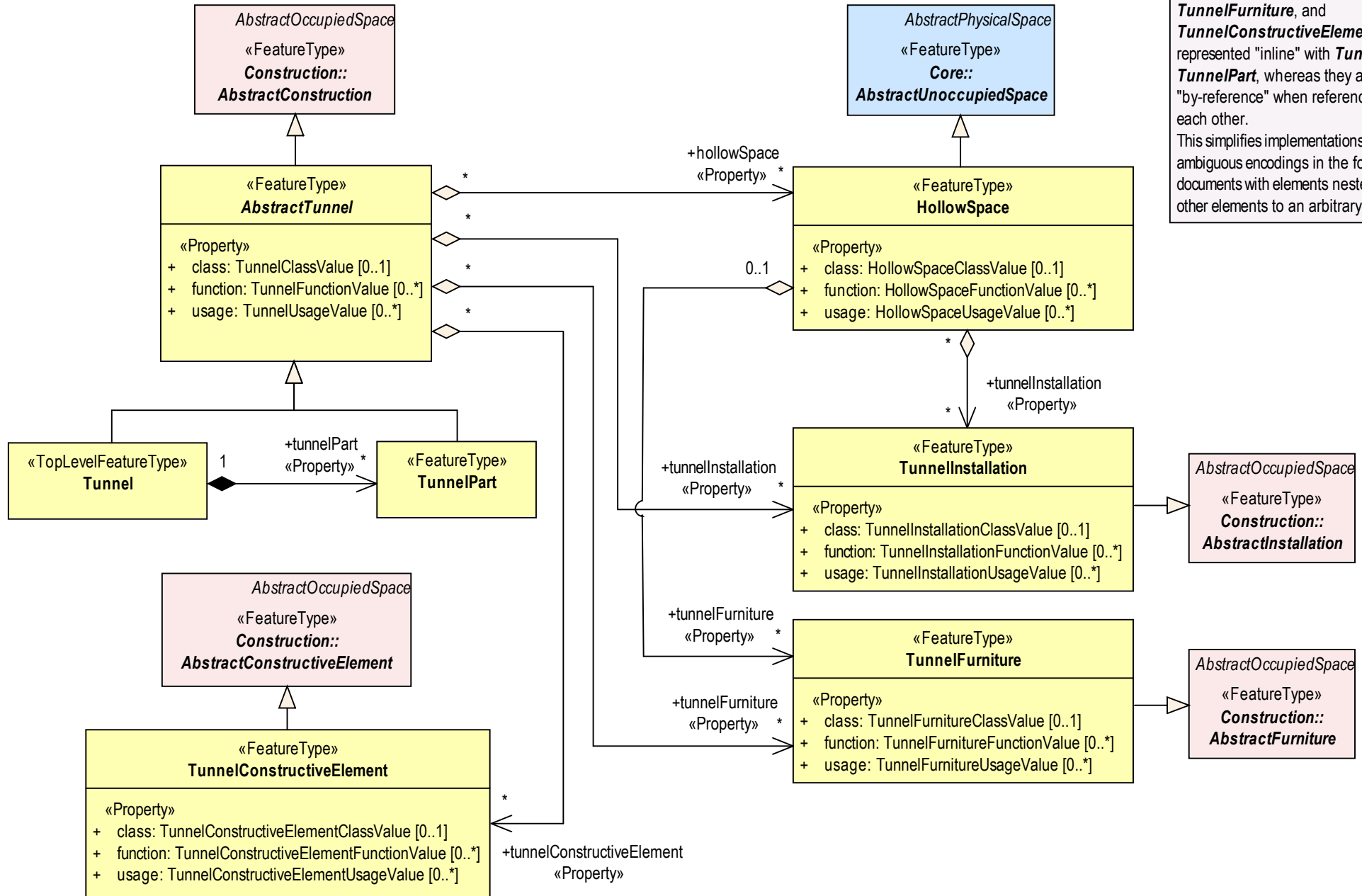




Transportation module - Code lists

«CodeList» TransportationComplexClassValue	«CodeList» TransportationSpaceClassValue	«CodeList» TrafficSpaceClassValue	«CodeList» TrafficAreaClassValue
«CodeList» TransportationComplexFunctionValue	«CodeList» TransportationSpaceFunctionValue	«CodeList» TrafficSpaceFunctionValue	«CodeList» TrafficAreaFunctionValue
«CodeList» TransportationComplexUsageValue	«CodeList» TransportationSpaceUsageValue	«CodeList» TrafficSpaceUsageValue	«CodeList» TrafficAreaUsageValue
«CodeList» AuxiliaryTrafficSpaceClassValue	«CodeList» AuxiliaryTrafficAreaClassValue	«CodeList» ClearanceSpaceClassValue	«CodeList» SurfaceMaterialValue
«CodeList» AuxiliaryTrafficSpaceFunctionValue	«CodeList» AuxiliaryTrafficAreaFunctionValue		
«CodeList» AuxiliaryTrafficSpaceUsageValue	«CodeList» AuxiliaryTrafficAreaUsageValue		

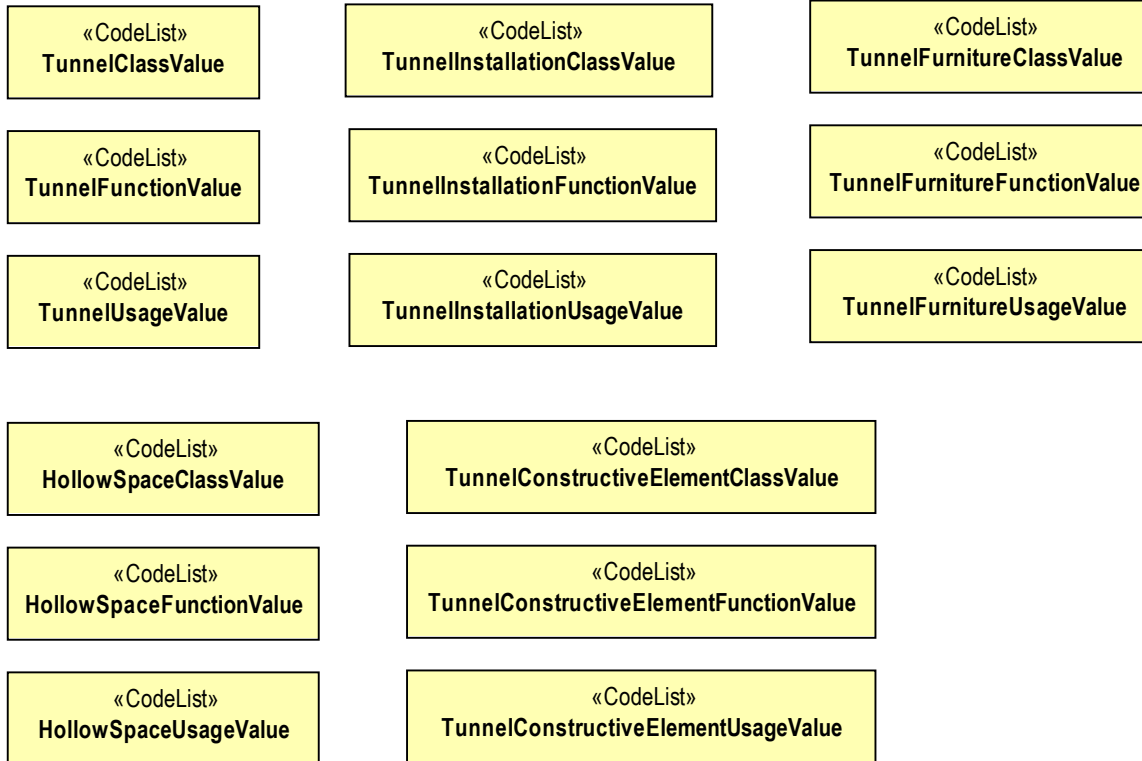
Tunnel module



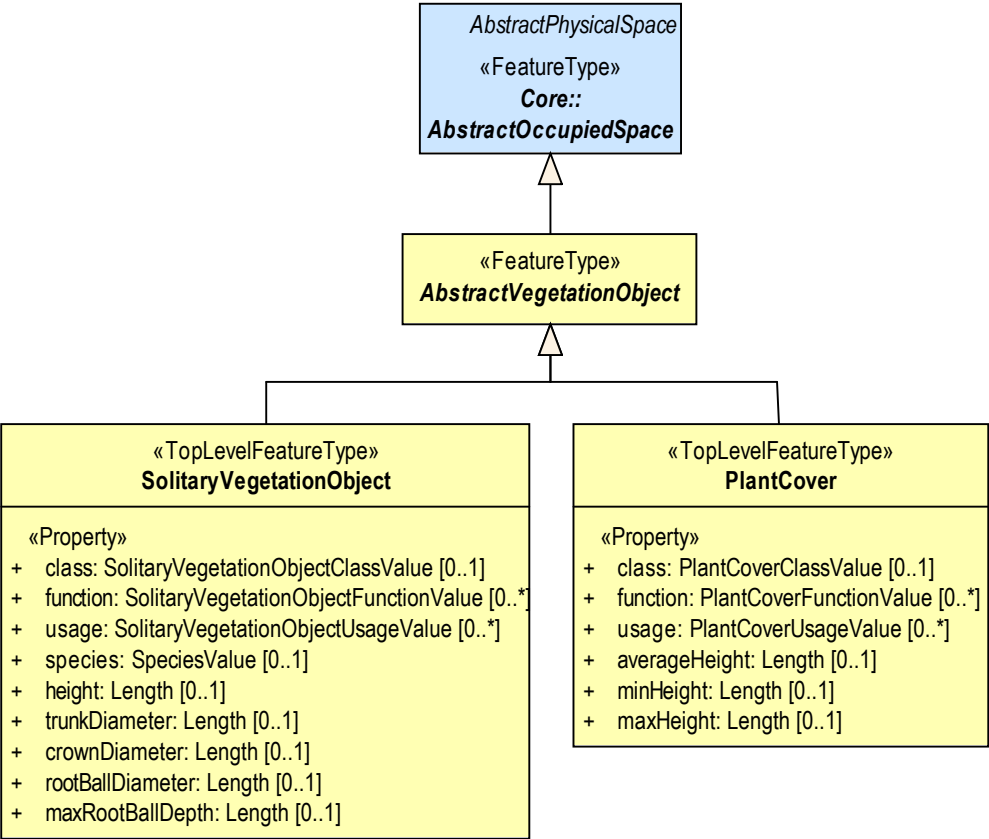
HollowSpace, **TunnelInstallation**, **TunnelFurniture**, and **TunnelConstructiveElement** are always represented "inline" with **Tunnel** and **TunnelPart**, whereas they are represented "by-reference" when referenced amongst each other.

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.

Tunnel module - Code lists



Vegetation module



Vegetation module - Code lists

«CodeList»
SolitaryVegetationObjectClassValue

«CodeList»
SolitaryVegetationObjectFunctionValue

«CodeList»
SolitaryVegetationObjectUsageValue

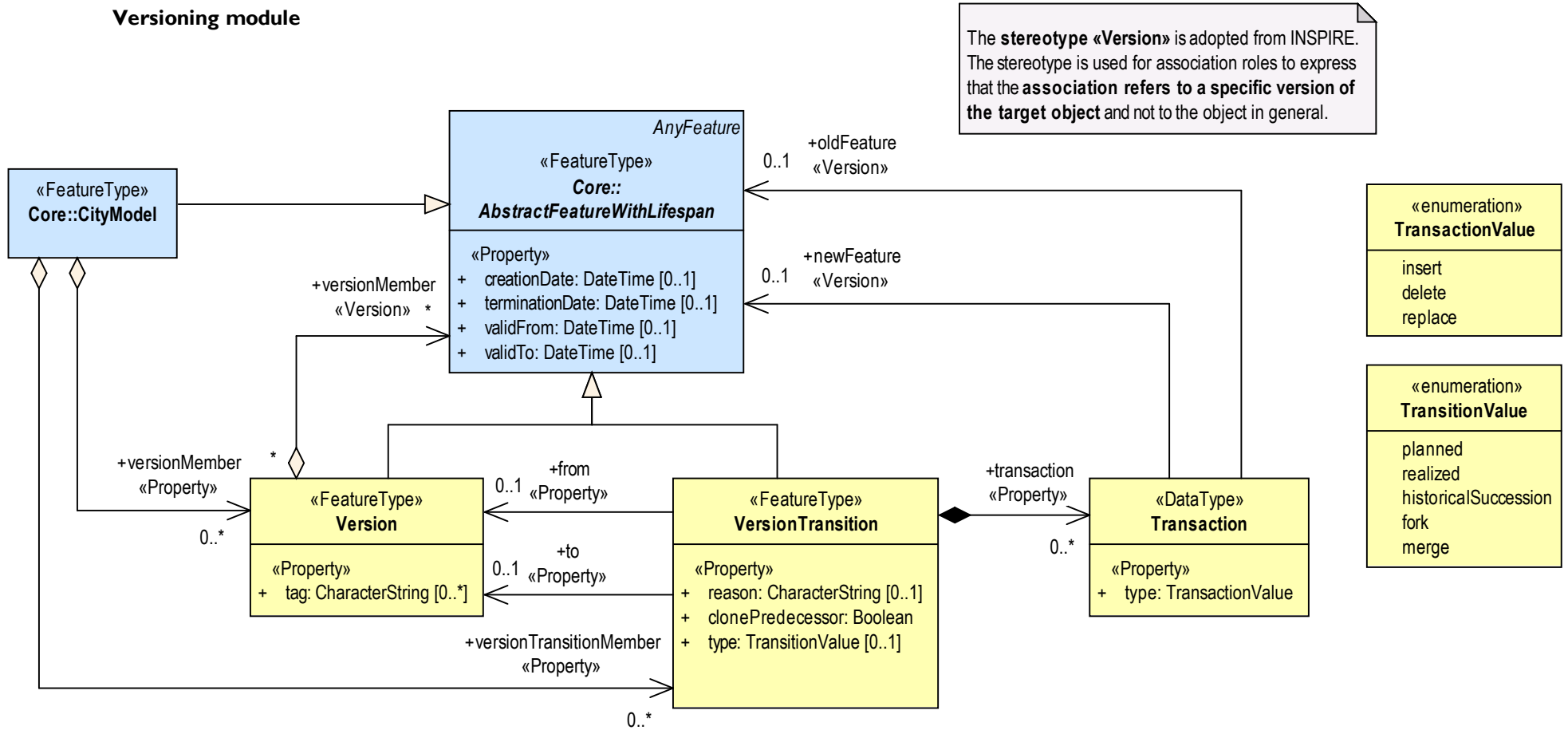
«CodeList»
SpeciesValue

«CodeList»
PlantCoverClassValue

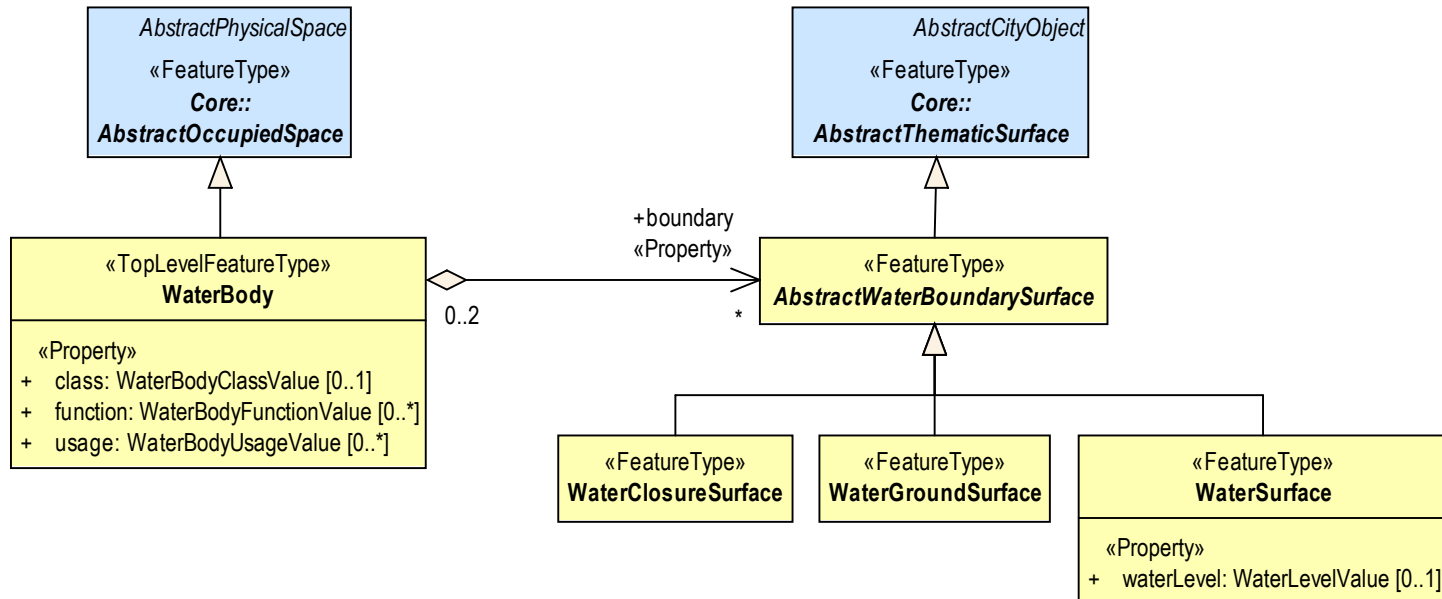
«CodeList»
PlantCoverFunctionValue

«CodeList»
PlantCoverUsageValue

Versioning module



WaterBody module



WaterBody module - Code lists

«CodeList»
WaterBodyClassValue

«CodeList»
WaterBodyFunctionValue

«CodeList»
WaterBodyUsageValue

«CodeList»
WaterLevelValue