These slides document the modifications applied to the CityGML 3.0 proposed consolidated draft based on the new github issue #62. **Construction module** AbstractPhysicalSpace «FeatureType» Core:: AbstractOccupiedSpace «FeatureType» «FeatureType» **AbstractConstruction AbstractConstructiveElement** «Property» «Property» conditionOfConstruction: ConditionOfConstructionValue [0..1] isStructuralElement: Boolean [0..1] dateOfConstruction: Date [0..1] dateOfDemolition: Date [0..1] +filling constructionEvent: ConstructionEvent [0..\*] 0..\* +window «Property» elevation: Elevation [0..\*] «Property» height: Height [0..\*] «FeatureType» «FeatureType» **AbstractFillingElement** occupancy: Occupancy [0..\*] Window {subsets bounds} +construction +door {subsets «Property» «FeatureType» «FeatureType» «Property» bounds} **AbstractFurniture** Door «TopLevelFeatureType» {subsets bounds} OtherConstruction «FeatureType» «Property» AbstractInstallation class: Code function: Code [0..\*] «Property» usage: Code [0..\*] relationToConstruction: RelationToConstruction [0..1] +address «Property» **AbstractCityObject** «FeatureType» «FeatureType» «FeatureType» Core::Address Core:: Core:: ClosureSurface AbstractThematicSurface +address +closureSurface 0..\* «Property» «Property» +constructionSurface +fillingSurface «Property» «Property» «FeatureType» «FeatureType» **AbstractConstructionSurface** AbstractFillingSurface {subsets boundary) +doorSurface «Property» «FeatureType» «FeatureType» «FeatureType» «FeatureType» «FeatureType» OuterCeilingSurface GroundSurface RoofSurface CeilingSurface **DoorSurface** (subsets boundary) +windowSurface «FeatureType» «FeatureType» «FeatureType» «FeatureType» «FeatureType» «Property» FloorSurface **OuterFloorSurface** WallSurface InteriorWallSurface WindowSurface {subsets boundary}

### «enumeration»

#### ConditionOfConstructionValue

declined demolished functional projected ruin underConstruction

# «enumeration» RelationToConstruction

inside outside bothInsideAndOutside

### «DataType» Elevation

### «Property»

- elevationReference: ElevationReferenceValue
- + elevationValue: DirectPosition

### «DataType» **Height**

#### «Property»

- highReference: ElevationReferenceValue
- lowReference: ElevationReferenceValue
- status: HeightStatusValue
- value: Length

## «enumeration»

### ElevationReferenceValue

aboveGroundEnvelope bottomOfConstruction entrancePoint generalEave generalGround generalRoof generalRoofEdge highestEave highestGroundPoint highestPoint highestRoofEdge lowestEave lowestFloorAboveGround lowestGroundPoint lowestRoofEdge

# «enumeration» HeightStatusValue

estimated measured

Reference values for heights below ground will be added.

# «DataType» ConstructionEvent

#### «Property»

event: EventValue

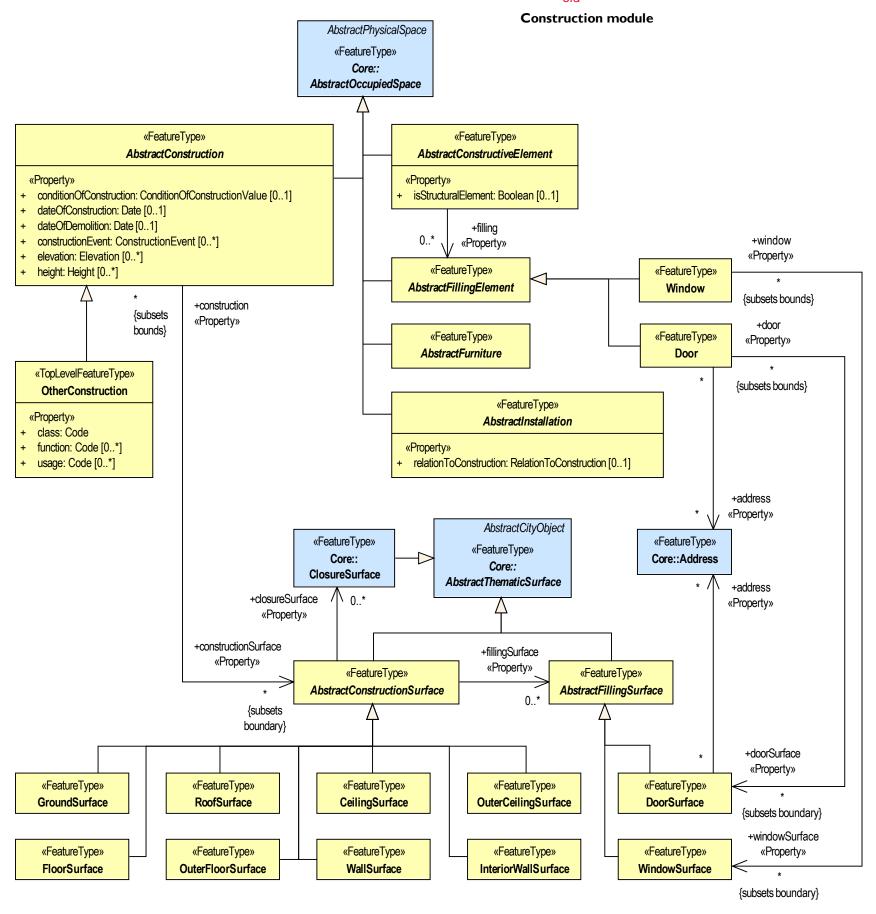
topOfConstruction

- dateOfEvent: Date
- + description: CharacterString [0..1]

### «CodeList» EventValue

- Lvontvalao
- buildingPermitstartOfRenovation
- endOfRenovation
- ...

old



### «enumeration»

#### ConditionOfConstructionValue

dedined demolished functional projected ruin underConstruction

# «enumeration» RelationToConstruction

inside outside bothInsideAndOutside

### «DataType» Elevation

#### «Property»

- elevationReference: ElevationReferenceValue
- + elevationValue: DirectPosition

### «DataType» **Height**

#### «Property»

- highReference: ElevationReferenceValue
- lowReference: ElevationReferenceValue
- status: HeightStatusValue
- value: Length

### «enumeration»

#### ElevationReferenceValue

aboveGroundEnvelope bottomOfConstruction entrancePoint generalEave generalGround generalRoof generalRoofEdge highestEave highestGroundPoint highestPoint highestRoofEdge IowestEave lowestFloorAboveGround **IowestGroundPoint** IowestRoofEdge topOfConstruction

# «enumeration» HeightStatusValue

estimated measured

Reference values for heights below ground will be added.

# «DataType» ConstructionEvent

#### «Property»

- event: EventValue
- dateOfEvent: Date
- + description: CharacterString [0..1]

# «CodeList» EventValue

- LVCIICVAIO
- buildingPermit startOfRenovation
- endOfRenovation
- ...

### **Core module - Basic Types and Enumerations**

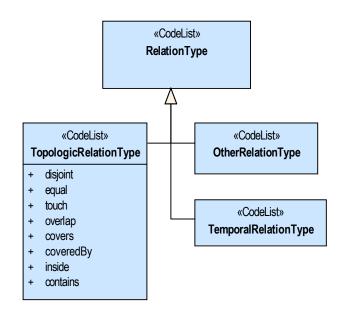
## «enumeration» RelativeToTerrain

entirelyAboveTerrain substantiallyAboveTerrain substantiallyAboveAndBelowTerrain substantiallyBelowTerrain entirelyBelowTerrain

#### «enumeration»

#### RelativeToWater

entirelyAboveWaterSurface substantiallyAboveWaterSurface substantiallyAboveAndBelowWaterSurface substantiallyBelowWaterSurface entirelyBelowWaterSurface temporarilyAboveAndBelowWaterSurface



inv: IntegerBetween0and3.allInstances()
->forAll( p | p >= 0 and p <= 3)
/\* Value has to be greater or equal than 0
and less or equal than 3 \*/

/\* List contains exactly 16 values. \*/

wBasicType»

DoubleBetween0and1.allInstances()
->forAll(p|p>=0 and p<= 1)

/\* Value has to be greater or equal than 0 and less or equal than 1. \*/

# «BasicType» **DoubleBetween0and1List**

«BasicType»

IntegerBetween0and3

+ list: DoubleBetween0and1 {sequence}

# «CodeList» QualifiedVolumeValue

- + grossVolume
- + netVolume
- т ..

## «CodeList»

#### QualifiedAreaValue

- + surfaceArea
- + wallSurfaceArea
- + sharedWallSurfaceArea
- + roofSurfaceArea
- + wallWindowArea
- + roofWindowArea
- + wallGlazingArea
- \_

# «dataType» Occupancy

#### «Property»

- + numberOfOccupants: Integer
- + interval: IntervalValue [0..1]
- occupantType: OccupantTypeValue [0..1]

### «CodeList»

### IntervalValue

- + weekday
- + weekend
- + weekday\_9to12
- weekday\_12to17
- + weekday\_8to16
- + daytime
- + nighttime
- + daily\_9to12
- + ...

## «Codel ist»

### OccupantTypeValue

- residents
- workers
- + students
- + students + patients
- + visitors
- othersOrCombination

/\* List contains exactly 4 values. \*/

### «enumeration» SpaceType closed «type» open basicTypes::doubleList semiOpen + list: Sequence<Real> «BasicType» «BasicType» «BasicType» TransformationMatrix2x2 TransformationMatrix3x4 TransformationMatrix4x4 inv: list->size() = 4 inv: list->size() = 12 inv: list->size() = 16

/\* List contains exactly 12 values. \*/

### **Core module - Basic Types and Enumerations**

## «enumeration» RelativeToTerrain

entirelyAboveTerrain substantiallyAboveTerrain substantiallyAboveAndBelowTerrain substantiallyBelowTerrain entirelyBelowTerrain

#### «enumeration»

#### RelativeToWater

entirelyAboveWaterSurface substantiallyAboveWaterSurface substantiallyAboveAndBelowWaterSurface substantiallyBelowWaterSurface entirelyBelowWaterSurface temporarilyAboveAndBelowWaterSurface

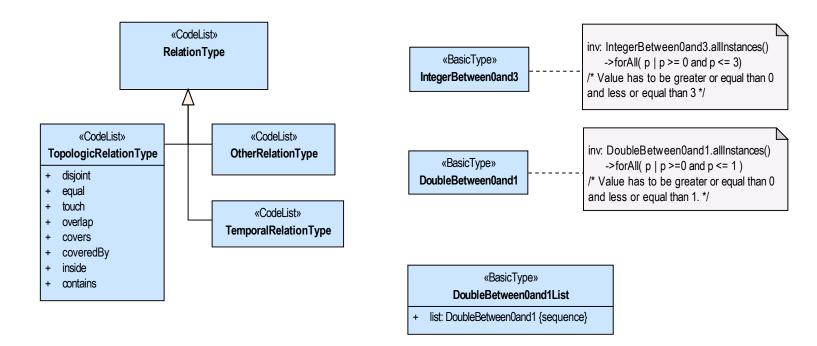
# «CodeList» QualifiedVolumeValue

- + grossVolume
- + netVolume
- ٠..

## «CodeList»

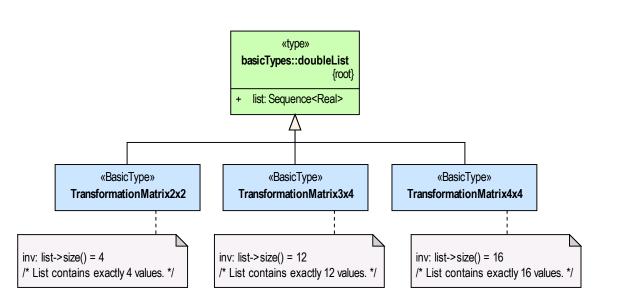
#### QualifiedAreaValue

- + surfaceArea
- + wallSurfaceArea
- + sharedWallSurfaceArea
- + roofSurfaceArea
- + wallWindowArea
- + roofWindowArea
- + wallGlazingArea
- ٠...



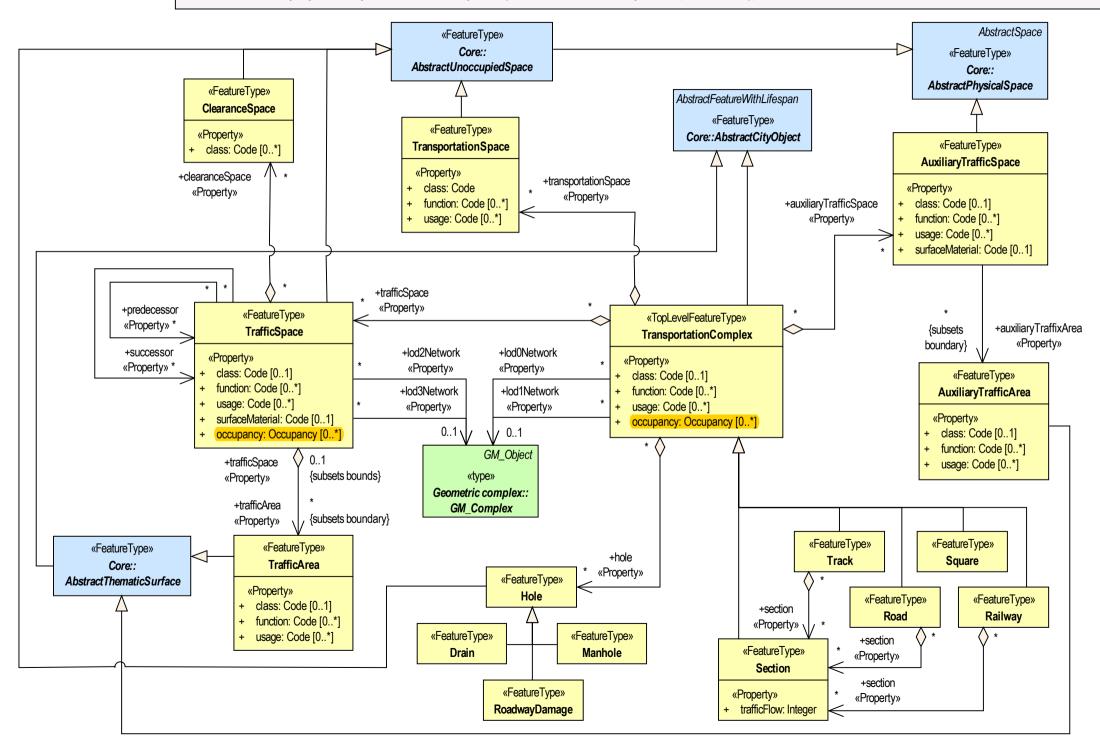
# «enumeration» SpaceType

closed open semiOpen



Transportation module

At the 3DGeoInfo conference at TU Delft early October 2018, a discussion between Anna Labetski and Thomas H. Kolbe took place regarding some refinements proposed by TU Delft in a conference paper. These refinements are going to be integrated. The current diagram only reflects the refined modelling of the TopLevelFeatureType concept.



Transportation module

At the 3DGeoInfo conference at TU Delft early October 2018, a discussion between Anna Labetski and Thomas H. Kolbe took place regarding some refinements proposed by TU Delft in a conference paper. These refinements are going to be integrated. The current diagram only reflects the refined modelling of the TopLevelFeatureType concept.

