Extended INSPIRE CP

on Cadastral Parcels

Michal Med

Extending INSPIRE June 19, 2017

1 Introduction

2 Design of extension

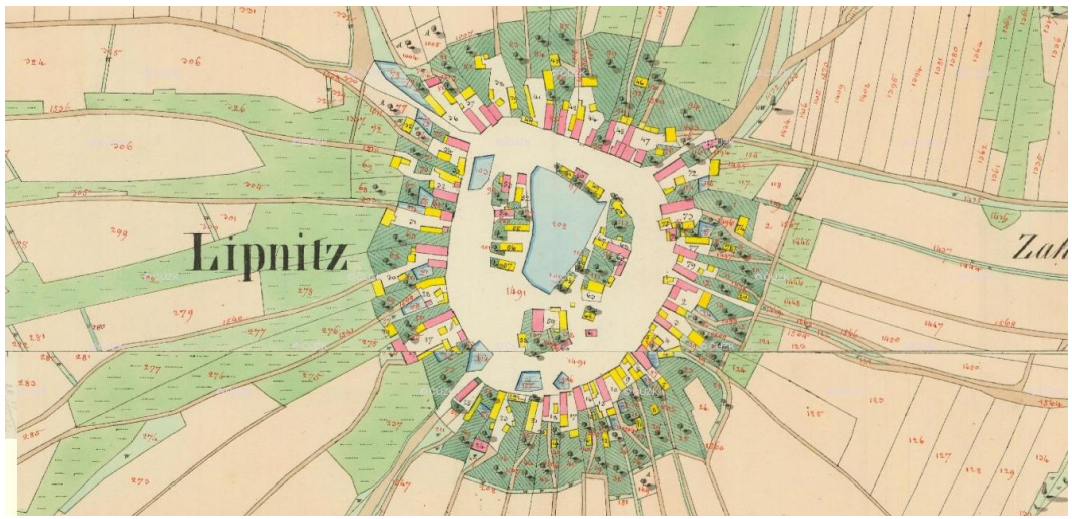
3 Implementation

4 Data transformation

Brief history of land registration in the Czech Republic I.

- Domesday Book – first evidence of real estates (13th century)
- Rustical Cadastre – evidence for purpose of taxation of subjects land (since 1653)
- Joseph II. Cadastre – first measurements of the area (1785)

Brief history of land registration in the Czech Republic II.

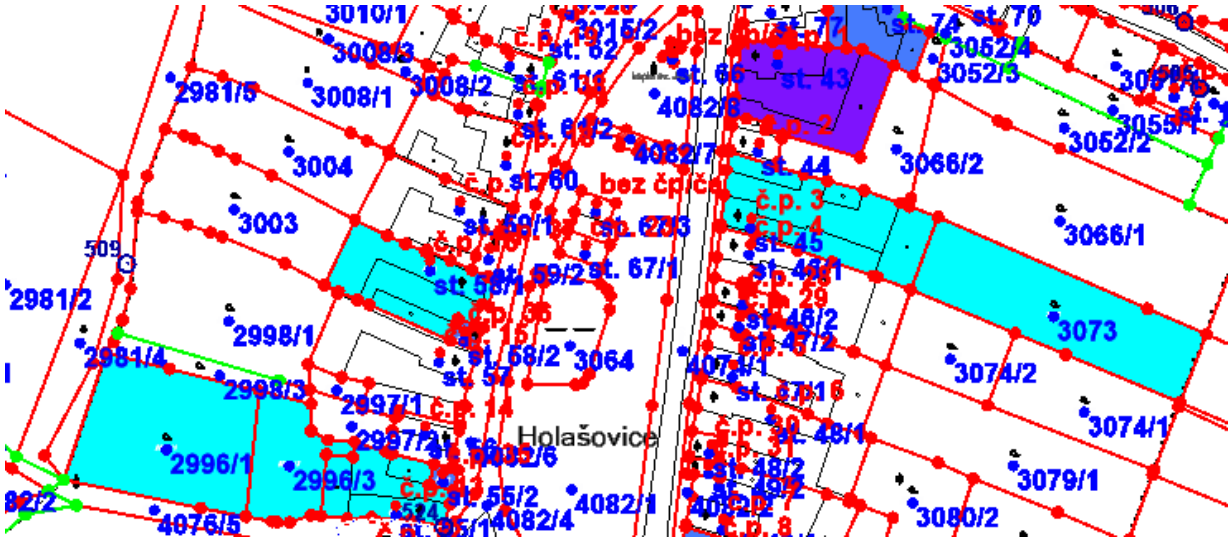


- **Stable Cadastre** – based on scentific methods of large scale map work (1817 declared / 1860 finished)
- Cadastre of Real Estates – purpose from taxation to jurisdiction and economy (1927)

Brief history of land registration in the Czech Republic III.

- 1951 – building not part of land (renewed in 2014), cancellation of intabulation (renewed in 1993), evindence of private properties canceled
- Land registry – evidence of land used for planning and management of the economy, especially agriculture (1964)

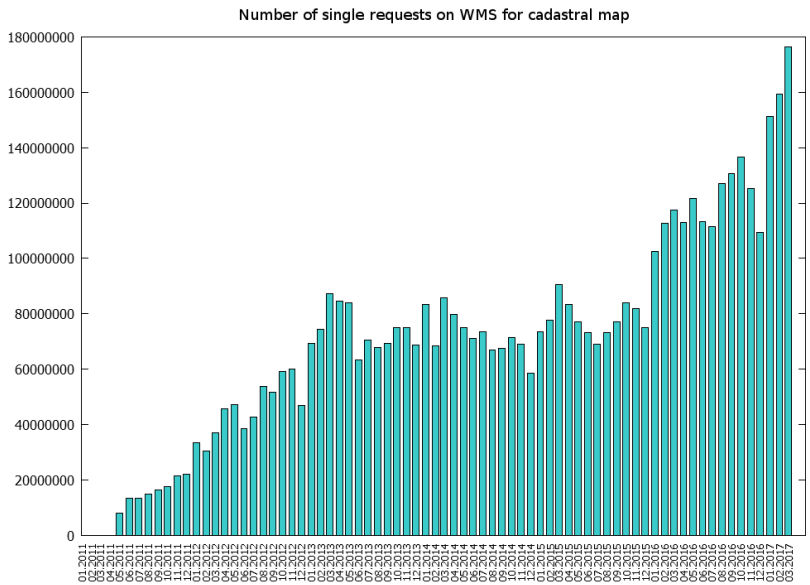
Modern Cadastre of Real Estates

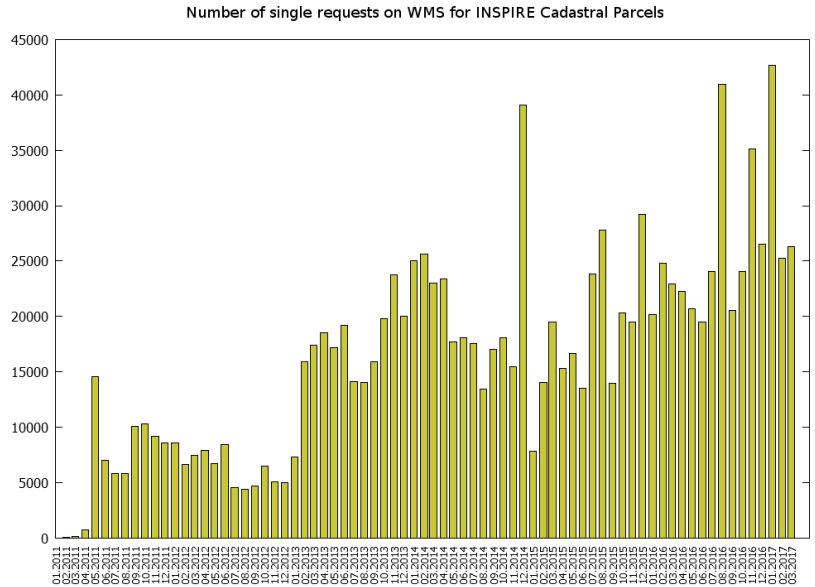


- New **Civil Code** and **Cadastral Law** – 1993
- **Digitalization** – 1998
- **INSPIRE CP** – unifiction of content and structure for sharing cadastral data accross EU (implemented 2012)

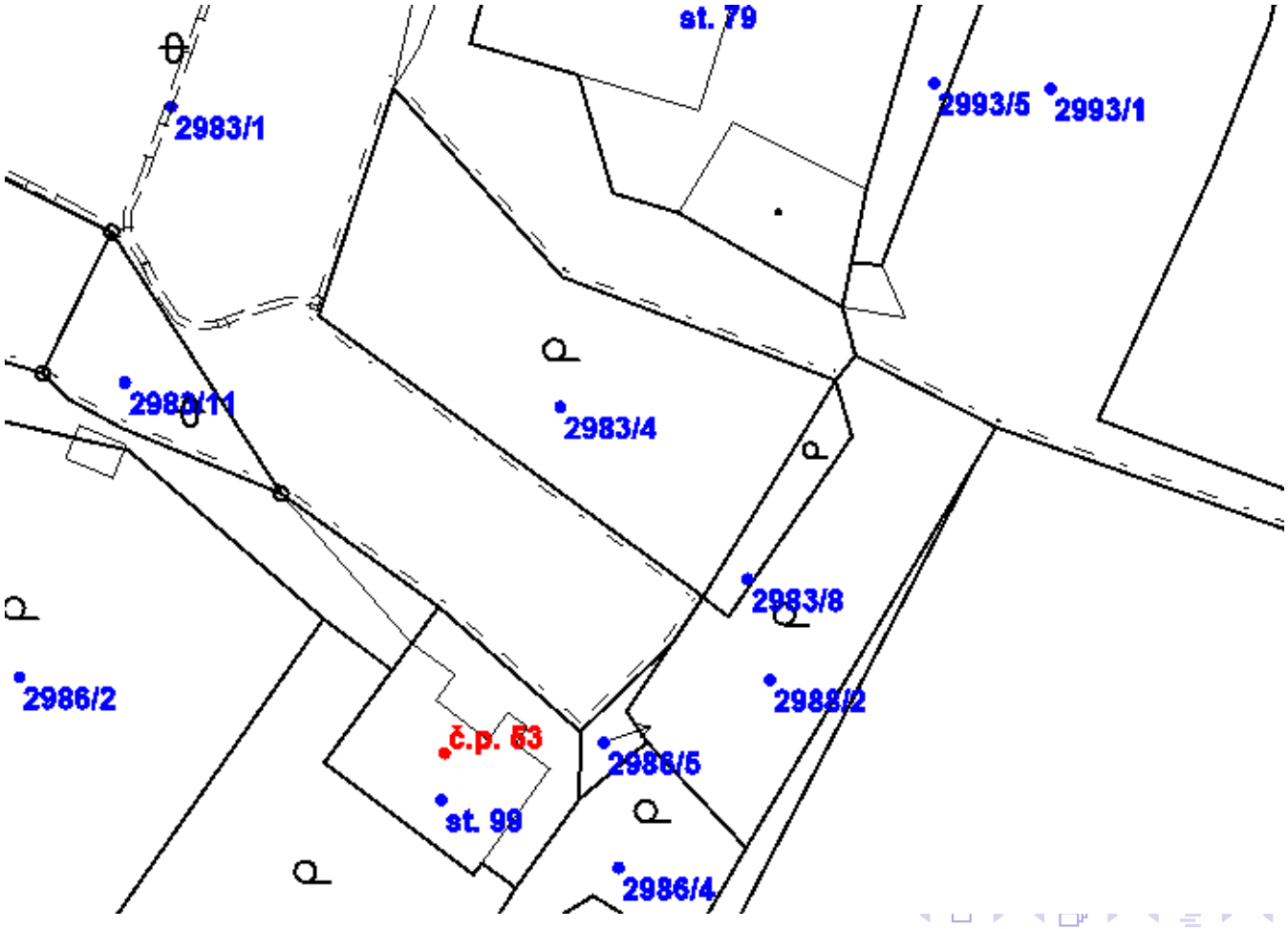
INSPIRE content

Usage of view service

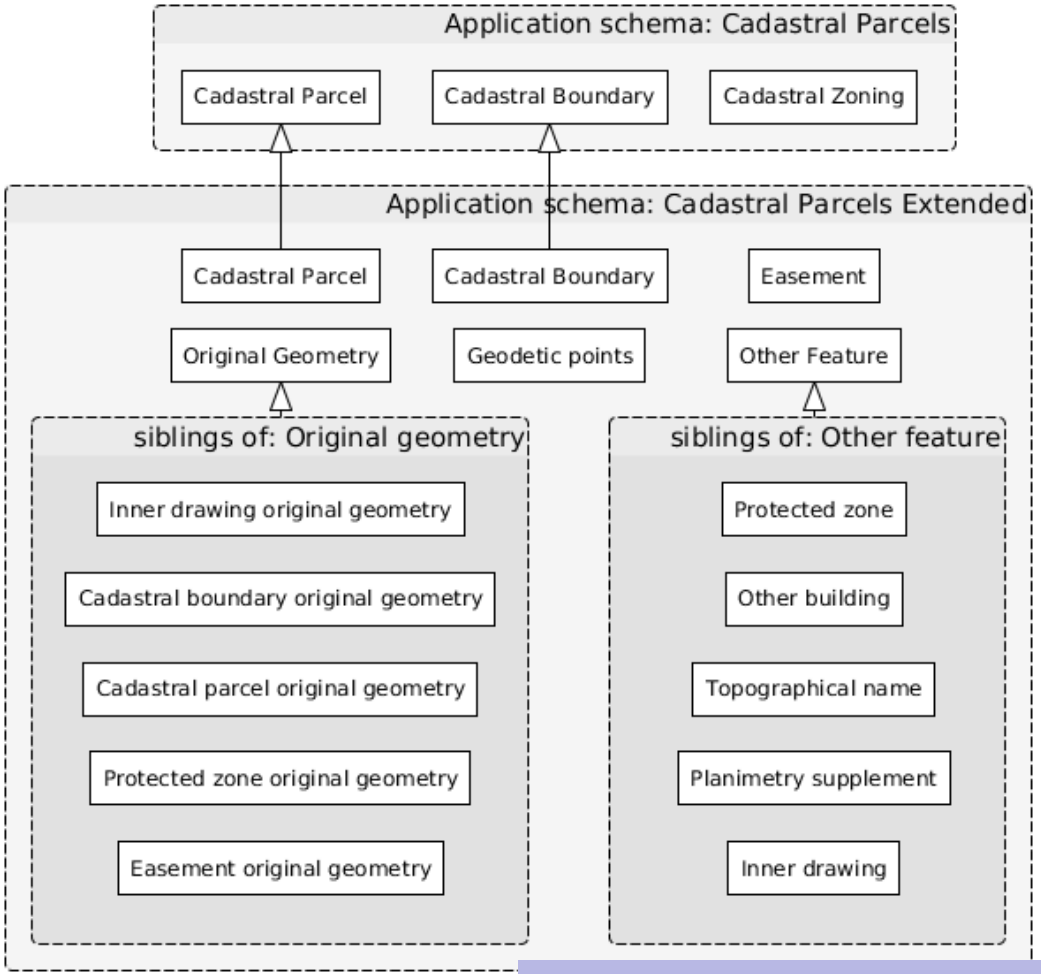




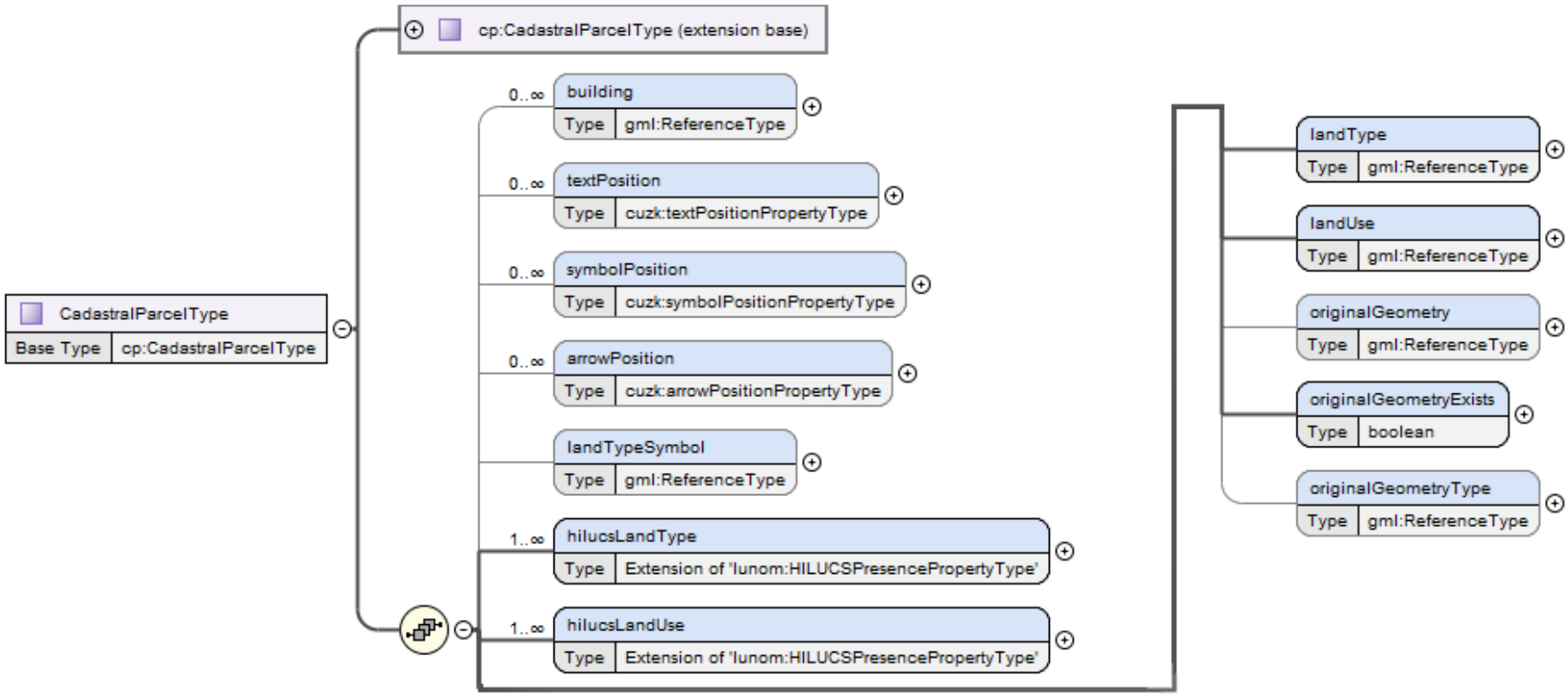
Missing information for parcels



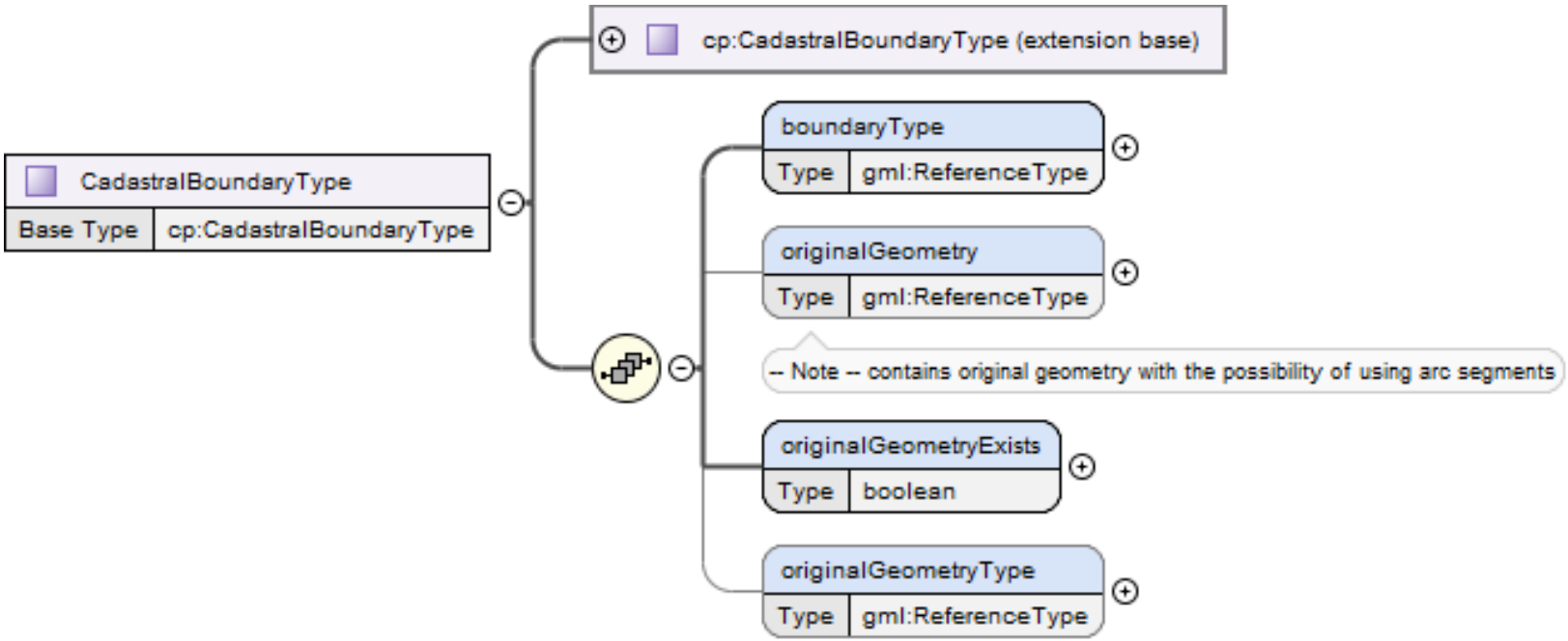
Design of schema



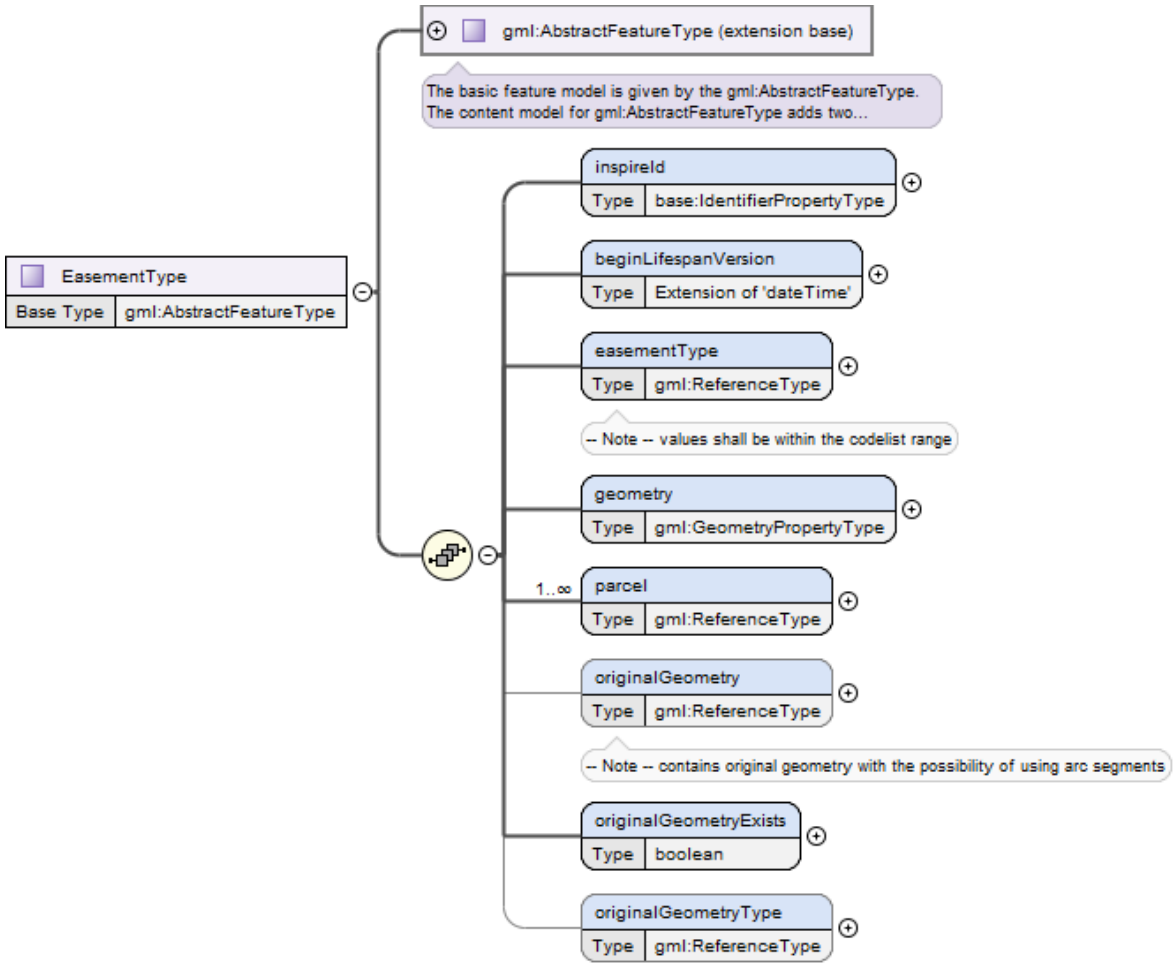
Cadastral Parcel



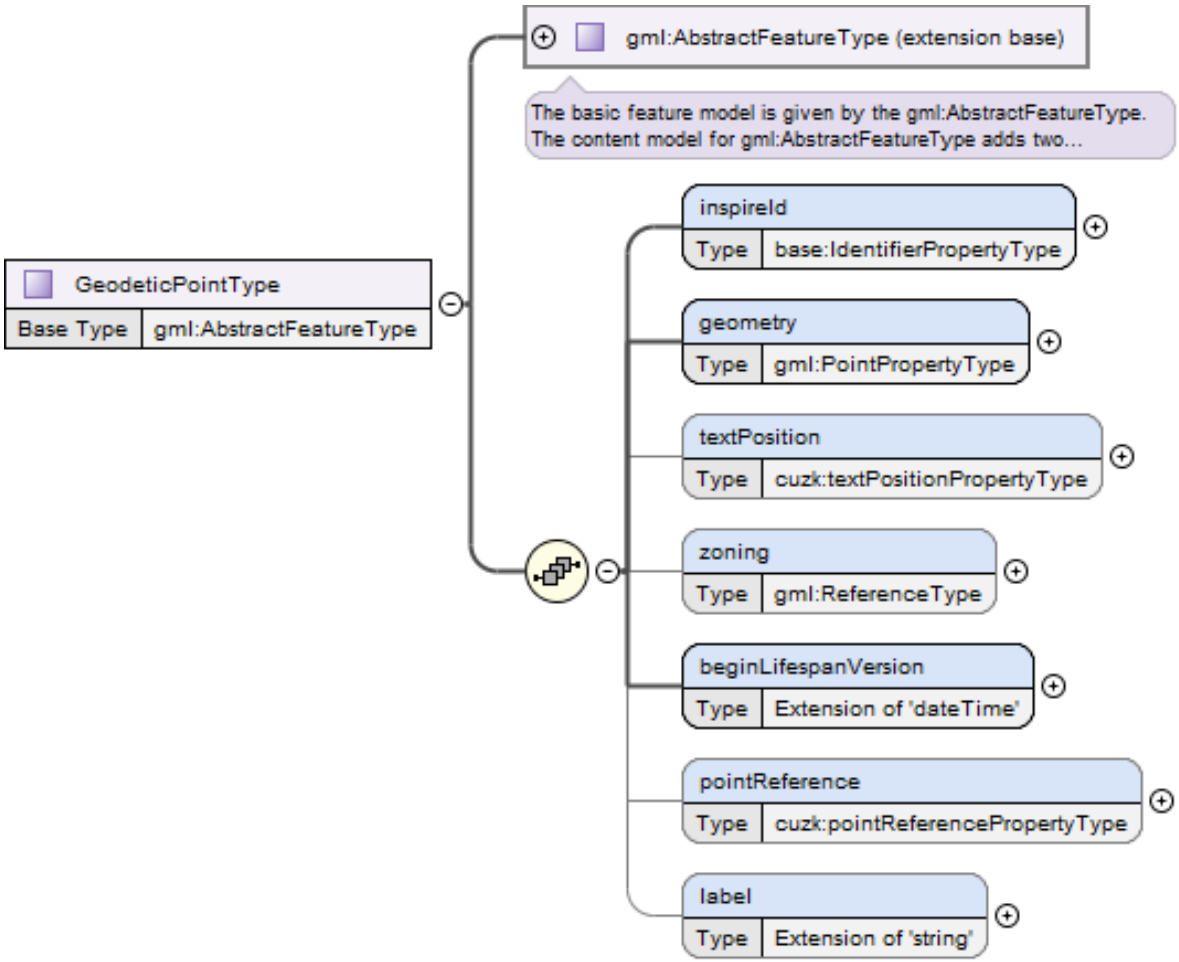
Cadastral Boundary



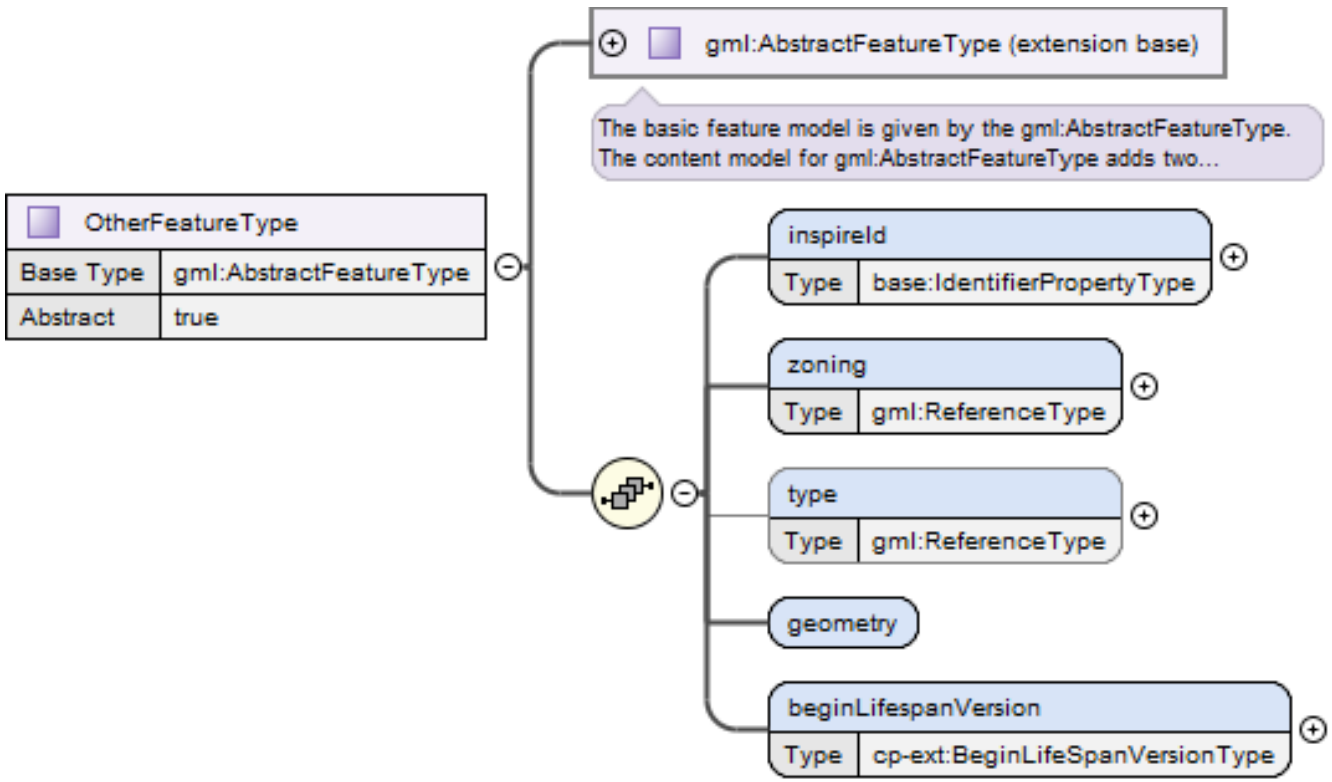
Easement


gml:AbstractFeatureType (extension base)
The basic feature model is given by the gml:AbstractFeatureType. The content model for gml:AbstractFeatureType adds two...
EasementType
Base Type
gml:AbstractFeatureType
inspireId
Type
base:IdentifierPropertyType
beginLifespanVersion
Type
Extension of 'dateTime'
easementType
Type
gml:ReferenceType
-- Note -- values shall be within the codelist range
geometry
Type
gml:GeometryPropertyType
1..∞
parcel
Type
gml:ReferenceType
originalGeometry
Type
gml:ReferenceType
-- Note -- contains original geometry with the possibility of using arc segments
originalGeometryExists
Type
boolean
originalGeometryType
Type
gml:ReferenceType

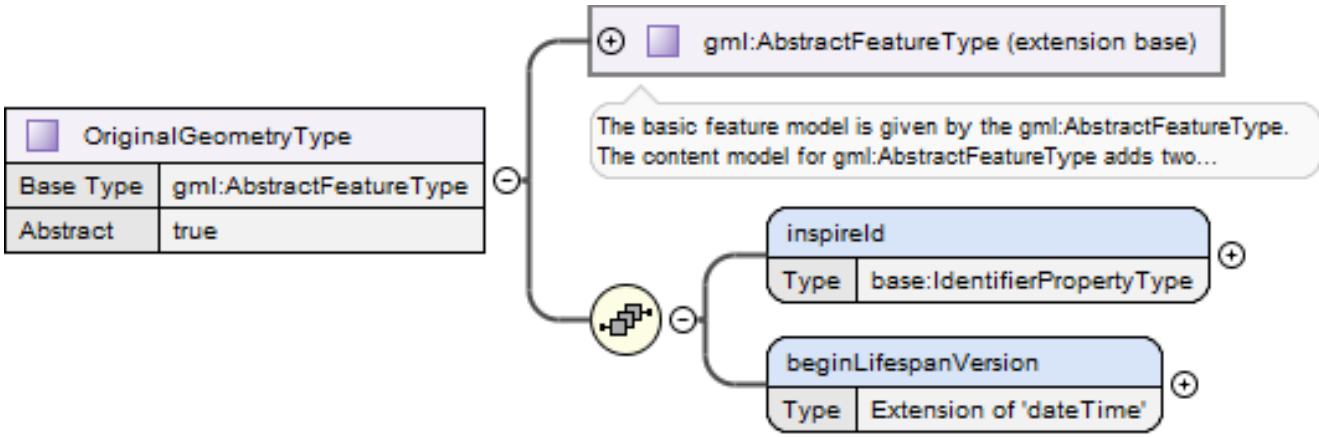
Geodetic point



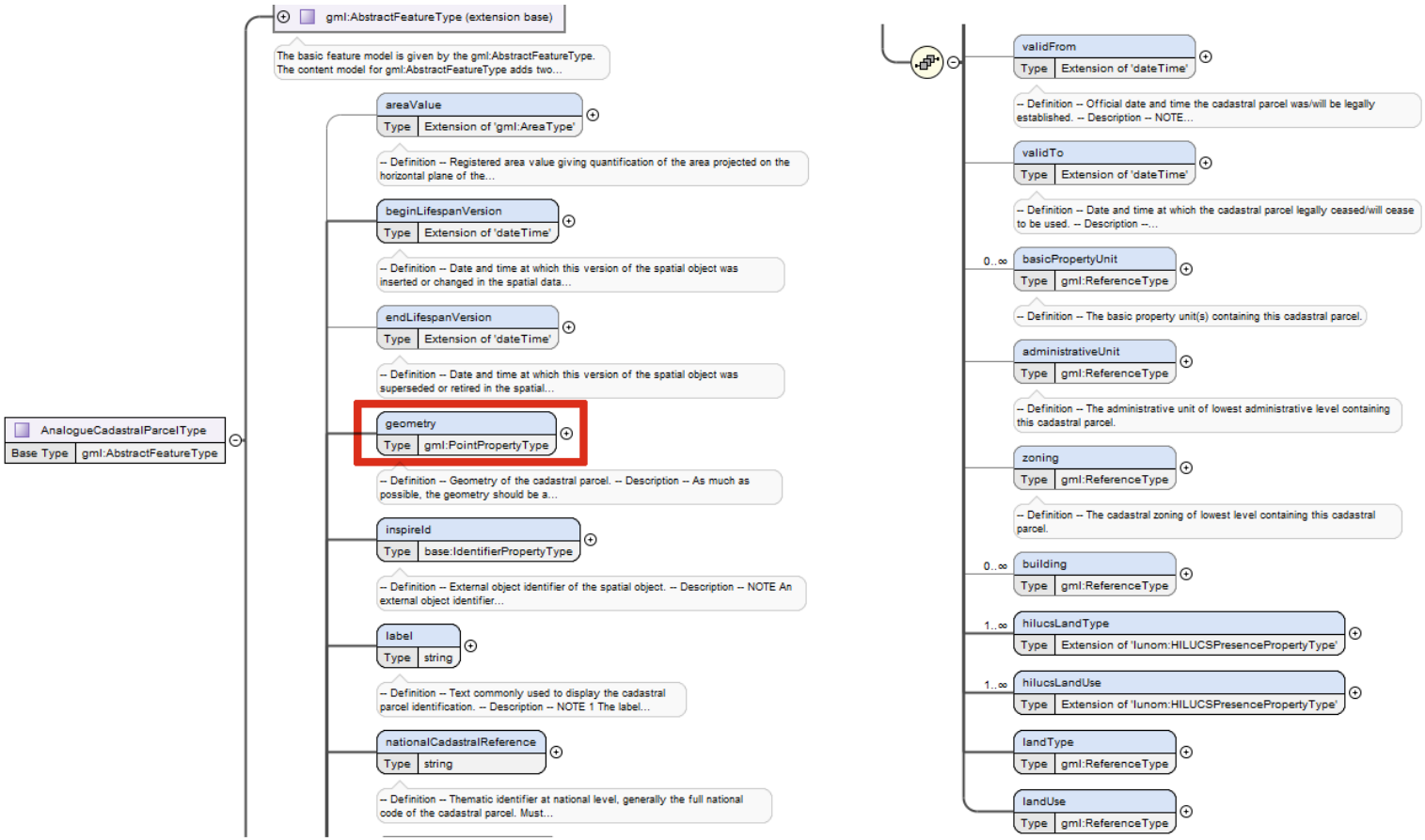
Other feature



Original geometry

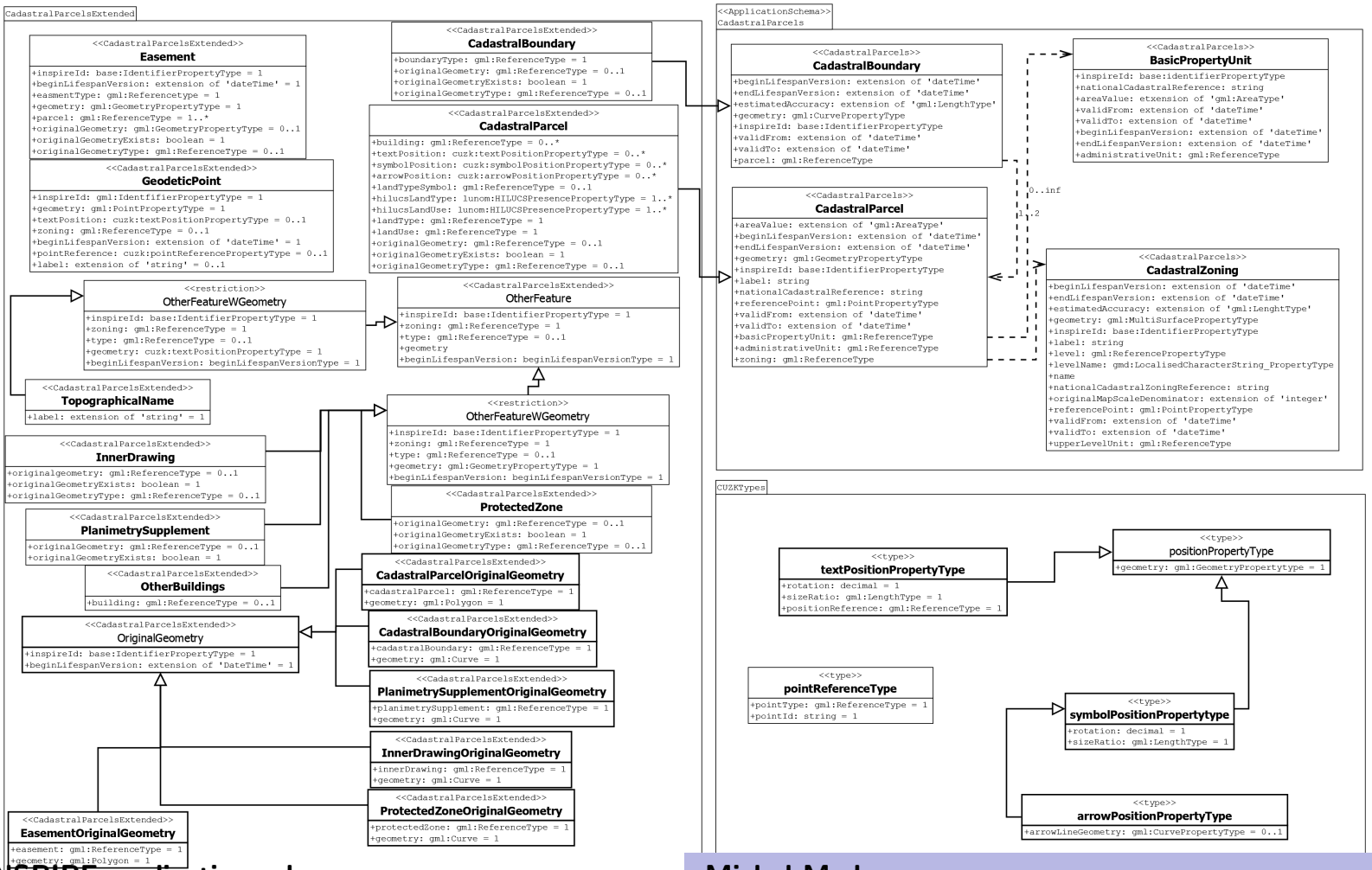


Analogue cadastral parcel



Technical implementation

UML model


CadastralParcelsExtended
<<CadastralParcelsExtended>>
Easement
+inspireId: base:IdentifierPropertyType = 1
+beginLifespanVersion: extension of 'dateTime' = 1
+easmentType: gml:ReferenceType = 1
+geometry: gml:GeometryPropertyType = 1
+parcel: gml:ReferenceType = 1..*
+originalGeometry: gml:GeometryPropertyType = 0..1
+originalGeometryExists: boolean = 1
+originalGeometryType: gml:ReferenceType = 0..1
<<CadastralParcelsExtended>>
CadastralBoundary
+boundaryType: gml:ReferenceType = 1
+originalGeometry: gml:ReferenceType = 0..1
+originalGeometryExists: boolean = 1
+originalGeometryType: gml:ReferenceType = 0..1
<<CadastralParcelsExtended>>
GeodeticPoint
+inspireId: gml:IdentifierPropertyType = 1
+geometry: gml:PointPropertyType = 1
+textPosition: cuzk:textPositionPropertyType = 0..1
+zoning: gml:ReferenceType = 0..1
+beginLifespanVersion: extension of 'dateTime' = 1
+pointReference: cuzk:pointReferencePropertyType = 0..1
+label: extension of 'string' = 0..1
<<CadastralParcelsExtended>>
CadastralParcel
+building: gml:ReferenceType = 0..*
+textPosition: cuzk:textPositionPropertyType = 0..*
+symbolPosition: cuzk:symbolPositionPropertyType = 0..*
+arrowPosition: cuzk:arrowPositionPropertyType = 0..*
+landTypeSymbol: gml:ReferenceType = 0..1
+hilucsLandType: lunom:HILUCSPresencePropertyType = 1..*
+hilucsLandUse: lunom:HILUCSPresencePropertyType = 1..*
+landType: gml:ReferenceType = 1
+landUse: gml:ReferenceType = 1
+originalGeometry: gml:ReferenceType = 0..1
+originalGeometryExists: boolean = 1
+originalGeometryType: gml:ReferenceType = 0..1
<<restriction>>
OtherFeatureWGeometry
+inspireId: base:IdentifierPropertyType = 1
+zoning: gml:ReferenceType = 1
+type: gml:ReferenceType = 0..1
+geometry: cuzk:textPositionPropertyType = 1
+beginLifespanVersion: beginLifespanVersionType = 1
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OtherFeature
+inspireId: base:IdentifierPropertyType = 1
+zoning: gml:ReferenceType = 1
+type: gml:ReferenceType = 0..1
+geometry
+beginLifespanVersion: beginLifespanVersionType = 1
<<CadastralParcelsExtended>>
TopographicalName
+label: extension of 'string' = 1
<<restriction>>
OtherFeatureWGeometry
+inspireId: base:IdentifierPropertyType = 1
+zoning: gml:ReferenceType = 1
+type: gml:ReferenceType = 0..1
+geometry: gml:GeometryPropertyType = 1
+beginLifespanVersion: beginLifespanVersionType = 1
<<CadastralParcelsExtended>>
InnerDrawing
+originalgeometry: gml:ReferenceType = 0..1
+originalGeometryExists: boolean = 1
+originalGeometryType: gml:ReferenceType = 0..1
<<CadastralParcelsExtended>>
ProtectedZone
+originalGeometry: gml:ReferenceType = 0..1
+originalGeometryExists: boolean = 1
+originalGeometryType: gml:ReferenceType = 0..1
<<CadastralParcelsExtended>>
PlanimetrySupplement
+originalGeometry: gml:ReferenceType = 0..1
+originalGeometryExists: boolean = 1
<<CadastralParcelsExtended>>
CadastralParcelOriginalGeometry
+cadastralParcel: gml:ReferenceType = 1
+geometry: gml:Polygon = 1
<<CadastralParcelsExtended>>
OtherBuildings
+building: gml:ReferenceType = 0..1
<<CadastralParcelsExtended>>
CadastralBoundaryOriginalGeometry
+cadastralBoundary: gml:ReferenceType = 1
+geometry: gml:Curve = 1
<<CadastralParcelsExtended>>
OriginalGeometry
+inspireId: base:IdentifierPropertyType = 1
+beginLifespanVersion: extension of 'DateTime' = 1
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PlanimetrySupplementOriginalGeometry
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+geometry: gml:Curve = 1
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ProtectedZoneOriginalGeometry
+protectedZone: gml:ReferenceType = 1
+geometry: gml:Curve = 1
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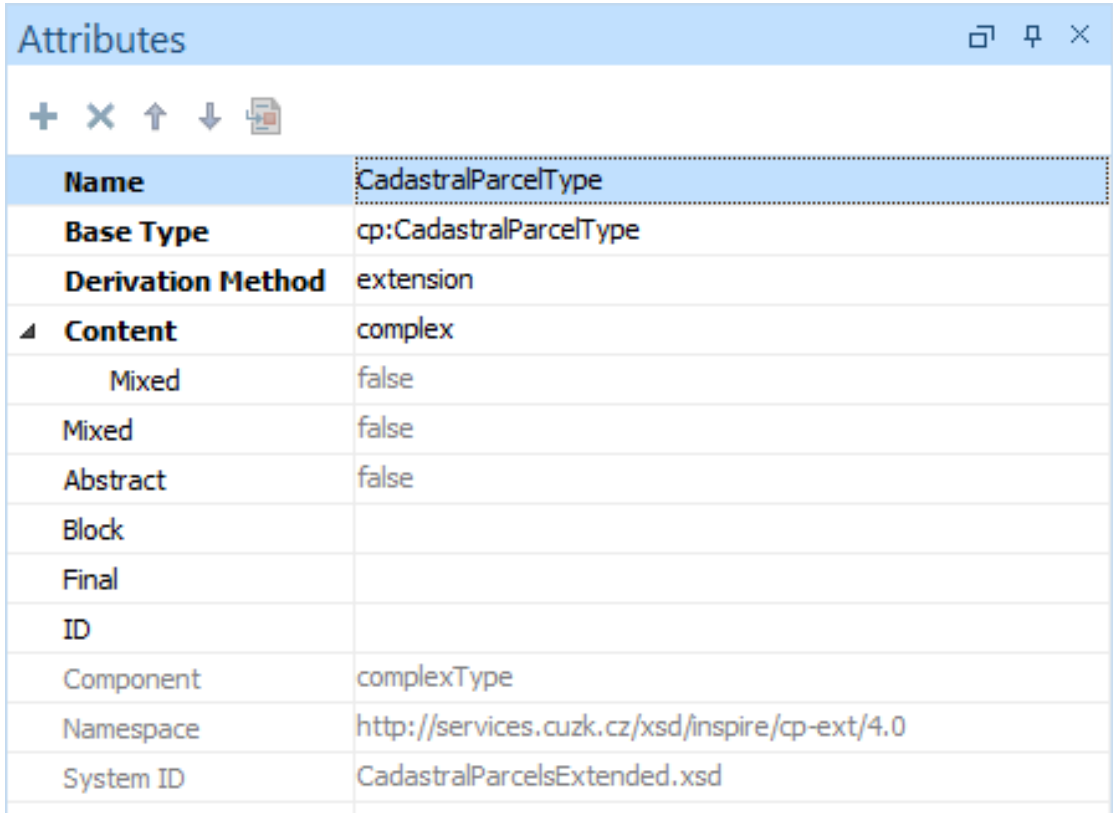
EasementOriginalGeometry
+easement: gml:ReferenceType = 1
+geometry: gml:Polygon = 1
<<ApplicationSchema>>
CadastralParcels
<<CadastralParcels>>
CadastralBoundary
+beginLifespanVersion: extension of 'dateTime'
+endLifespanVersion: extension of 'dateTime'
+estimatedAccuracy: extension of 'gml:LengthType'
+geometry: gml:CurvePropertyType
+inspireId: base:IdentifierPropertyType
+validFrom: extension of 'dateTime'
+validTo: extension of 'dateTime'
+parcel: gml:ReferenceType
<<CadastralParcels>>
BasicPropertyUnit
+inspireId: base:identifierPropertyType
+nationalCadastralReference: string
+areaValue: etxension of 'gml:AreaType'
+validFrom: extension of 'dateTime'
+validTo: extension of 'dateTime'
+beginLifespanVersion: extension of 'dateTime'
+endLifespanVersion: extension of 'dateTime'
+administrativeUnit: gml:ReferenceType
0..inf
1..2
<<CadastralParcels>>
CadastralParcel
+areaValue: extension of 'gml:AreaType'
+beginLifespanVersion: extension of 'dateTime'
+endLifespanVersion: extension of 'dateTime'
+geometry: gml:GeometryPropertyType
+inspireId: base:IdentifierPropertyType
+label: string
+nationalCadastralReference: string
+referencePoint: gml:PointPropertyType
+validFrom: extension of 'dateTime'
+validTo: extension of 'dateTime'
+basicPropertyUnit: gml:ReferenceType
+administrativeUnit: gml:ReferenceType
+zoning: gml:ReferenceType
<<CadastralParcels>>
CadastralZoning
+beginLifespanVersion: extension of 'dateTime'
+endLifespanVersion: extension of 'dateTime'
+estimatedAccuracy: extension of 'gml:LenghtType'
+geometry: gml:MultiSurfacePropertyType
+inspireId: base:IdentifierPropertyType
+label: string
+level: gml:ReferencePropertyType
+levelName: gmd:LocalisedCharacterString_PropertyType
+name
+nationalCadastralZoningReference: string
+originalMapScaleDenominator: extension of 'integer'
+referencePoint: gml:PointPropertyType
+validFrom: extension of 'dateTime'
+validTo: extension of 'dateTime'
+upperLevelUnit: gml:ReferenceType
CUZKTypes
<<type>>
textPositionPropertyType
+rotation: decimal = 1
+sizeRatio: gml:LengthType = 1
+positionReference: gml:ReferenceType = 1
<<type>>
positionPropertyType
+geometry: gml:GeometryPropertytype = 1
<<type>>
pointReferenceType
+pointType: gml:ReferenceType = 1
+pointId: string = 1
<<type>>
symbolPositionPropertytype
+rotation: decimal = 1
+sizeRatio: gml:LengthType = 1
<<type>>
arrowPositionPropertyType
+arrowLineGeometry: gml:CurvePropertyType = 0..1

Extending feature types

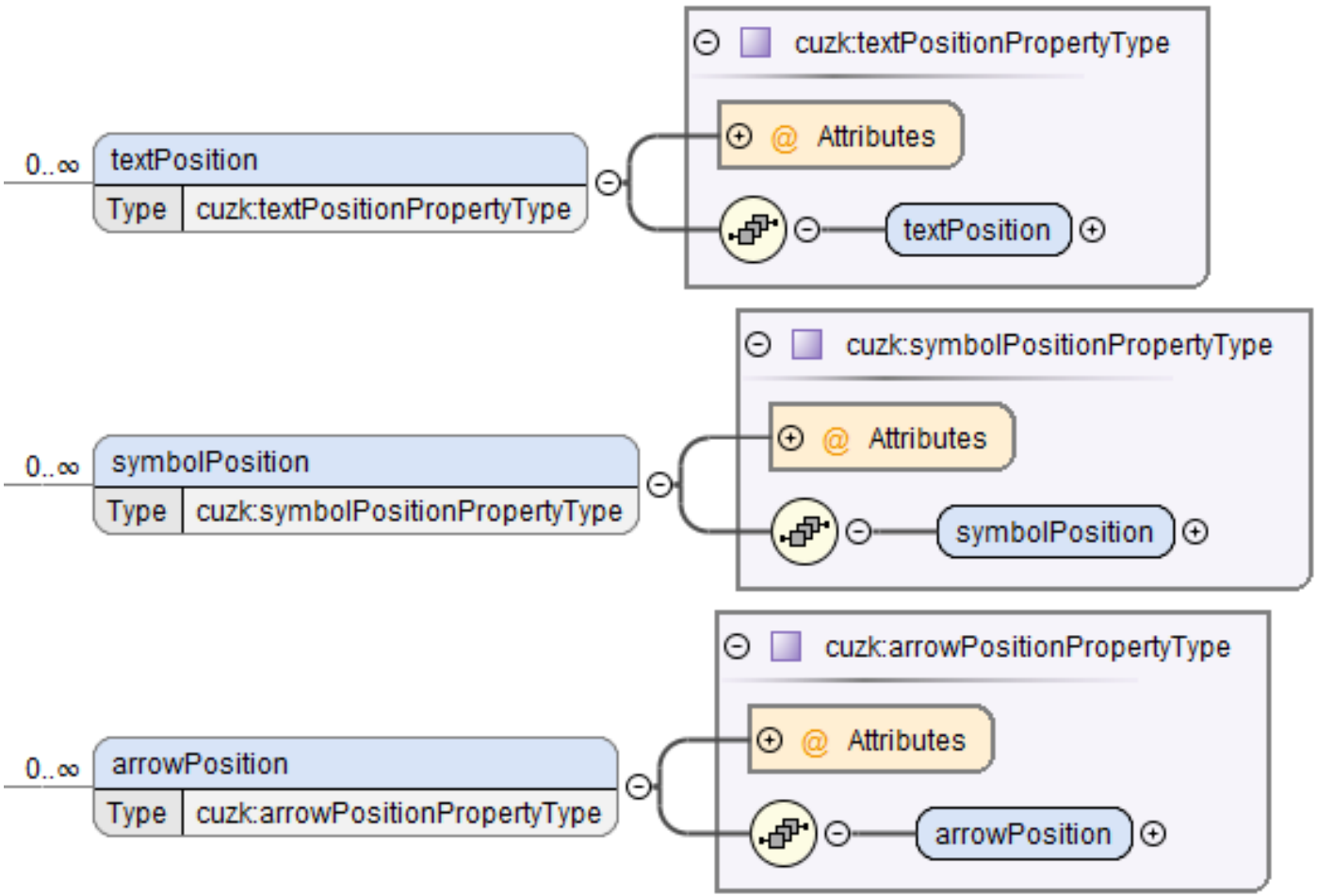


New feature types

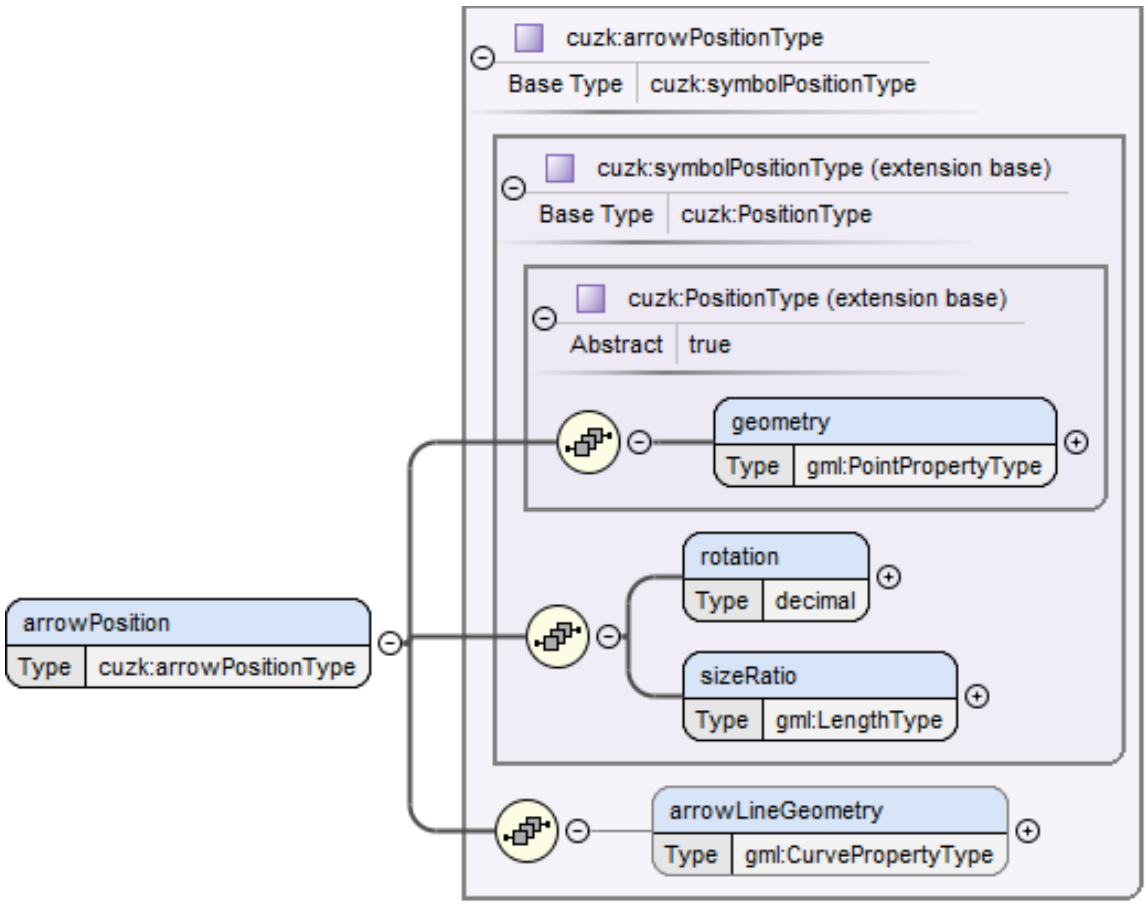
Attributes

Name	AnalogueCadastralParcelType
Base Type	gml:AbstractFeatureType
Derivation Method	extension
Content	complex
Mixed	false
Mixed	false
Abstract	false
Block	
Final	
ID	
Component	complexType
Namespace	http://services.cuzk.cz/xsd/inspire/cp-ext/4.0
System ID	CadastralParcelsExtended.xsd

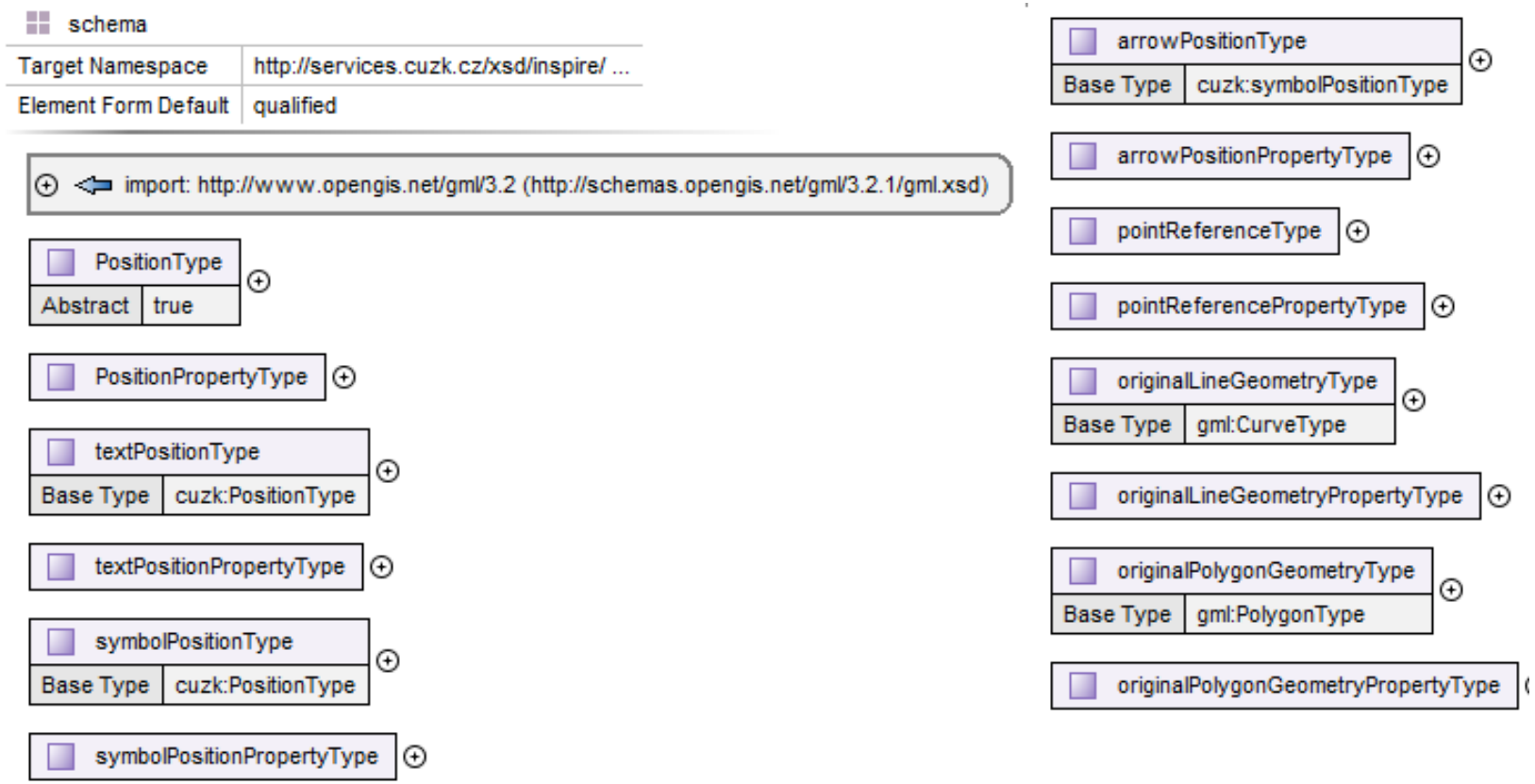
Map symbols


cuzk:textPositionPropertyType
0..∞
textPosition
Type
cuzk:textPositionPropertyType
@ Attributes
textPosition
cuzk:symbolPositionPropertyType
0..∞
symbolPosition
Type
cuzk:symbolPositionPropertyType
@ Attributes
symbolPosition
cuzk:arrowPositionPropertyType
0..∞
arrowPosition
Type
cuzk:arrowPositionPropertyType
@ Attributes
arrowPosition

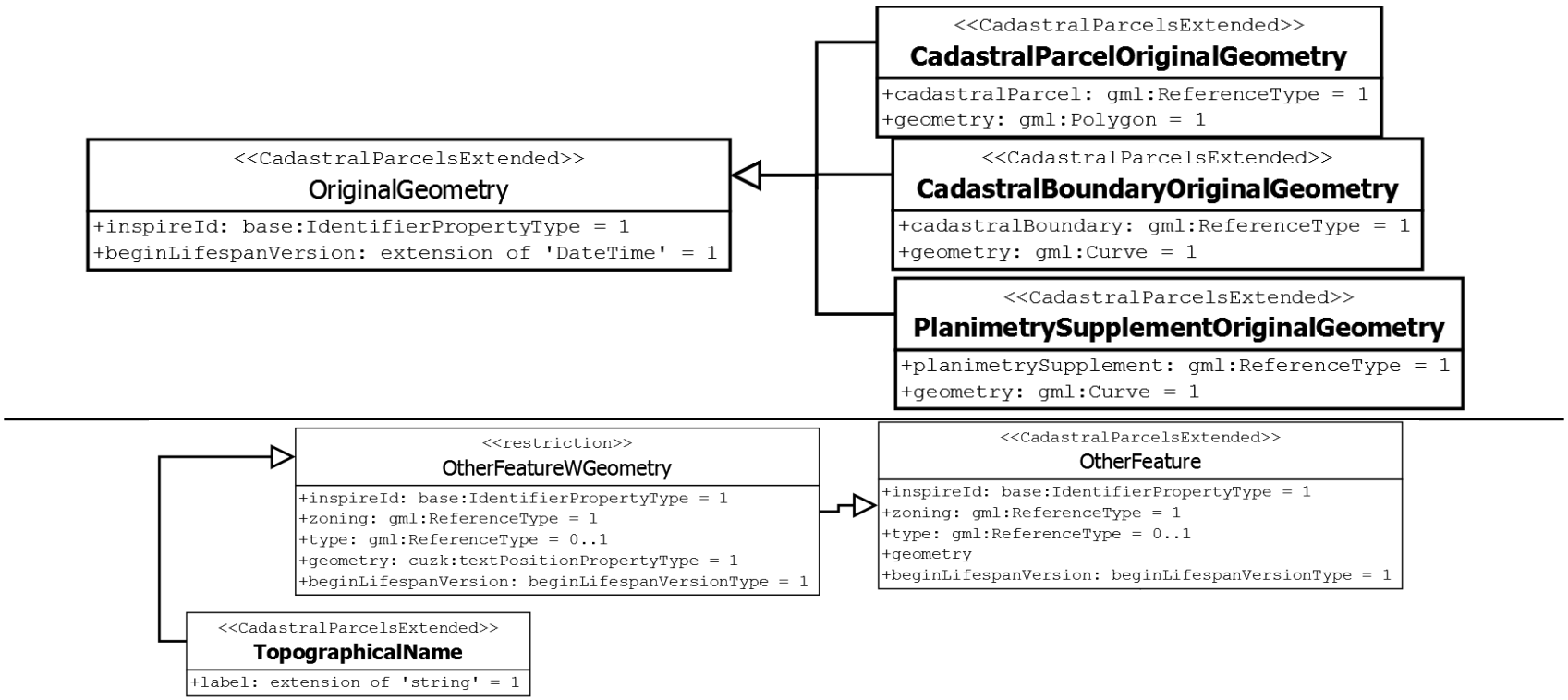
Arrow position



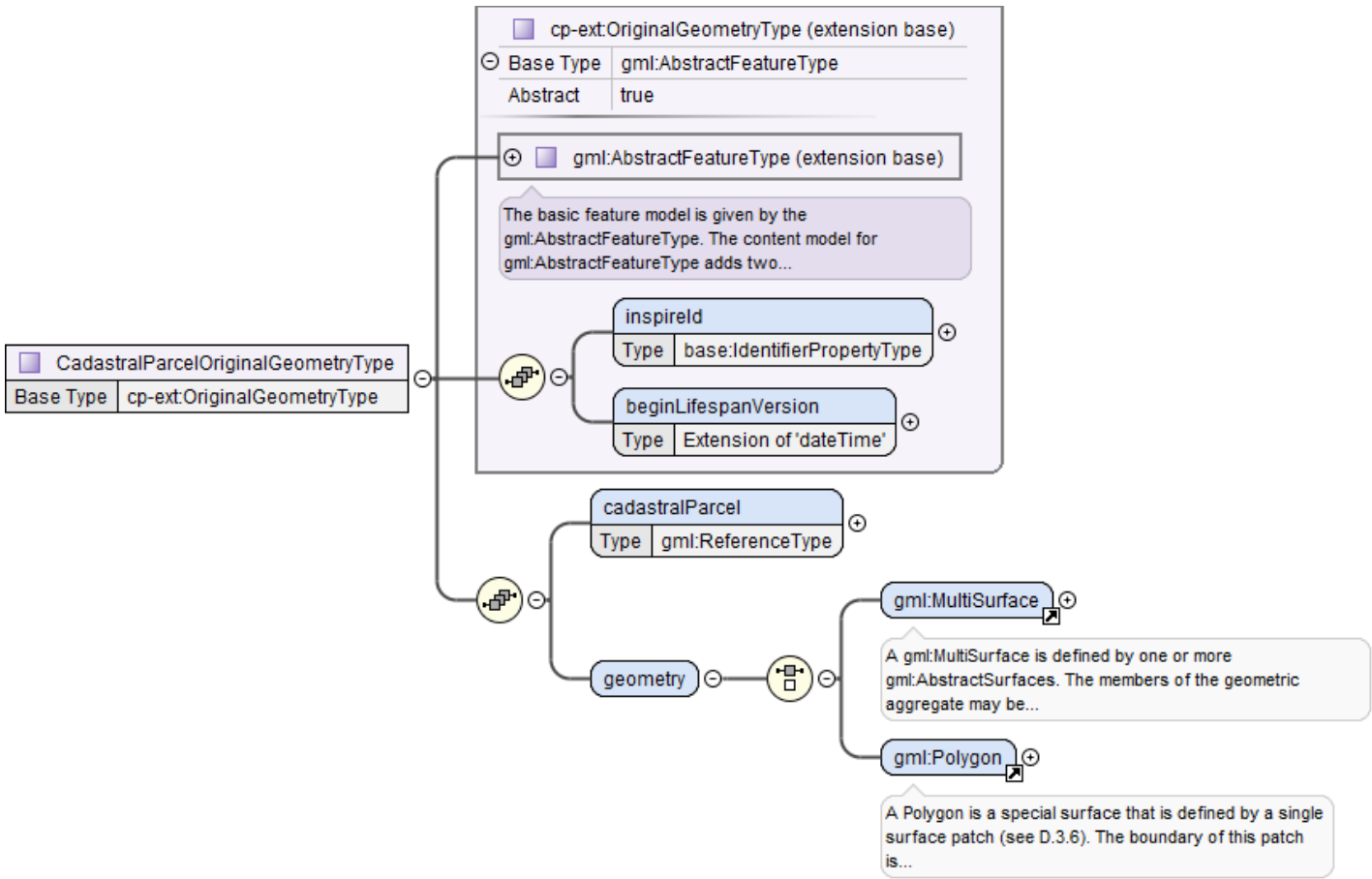
New types – cuzkTypes



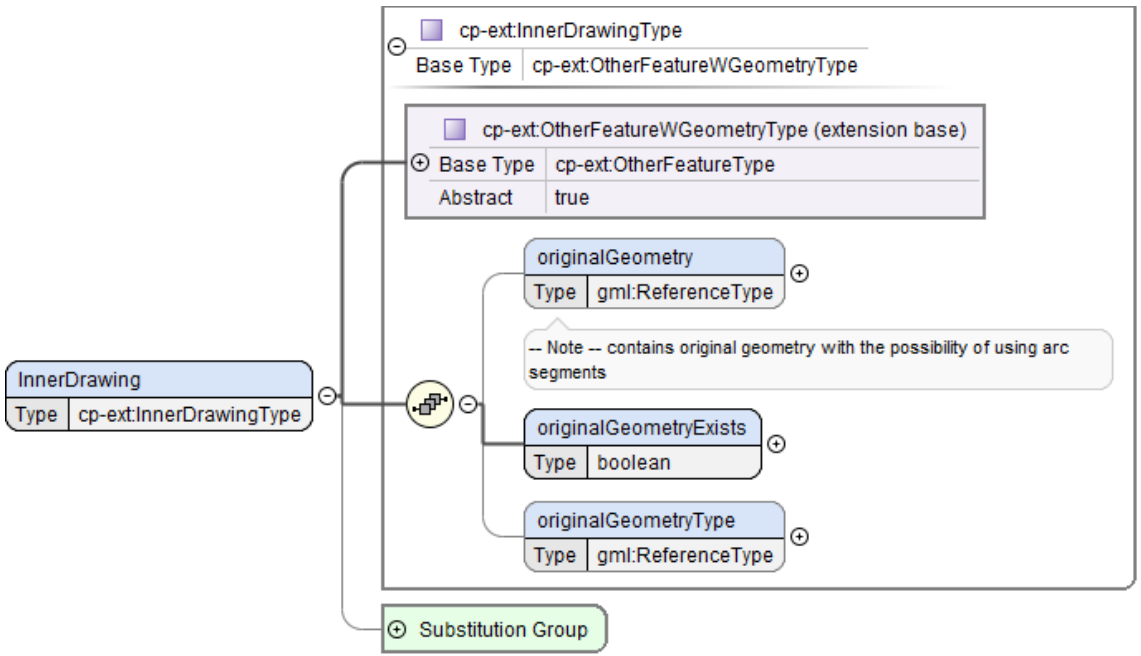
Geometry inheritance



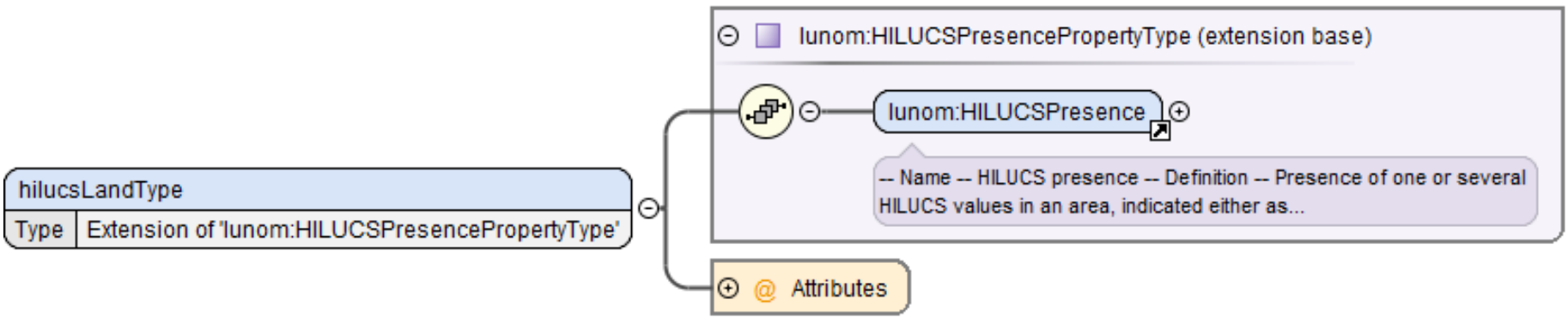
Original geometry



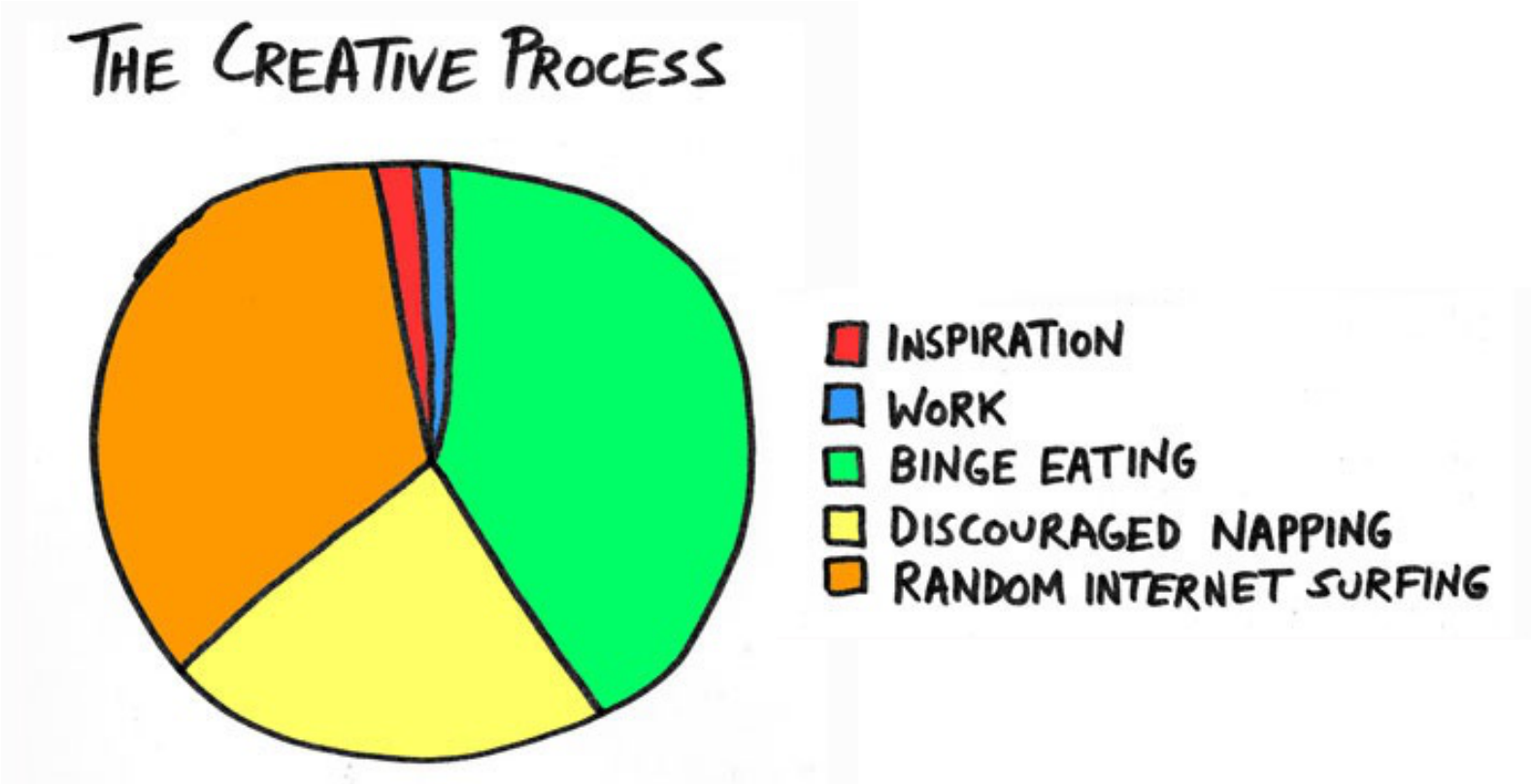
Other feature



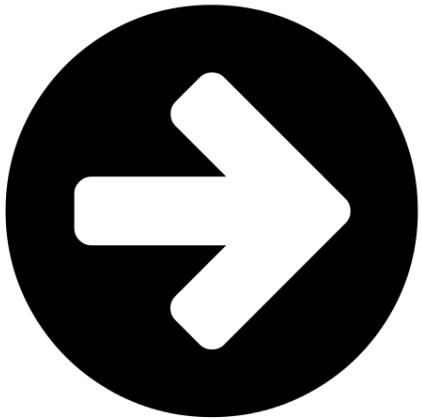
Links to other themes



Results


THE CREATIVE PROCESS
INSPIRATION
WORK
BINGE EATING
DISCOURAGED NAPPING
RANDOM INTERNET SURFING

Storage in the database



Transformation

Thanks for attention

michal.med@cuzk.cz

michal.med.jr@gmail.com