6. INSPIRE ESPUS školenie „INSPIRE interoperabilita“

Údajové modely, koncepty a mapovanie

Operačný program Efektívna verejná správa

Európska únia
Európsky sociálny fond

MINISTERSTVO
ŽIVOTNÉHO PROSTREDIA
SLOVENSKEJ REPUBLIKY

ESPUS
Efektívna správa priestorových údajov a služieb

6. INSPIRE ESPUS školenie „Harmonizáciou k INSPIRE interoperabilite“

Údajové modely, koncepty a mapovanie

28.09.2022

CC BY

Operačný program Efektívna verejná správa

Európska únia
Európsky sociálny fond

Přehled

INSPIRE model

- Datové modely INSPIRE
- Témata a Aplikační schémata

Klíčové koncepty

- Objekty, atributy, relace
- Voidable, Codelists, Constraints

Způsoby reprezentace

- Vektory, rastry, webové služby

Implementace a mapování

- Jakým způsobem publikovat INSPIRE data
- Mapovací tabulky, XSLT, další software

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INSPIRE model

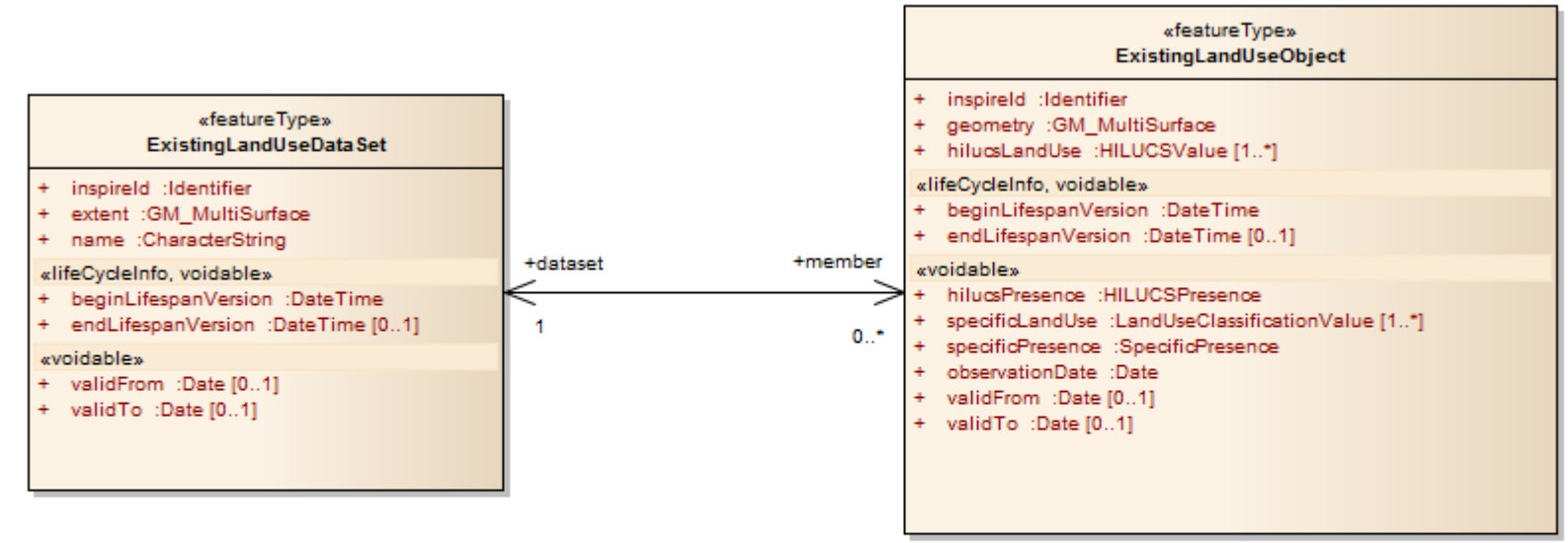
Datové modely

Obecný GIS data model - relační model

	OBJECTID	GUID_LC	IDPS	DC	CP	PS	KPL	RZP	RUP
1	255076	{D75428C8...	NULL	0	NULL	0	EF018	2010	2019
2	255591	{D75428C8...	NULL	0	NULL	0	EF018	2010	2019
3	262533	{D75428C8...	2010EF018...	11	c	2	EF018	2010	2019
4	262646	{D75428C8...	2010EF018...	9	_	0	EF018	2010	2019
5	262647	{D75428C8...	2010EF018...	11	c	1	EF018	2010	2019
6	263190	{D75428C8...	2010EF018...	12	b	0	EF018	2010	2019
7	292308	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028
8	292309	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028
9	292310	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028
10	292311	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028
11	292326	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028
12	292334	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028
13	292335	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028
14	292336	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028
15	292337	{35683A4E...	NULL	0	NULL	0	EF093	2019	2028

Datové modely

INSPIRE data model - UML reprezentace



Existing Land Use : Class diagram

Created: 10/1/2010 12:01:42 PM
Modified: 2/23/2012 9:49:22 PM
Project:
Advanced:

https://inspire.ec.europa.eu/data-model/approved/r4618-ir/html/

Datové modely

INSPIRE data model - Datové specifikace

Data Specifications > Themes

ANNEX: 1

- Addresses
- Administrative units
- Cadastral parcels
- Coordinate reference systems
- Geographical grid systems
- Geographical names
- Hydrography
- Protected sites
- Transport networks

ANNEX: 2

- Elevation
- Geology
- Land cover
- Orthoimagery

5.3.3 Existing land use Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Existing *Land Use*
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
ExistingLandUseDataSet	Existing *Land Use*	«featureType»
ExistingLandUseObject	Existing *Land Use*	«featureType»

5.3.3.1. Spatial object types

5.3.3.1.1. ExistingLandUseDataSet

ExistingLandUseDataSet

Name:	existing land use data set
Definition:	An existing land use data set is a collection of areas for which information on existing (present or past) land uses is provided.
Stereotypes:	«featureType»

Attribute: inspireId

Value type:	Identifier
Definition:	External object identifier of the existing land use dataset.
Description:	NOTE An external object identifier is a unique object identifier published by the responsible body, which may be used by external applications to reference the spatial object. The identifier is an identifier of the spatial object, not an identifier of the real-world phenomenon.
Multiplicity:	1

Attribute: extent

Name:	existing land use data set
Value type:	GM_MultiSurface
Definition:	Boundary of the geometrical union of all the instances of the spatial object type ExistingLandUseObject.
Multiplicity:	1

Attribute: beginLifespanVersion

Value type:	DateTime
Definition:	Date and time at which this version of the existing land use data set was inserted or changed in the provided set of data.
Multiplicity:	1
Stereotypes:	«lifeCycleInfo,voidable»

https://inspire.ec.europa.eu/Themes/Data%20Specifications/2892

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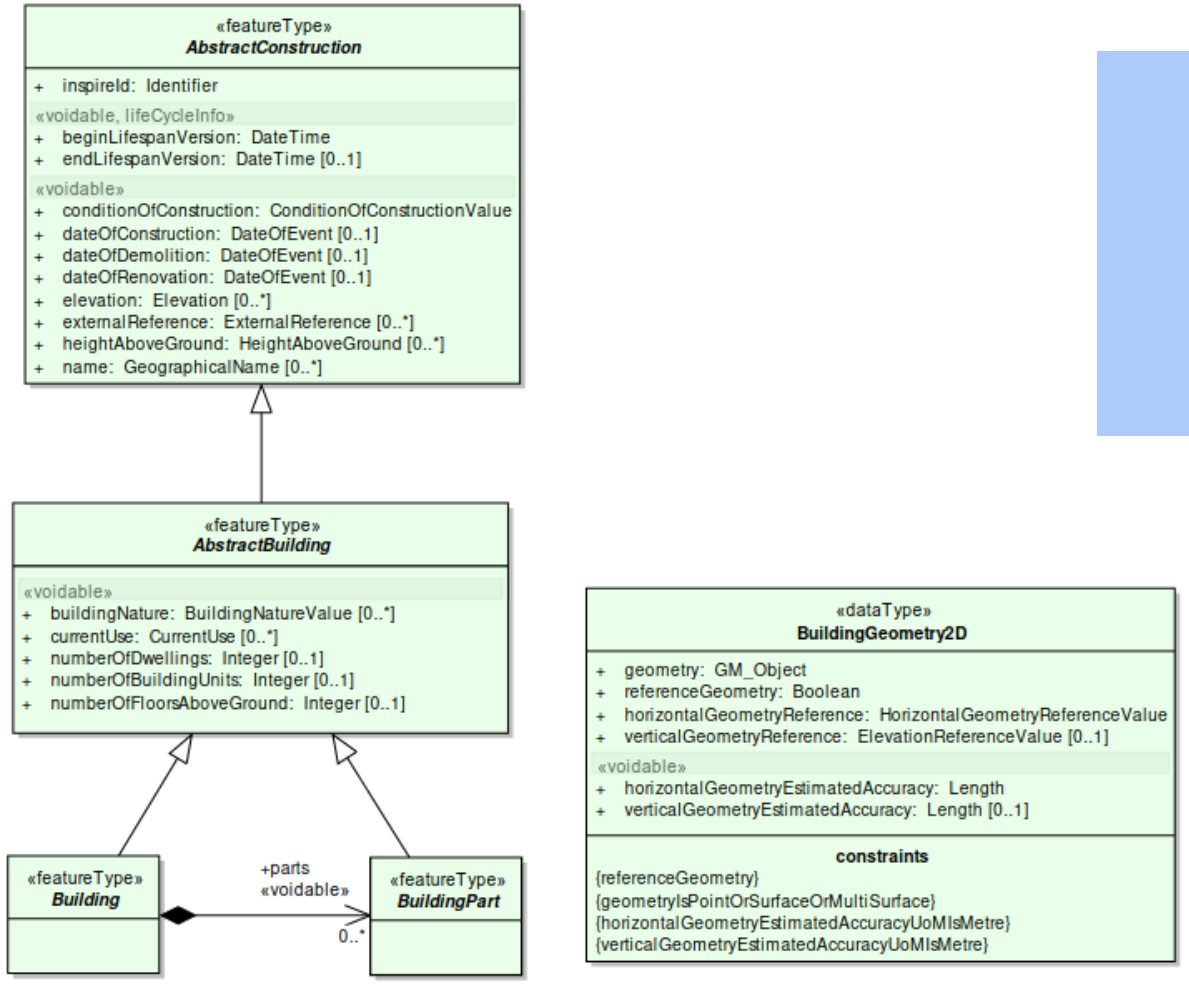
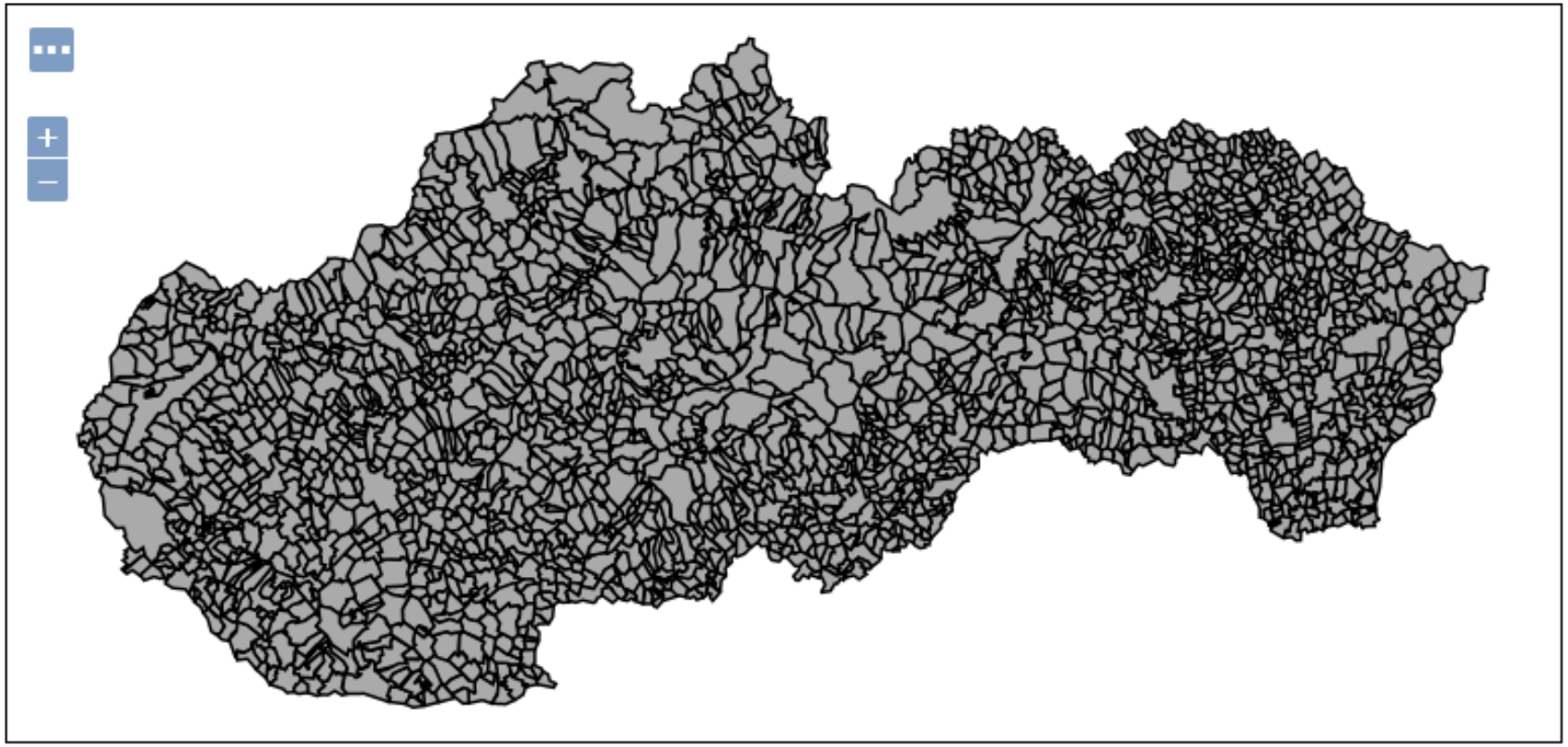
Klíčové koncepty

Objekty skutečného světa

Abstraktní reprezentace objektů



Abstraktní reprezentace objektů

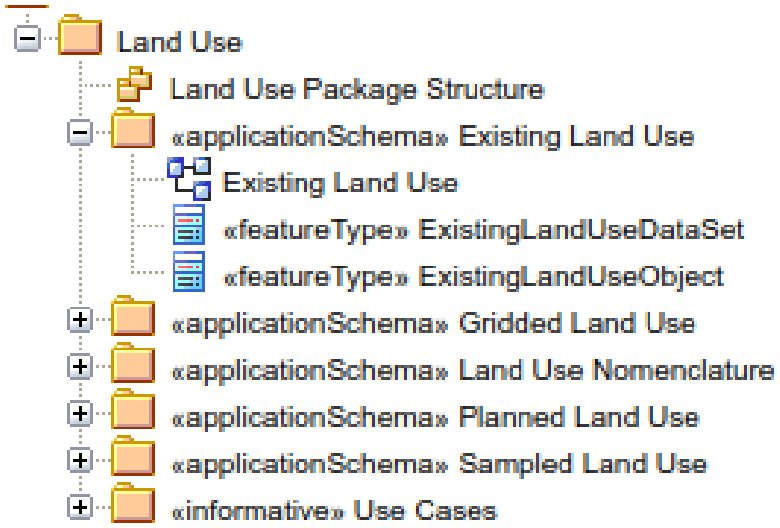


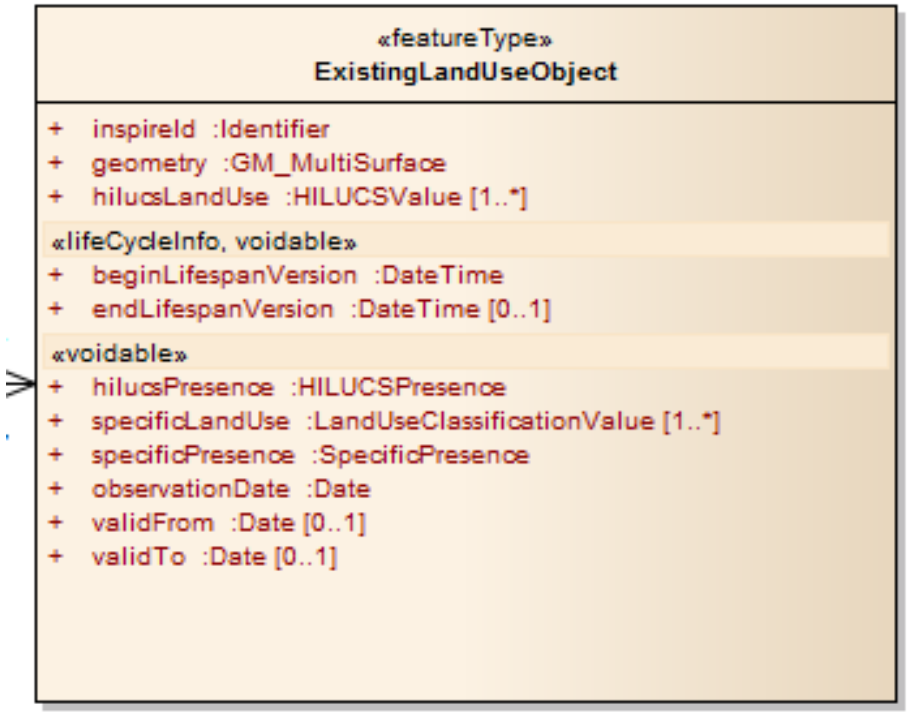
Scale = 1 : 2M

aglo_orig

fid	objectid	idn2	nm2	idn3	nm3	vymera_ha	shape_leng	shape_area	aglome
aglo_orig.1735	847	508527	Cierny Balog	603	Brezno	14710.426999999999680	84280.996056425050483	147104270.33184638619422	A60305

Objekty - featureTypes





ExistingLandUseObject : Public <<featureType>> Class

Created: 3/11/2011 2:51:42 PM
Modified: 10/22/2012 2:01:00 PM

⊞ Project:
⊞ Advanced:

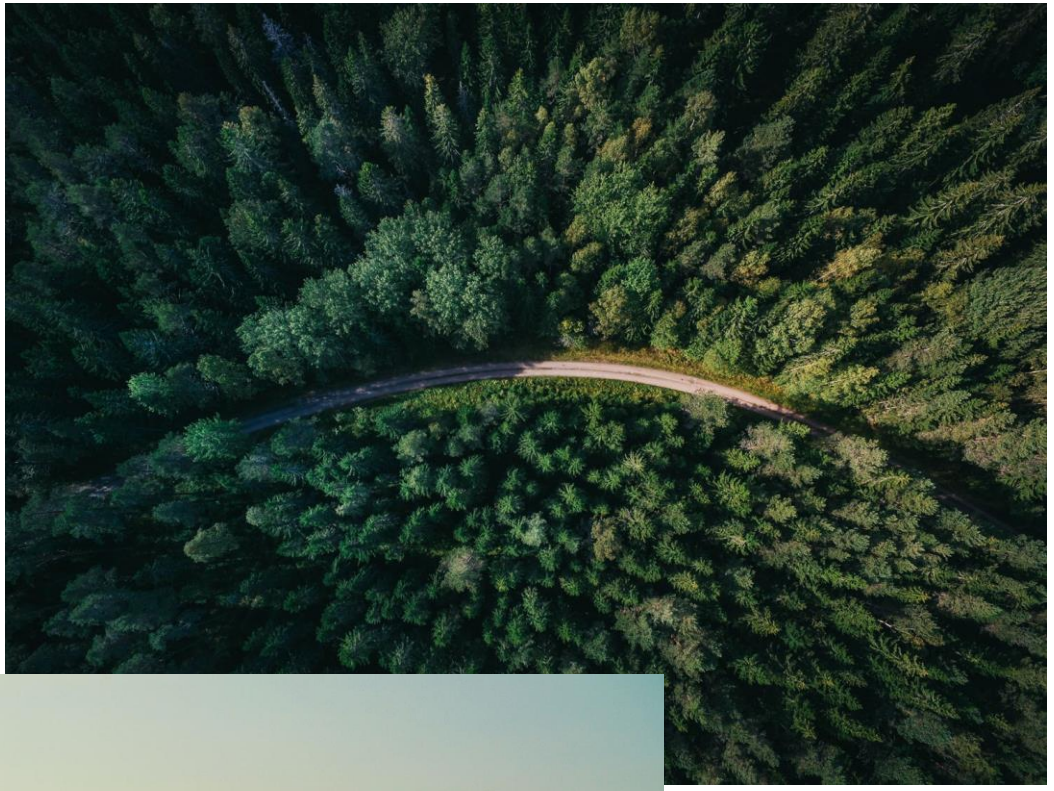
-- Name --

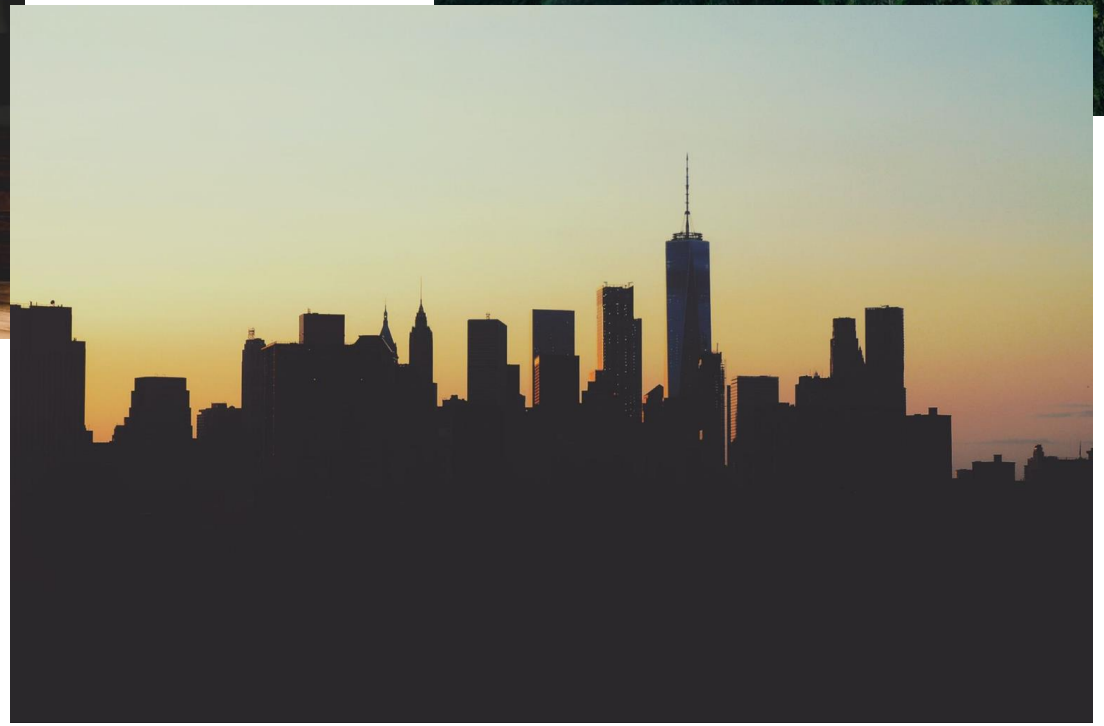
existing land use object

-- Definition --

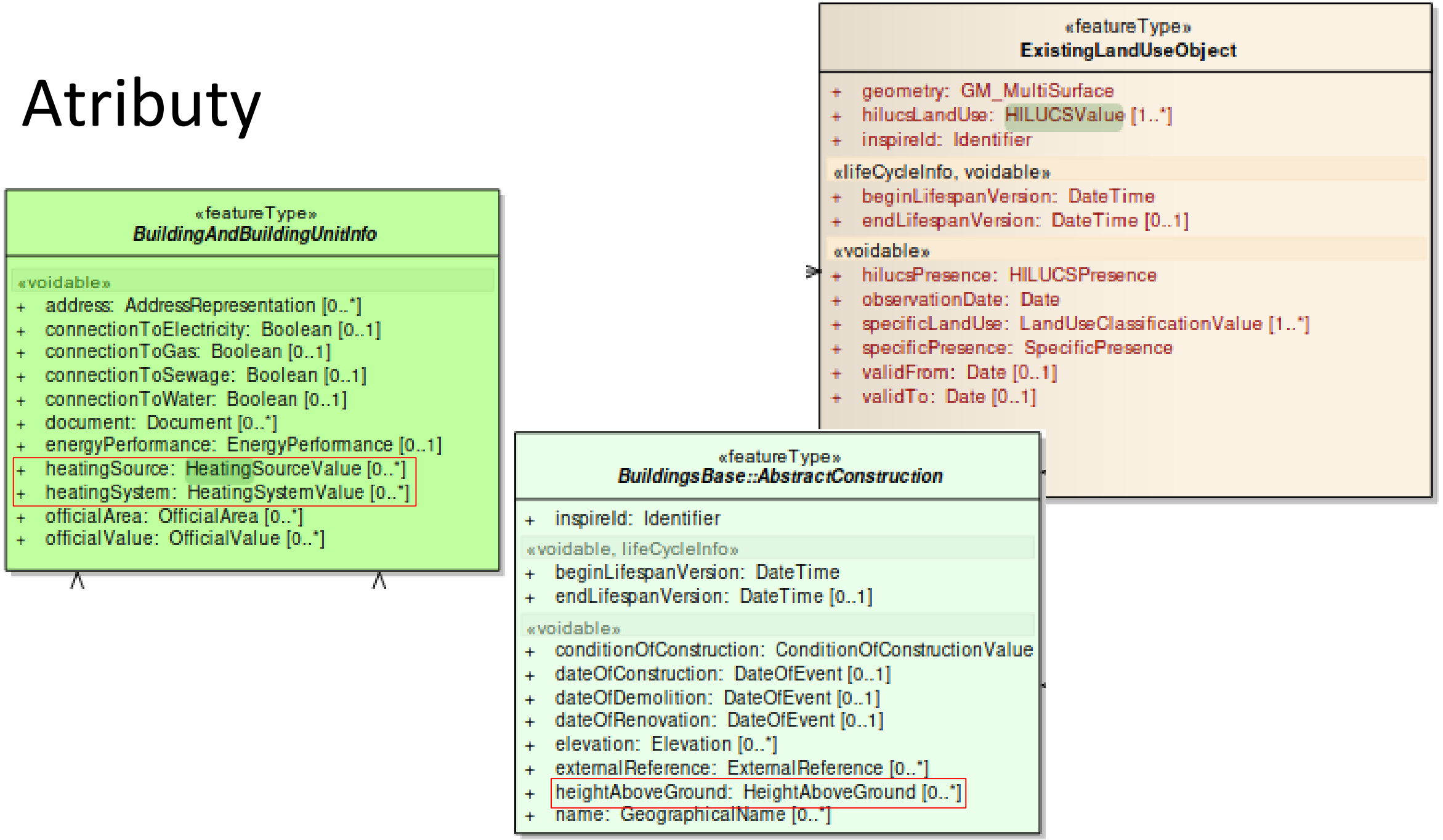
An existing land use object describes the land use of an area having a homogeneous combination of land use types.

Atributy



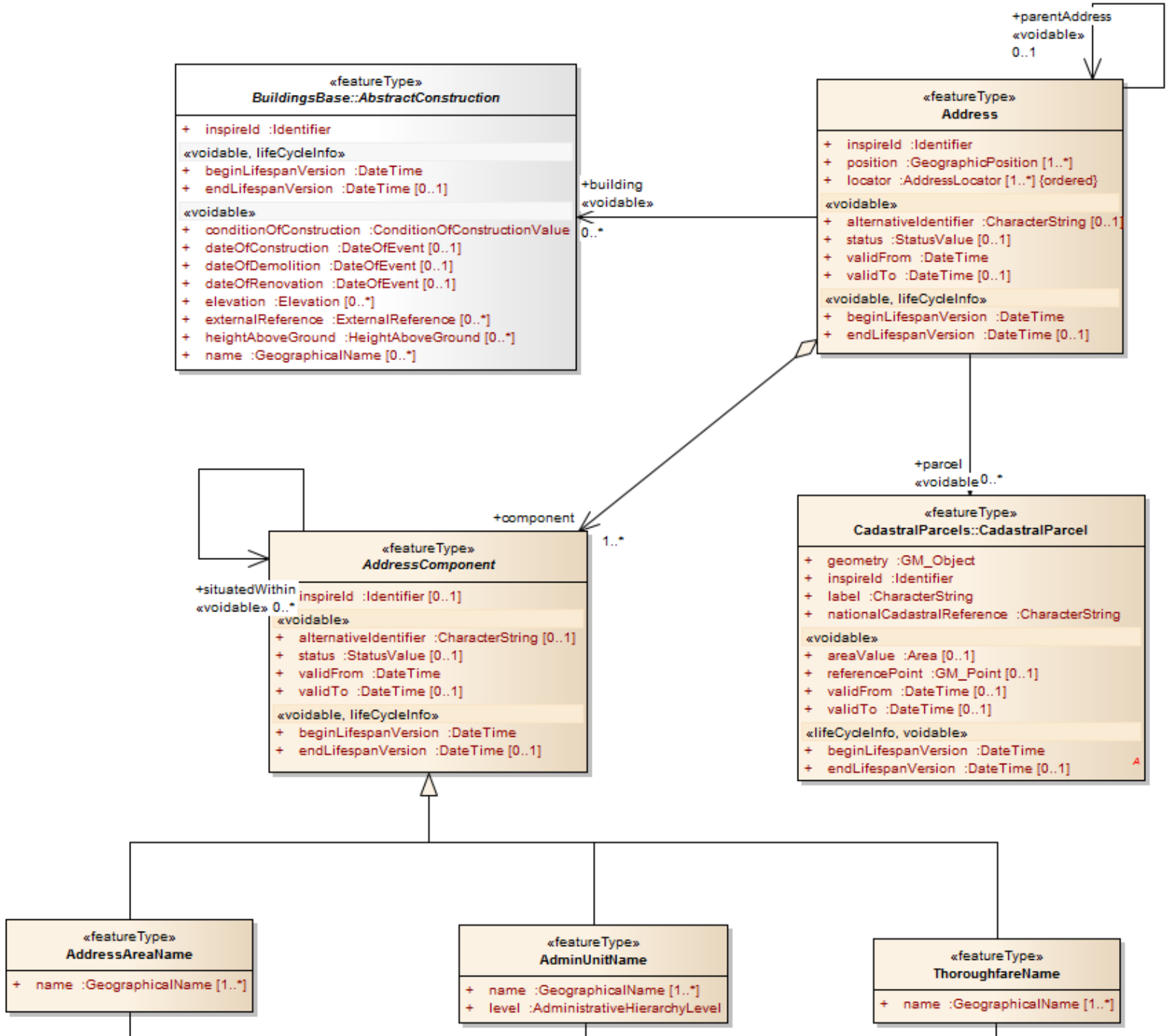


Atributy


«featureType»
ExistingLandUseObject
+ geometry: GM_MultiSurface
+ hilucsLandUse: HILUCSValue [1..*]
+ inspireId: Identifier
«lifeCycleInfo, voidable»
+ beginLifespanVersion: DateTime
+ endLifespanVersion: DateTime [0..1]
«voidable»
+ hilucsPresence: HILUCSPresence
+ observationDate: Date
+ specificLandUse: LandUseClassificationValue [1..*]
+ specificPresence: SpecificPresence
+ validFrom: Date [0..1]
+ validTo: Date [0..1]
«featureType»
BuildingAndBuildingUnitInfo
«voidable»
+ address: AddressRepresentation [0..*]
+ connectionToElectricity: Boolean [0..1]
+ connectionToGas: Boolean [0..1]
+ connectionToSewage: Boolean [0..1]
+ connectionToWater: Boolean [0..1]
+ document: Document [0..*]
+ energyPerformance: EnergyPerformance [0..1]
+ heatingSource: HeatingSourceValue [0..*]
+ heatingSystem: HeatingSystemValue [0..*]
+ officialArea: OfficialArea [0..*]
+ officialValue: OfficialValue [0..*]
«featureType»
BuildingsBase::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..*]

Relace

Relace


«featureType»
BuildingsBase::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..*]
+building
«voidable»
0..*
+parentAddress
«voidable»
0..1
«featureType»
Address
+ inspireId :Identifier
+ position :GeographicPosition [1..*]
+ locator :AddressLocator [1..*] {ordered}
«voidable»
+ alternativeIdentifier :CharacterString [0..1]
+ status :StatusValue [0..1]
+ validFrom :DateTime
+ validTo :DateTime [0..1]
«voidable, lifeCycleInfo»
+ beginLifespanVersion :DateTime
+ endLifespanVersion :DateTime [0..1]
+parcel
«voidable
0..*
+component
1..*
+situatedWithin
«voidable» 0..*
«featureType»
AddressComponent
inspireId :Identifier [0..1]
«voidable»
+ alternativeIdentifier :CharacterString [0..1]
+ status :StatusValue [0..1]
+ validFrom :DateTime
+ validTo :DateTime [0..1]
«voidable, lifeCycleInfo»
+ beginLifespanVersion :DateTime
+ endLifespanVersion :DateTime [0..1]
«featureType»
CadastralParcels::CadastralParcel
+ geometry :GM_Object
+ inspireId :Identifier
+ label :CharacterString
+ nationalCadastralReference :CharacterString
«voidable»
+ areaValue :Area [0..1]
+ referencePoint :GM_Point [0..1]
+ validFrom :DateTime [0..1]
+ validTo :DateTime [0..1]
«lifeCycleInfo, voidable»
+ beginLifespanVersion :DateTime
+ endLifespanVersion :DateTime [0..1]
«featureType»
AddressAreaName
+ name :GeographicalName [1..*]
«featureType»
AdminUnitName
+ name :GeographicalName [1..*]
+ level :AdministrativeHierarchyLevel
«featureType»
ThoroughfareName
+ name :GeographicalName [1..*]

Atributy - jednoduché a komplexní typy

výška budovy	26.5 metru
způsob vytápění	plynový kotel
datum kolaudace	26. října 2012
způsob využití území	hospodářský les
současný způsob využití budovy	kanceláře a skladiště
zodpovědná osoba	Peťo Tázok

Atributy - jednoduché a komplexní typy

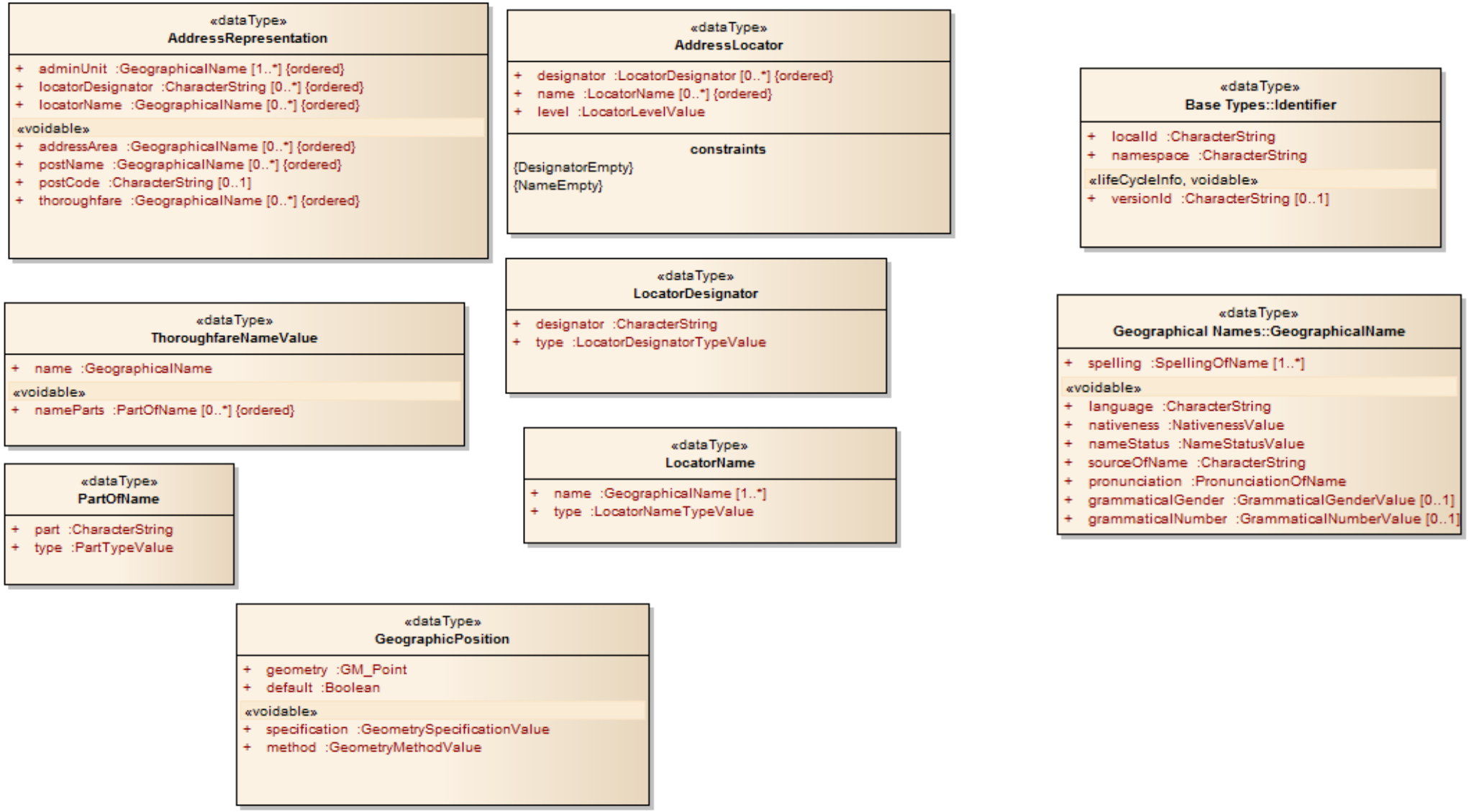
výška budovy	26.5 metru
způsob vytápění	plynový kotel
datum kolaudace	26. října 2012
způsob využití území	hospodářský les
současný způsob využití budovy	kanceláře a skladiště
zodpovědná osoba	Peťo Tázok

Atributy - jednoduché a komplexní typy

Zodpovědná osoba	
jméno	Peťo
příjmení	Tázok
Datum narození	26. októbra 1992
Kontaktní informace	email: petot@zok.sk telefon: +421 123 456 789
Organizace	MŽP SR
Adresa	Adresa

Adresa	
Ulice	Vodní
Číslo popisné	26
Město	Bratislava
Stát	Slovensko

Atributy - komplexní typy

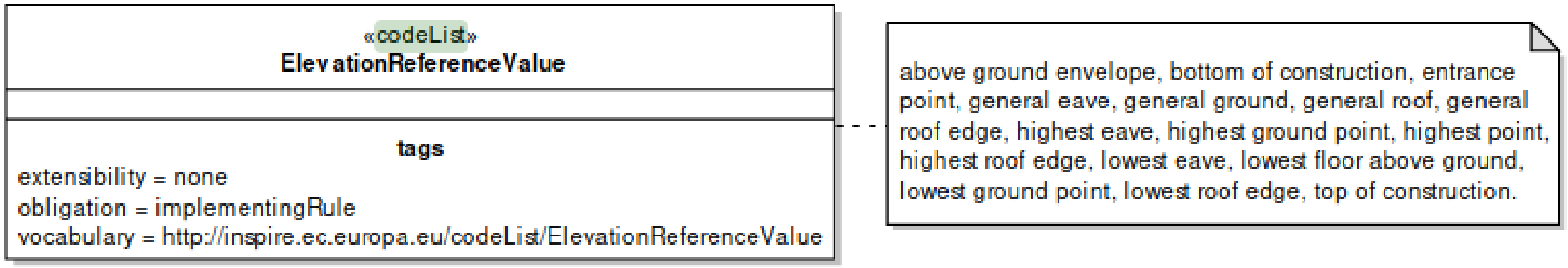


Atributy - číselníky

Adresa	
Ulice	Horská
Číslo popisné	265
Město	Bratislava
Stát	Slovenská republika

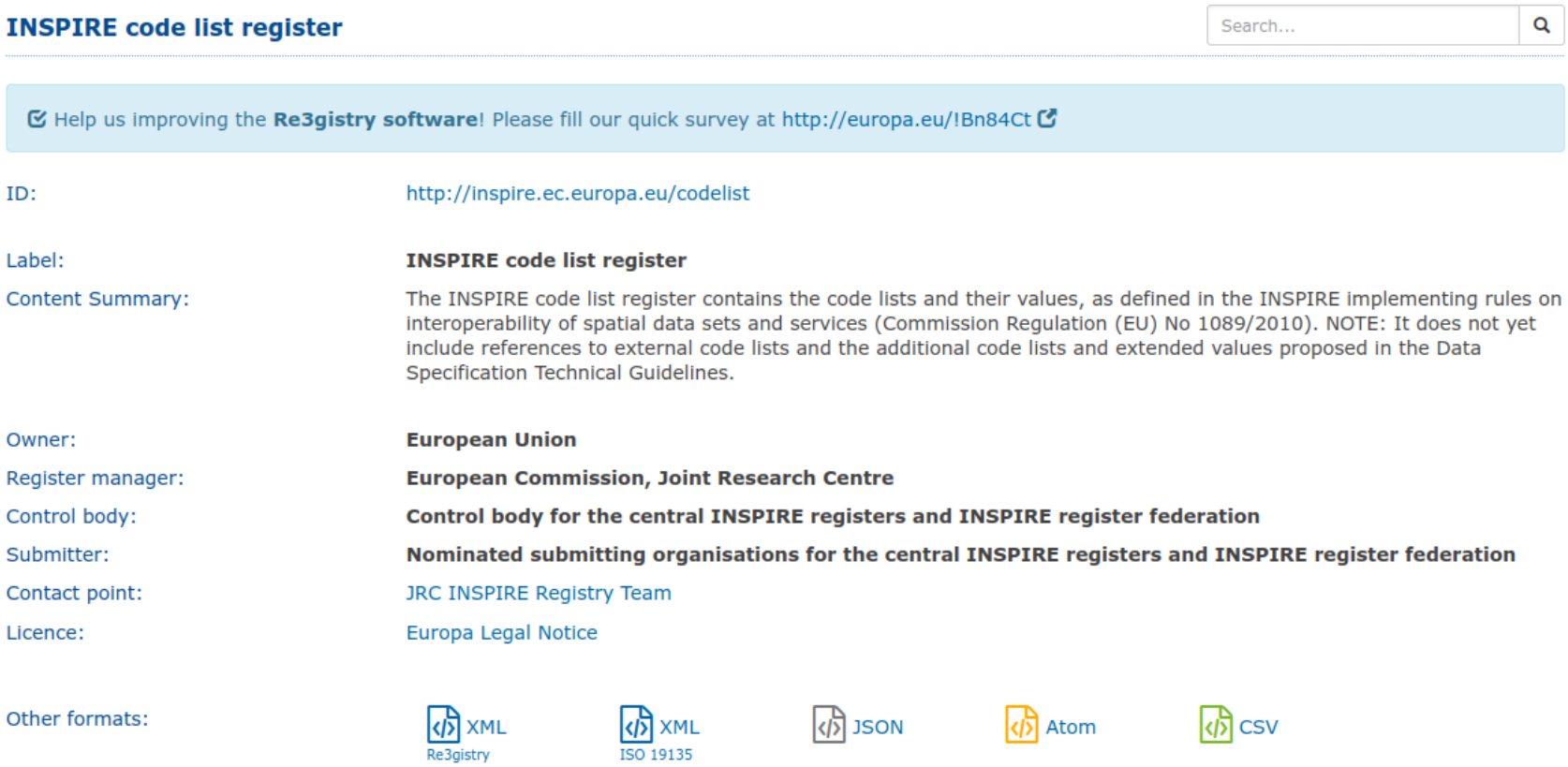
Adresa	
Ulice	Vodní
Číslo popisné	26
Město	Bratislava
Stát	Slovensko

Atributy - číselníky



elevationReference	roof edge
elavationValue	420

Registr číselníků



https://inspire.ec.europa.eu/codelist

Registr číselníků

Code Lists

☑ Show only valid items

Filter Label	Filter Themes	Filter Application schema	Filter Parents	^Valid((?!Invali
Label	**Themes**	**Application schema**	**Parents**	**Status**
Access Restriction	Transport networks	Common Transport Elements		Valid
Active Well Type	Geology	Hydrogeology		Valid
activity code value	Production and industrial facilities	Production and Industrial Facilities		Valid
Administrative Hierarchy Level	Administrative units	Administrative Units		Valid
Aerodrome Category	Transport networks	Air Transport Network		Valid
Aerodrome Type	Transport networks	Air Transport Network		Valid
Age By 5 Years	Population distribution — demography	Population Distribution - Demography	Classification Item Type	Valid
Age By Year	Population distribution — demography	Population Distribution - Demography	Classification Item Type	Valid
Age Group Value	Population distribution — demography	Population Distribution - Demography		Valid
Air Route Link Class	Transport networks	Air Transport Network		Valid
Air Route Type	Transport networks	Air Transport Network		Valid
Air Use Restriction	Transport networks	Air Transport Network		Valid
Airspace Area Type	Transport networks	Air Transport Network		Valid
Annex II to Regulation (EC) No 1165/2008 and additional values at any level defined by data providers.	Agricultural and aquaculture facilities	Agricultural and Aquaculture Facilities Model		Valid

https://inspire.ec.europa.eu/codelist

Číselník

HILUCS

Search...

Help us improving the **Re3gistry software**! Please fill our quick survey at http://europa.eu/!Bn84Ct

ID:	http://inspire.ec.europa.eu/codelist/HILUCSValue
This version:	http://inspire.ec.europa.eu/codelist/HILUCSValue:1
Latest version:	http://inspire.ec.europa.eu/codelist/HILUCSValue
Label:	**HILUCS**
Definition:	List of land use categories to be used in INSPIRE Land Use.
Description:	This list is populated with the land use categories of the Hierarchical INSPIRE Land Use Classification System (HILUCS). The elements of the list should be both applicable to existing land use and planned land use.
Governance level:	eu-legal
Status:	Valid
Themes:	Land use
Application schema:	Land Use Nomenclature
Extensibility:	Not extensible

Other formats: XML (Re3gistry) | XML (ISO 19135) | RDF/XML | JSON | Atom | CSV

https://inspire.ec.europa.eu/codelist/HILUCSValue

Číselník

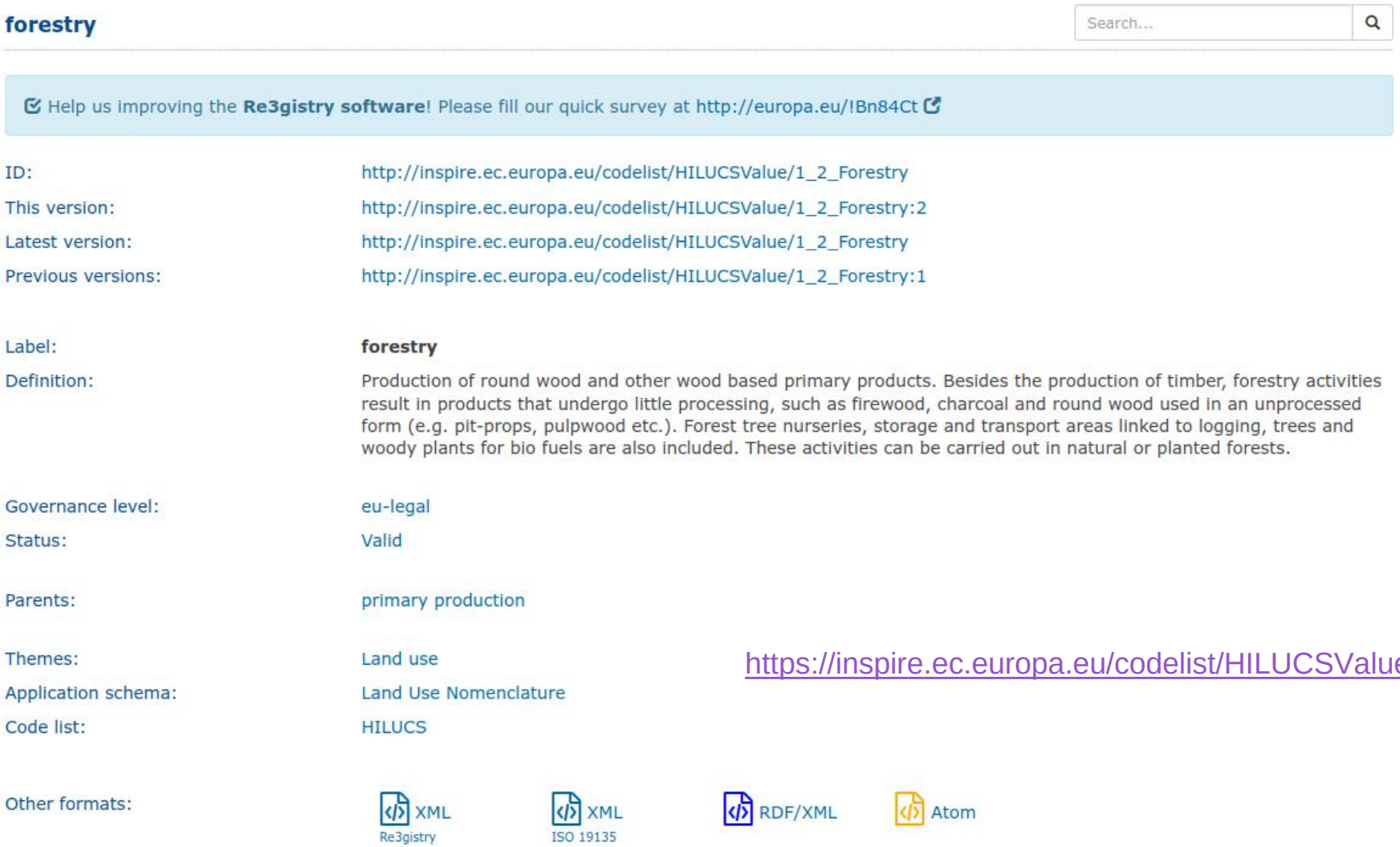
Code list values

Show only valid items

Filter Label	Filter Parent	Filter Governance level	^Valid((?!Invali
Label	**Parent**	**Governance level**	**Status**
abandoned areas	other uses	eu-legal	Valid
accommodation and food services	commercial services	eu-legal	Valid
administrative and support services	financial professional and information services	eu-legal	Valid
agricultural production for own consumption	agriculture	eu-legal	Valid
agriculture	primary production	eu-legal	Valid
air transport	transport networks	eu-legal	Valid
aquaculture	aquaculture and fishing	eu-legal	Valid
aquaculture and fishing	primary production	eu-legal	Valid
areas where any use allowed	other uses	eu-legal	Valid
areas without any specified planned use	other uses	eu-legal	Valid
biomass based energy production	energy production	eu-legal	Valid
commercial agricultural production	agriculture	eu-legal	Valid
commercial services	tertiary production	eu-legal	Valid
community services	tertiary production	eu-legal	Valid

https://inspire.ec.europa.eu/codelist/HILUCSValue

Hodnota číselníku



https://inspire.ec.europa.eu/codelist/HILUCSValue/1_2_Forestry

Hodnota číselníku - specifičtější hodnoty

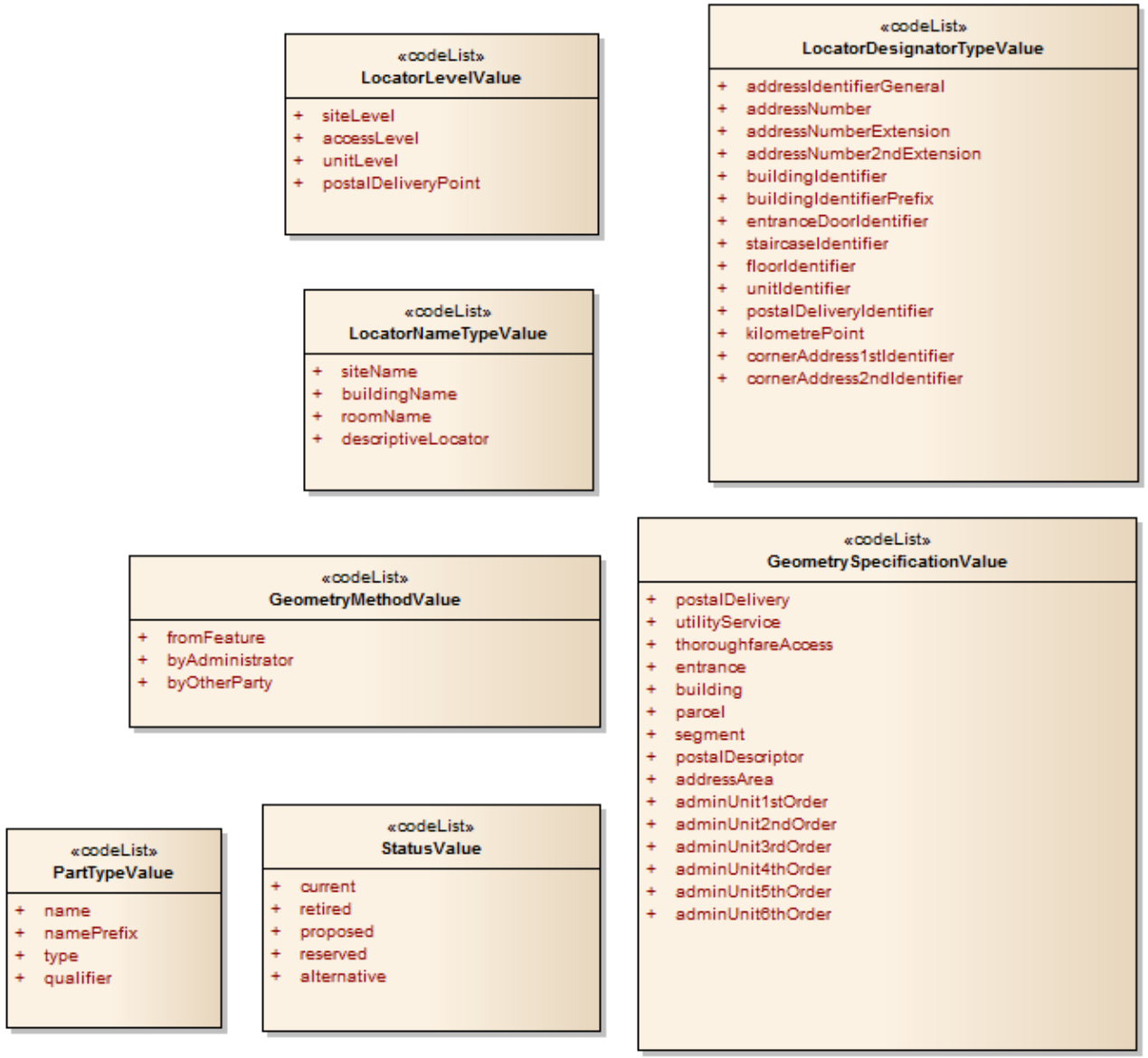
Narrower

☑ Show only valid items

Filter Label	Filter Governance level	^Valid((?!Invali
Label	**Governance level**	**Status**
forestry based on continuous cover	eu-legal	Valid
forestry based on intermediate or long rotation	eu-legal	Valid
forestry based on short rotation	eu-legal	Valid

https://inspire.ec.europa.eu/codelist/HILUCSValue/1_2_Forestry

Číselníky vztažené k tématu



Komplexní atribut a číselník

výška budovy	26.5 metru
způsob vytápění	plynový kotel
datum kolaudace	26. října 2012
způsob využití území	hospodářský les
současný způsob využití budovy	kanceláře a skladiště
zodpovědná osoba	Peťo Tázok

Komplexní atribut a číselník

Figure 18 – *Land Use* object with several hilucsLandUse value with knowledge of relative importance and propotion

Typy číselníků

Extensibility

Search...

ID: http://inspire.ec.europa.eu/registry/extensibility

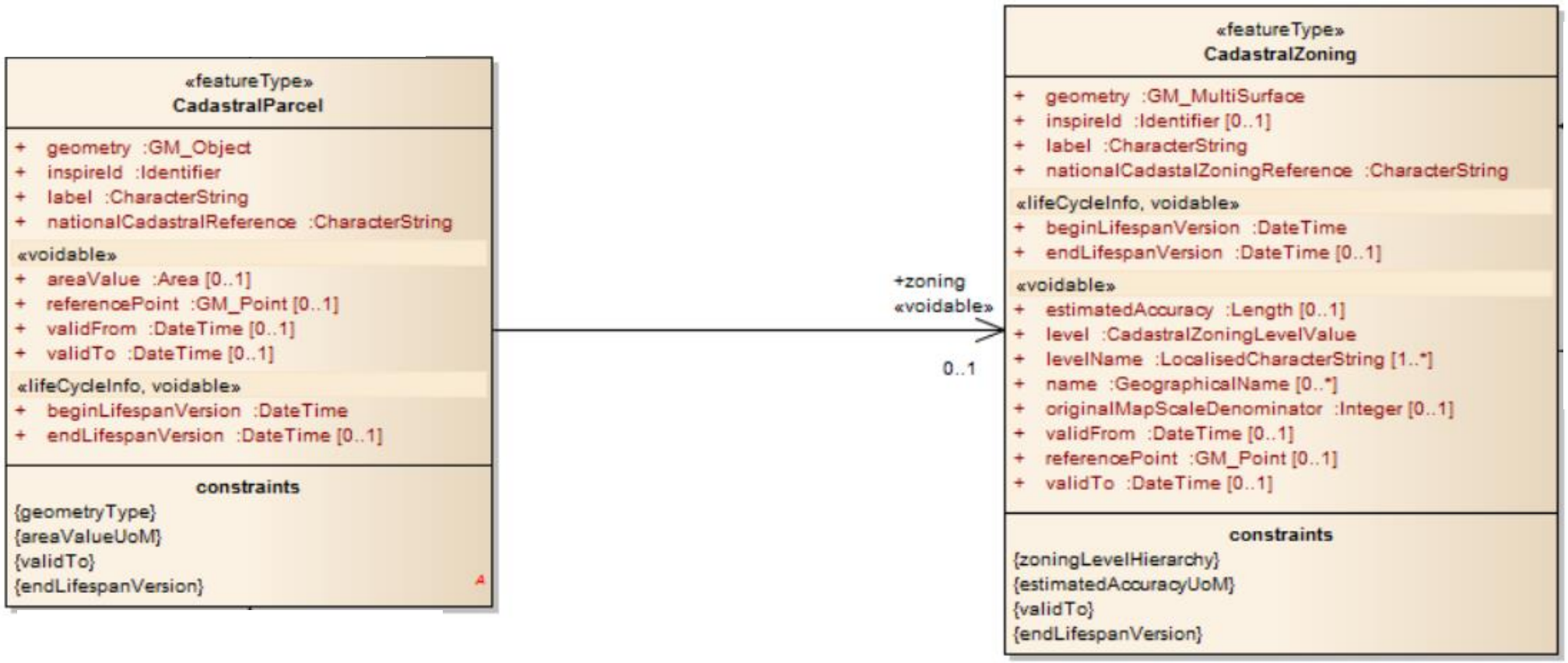
Label: **Extensibility**

Definition:

Filter Label	Filter Definition
Label	**Definition**
Empty code list	No values are specified for this code list in this register, i.e. its allowed values comprise any values defined by data providers.
Extensible with narrower values	The code list can only be extended with narrower values, i.e. its allowed values comprise the values specified in this register and narrower values defined by data providers.
Extensible with values at any level	The code list can be extended with additional values at any level, i.e. its allowed values comprise the values specified in this register and additional values at any level defined by data providers.
Not extensible	The code list cannot be extended, i.e. its allowed values comprise only the values specified in this register.

https://inspire.ec.europa.eu/registry/extensibility

Kardinalita



Voidable

«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

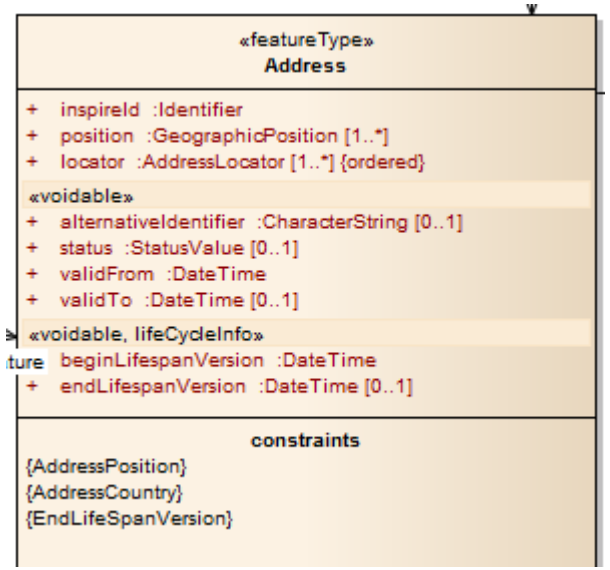
«voidable»
\+ buildingNature :BuildingNatureValue [0..*]
\+ currentUse :CurrentUse [0..*]
\+ numberOfDwellings :Integer [0..1]
\+ numberOfBuildingUnits :Integer [0..1]
\+ numberOfFloorsAboveGround :Integer [0..1]

Voidable - přípustné důvody

- unknown
- unpopulated
- withheld

Constraints

Official Documentation feature type



Attribute: inspireId

Value type:	Identifier
Definition:	External object identifier of this spatial textual regulation.
Description:	NOTE An external object identifier is a unique object identifier published by the responsible body, which may be used by external applications to reference the spatial object. The identifier is an identifier of the spatial object, not an identifier of the real-world phenomenon.
Multiplicity:	1

Attribute: legislationCitation

Value type:	LegislationCitation
Definition:	Reference to the document that contains the text of the regulation.
Multiplicity:	0..1
Stereotypes:	«voidable»

Attribute: regulationText

Value type:	CharacterString
Definition:	Text of the regulation.
Multiplicity:	0..1
Stereotypes:	«voidable»

Attribute: planDocument

Value type:	DocumentCitation
Definition:	Citation of scanned plans and structural drawings which may sometimes be geo-referenced or not,. E.g. raster images, vector drawings or scanned text.
Multiplicity:	0..1
Stereotypes:	«voidable»

Constraint: OneMustBeFilled

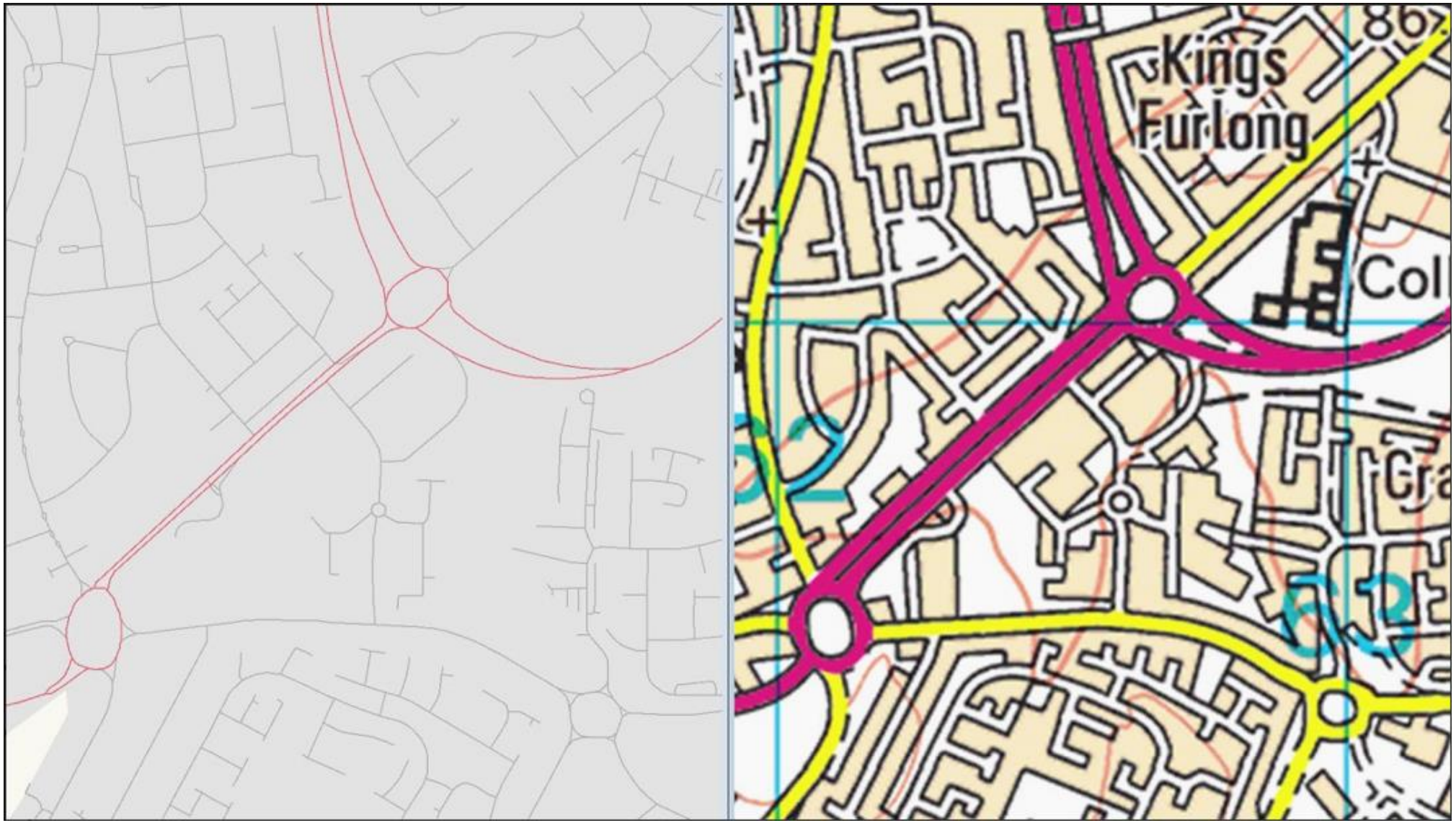
Natural language:	** At least one of the values must be populated with a non-void value
OCL:	

ESPUS

Efektívna správa priestorových údajov a služieb

Reprezentace dat

Způsoby reprezentace dat



Způsoby reprezentace dat

«featureType»
Address

+ inspireId :Identifier
+ position :GeographicPosition [1..*]
+ locator :AddressLocator [1..*] {ordered}

«voidable»
+ alternativeIdentifier :CharacterString [0..1]
+ status :StatusValue [0..1]
+ validFrom :DateTime
+ validTo :DateTime [0..1]

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

constraints
{AddressPosition}
{AddressCountry}
{EndLifeSpanVersion}

```
<base:member>
  <ad:Address gml:id="AD.7412193">
    <ad:inspireId>
      <base:Identifier>
        <base:localId>AD.7412193</base:localId>
        <base:namespace>CZ-00025712-CUZK_AD</base:namespace>
      </base:Identifier>
    </ad:inspireId>
    <ad:alternativeIdentifier>Dolní Adršpach 38, 54957 Adršpach</ad:alternativeIdentifier>
    <ad:position>
      <ad:GeographicPosition>
        <ad:geometry>
          <gml:Point gml:id="P.AD.7412193" srsName="http://www.opengis.net/def/crs/EPSG/0/5514" srsDimension="2">
            <gml:pos>-616309.63 -999367.06</gml:pos>
          </gml:Point>
        </ad:geometry>
        <ad:specification xlink:href="http://inspire.ec.europa.eu/codelist/GeometrySpecificationValue/entrance" xlink:title="entrance" />
        <ad:method xlink:href="http://inspire.ec.europa.eu/codelist/GeometryMethodValue/byAdministrator" xlink:title="byAdministrator" />
        <ad:default>true</ad:default>
      </ad:GeographicPosition>
    </ad:position>
    <ad:status xlink:href="http://inspire.ec.europa.eu/codelist/StatusValue/current" xlink:title="current" />
    <ad:locator>
      <ad:AddressLocator>
        <ad:designator>
          <ad:LocatorDesignator>
            <ad:designator>č.p.</ad:designator>
            <ad:type xlink:href="http://inspire.ec.europa.eu/codelist/LocatorDesignatorTypeValue/buildingIdentifierPrefix" xlink:title="buildingIdentifierPrefix" />
          </ad:LocatorDesignator>
        </ad:designator>
        <ad:designator>
          <ad:LocatorDesignator>
            <ad:designator>38</ad:designator>
            <ad:type xlink:href="http://inspire.ec.europa.eu/codelist/LocatorDesignatorTypeValue/buildingIdentifier" xlink:title="buildingIdentifier" />
          </ad:LocatorDesignator>
        </ad:designator>
        <ad:level xlink:href="http://inspire.ec.europa.eu/codelist/LocatorLevelValue/siteLevel" xlink:title="siteLevel" />
      </ad:AddressLocator>
    </ad:locator>
    <ad:validFrom>2015-10-11T16:24:22Z</ad:validFrom>
    <ad:beginLifespanVersion>2015-10-11T16:24:22Z</ad:beginLifespanVersion>
    <ad:endLifespanVersion xsi:nil="true" nilReason="http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated" />
    <ad:parcel xlink:href="http://services.cuzk.cz/wfs/inspire-cp-wfs.asp?service=WFS&amp;VERSION=2.0.0&amp;request=GetFeature&amp;storedQuery_id=urn:ogc:def:query:OG
    <ad:building xlink:href="http://services.cuzk.cz/wfs/inspire-bu-wfs.asp?service=WFS&amp;VERSION=2.0.0&amp;request=GetFeature&amp;storedQuery_id=urn:ogc:def:query:
    <ad:component xlink:href="http://services.cuzk.cz/wfs/inspire-au-wfs.asp?service=WFS&amp;VERSION=2.0.0&amp;request=GetFeature&amp;storedQuery_id=urn:ogc:def:query
    <ad:component xlink:href="http://services.cuzk.cz/wfs/inspire-au-wfs.asp?service=WFS&amp;VERSION=2.0.0&amp;request=GetFeature&amp;storedQuery_id=urn:ogc:def:query
    <ad:component xlink:href="http://services.cuzk.cz/wfs/inspire-ad-wfs.asp?service=WFS&amp;VERSION=2.0.0&amp;request=GetFeature&amp;storedQuery_id=urn:ogc:def:query
    <ad:component xlink:href="http://services.cuzk.cz/wfs/inspire-ad-wfs.asp?service=WFS&amp;VERSION=2.0.0&amp;request=GetFeature&amp;storedQuery_id=urn:ogc:def:query
  </ad:Address>
</base:member>
```

Vektorová data

Article 7

Encoding

1. Every encoding rule used to encode spatial data shall conform to EN ISO 19118. In particular, it shall specify schema conversion rules for all spatial object types and all attributes and association roles and the output data structure used.

2. Every encoding rule used to encode spatial data shall be made available.

https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02010R1089-20141231&from=EN#tocId9

GML 3.2.1 odpovídá kódování podle **EN ISO 19118** a zároveň je sám o sobě normou **ISO 19136**, která je zmíněna v legislativně nezávazných datových specifikacích INSPIRE. Formát **GML 3.2.1** je tak primárním doporučeným výměnným formátem pro data INSPIRE ve vektorové podobě. Sekundárními doporučenými formáty jsou od roku 2016 i **GeoJSON** a **GeoPackage**.

Rastrová data

Article 14

Portrayal

1. For the portrayal of spatial data sets using a view network service as specified in Commission Regulation No 976/2009 ([5]), the following shall be available:

(a) the layers specified in Annex II for the theme or themes the data set is related to;

(b) for each layer at least a default portrayal style, with as a minimum an associated title and a unique identifier.

2. For each layer, Annex II defines the following:

(a) a human readable title of the layer to be used for display in user interface;

(b) the spatial object type(s), or sub-set thereof, that constitute(s) the content of the layer.

3. For spatial object types whose objects can be further classified using a code list-valued attribute, several layers may be defined. Each of these layers shall include the spatial objects corresponding to one specific code list value. In the definition of such sets of layers in Annexes II, III and IV, all of the following requirements shall be fulfilled:

(a) the placeholder <CodeListValue> shall represent the values of the relevant code list, with the first letter in upper case;

(b) the placeholder <human-readable name> shall represent the human-readable name of the code list values;

(c) the spatial object type shall include the relevant attribute and code list, in parentheses;

(d) one example of a layer shall be given.

https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02010R1089-20141231&from=EN#tocId9

Explicitní požadavek na **vytvoření vrstev a typů objektů**, které budou obsahovat, ovšem **bez legislativní povinnosti** dodržovat specifická pravidla vizualizace. Způsob vizualizace tedy zůstává na poskytovateli.

Způsoby publikace

Právní rámec - legislativně závazný

https://inspire.ec.europa.eu/documents/commission-regulation-eu-no-13112014-10-december-2014-amending-regulation-ec-no-9762009-0

Technické návody

https://inspire.ec.europa.eu/Technical-Guidelines2/Network-Services/41

Prohlížecí služba

Stahovací služba

storedQuery

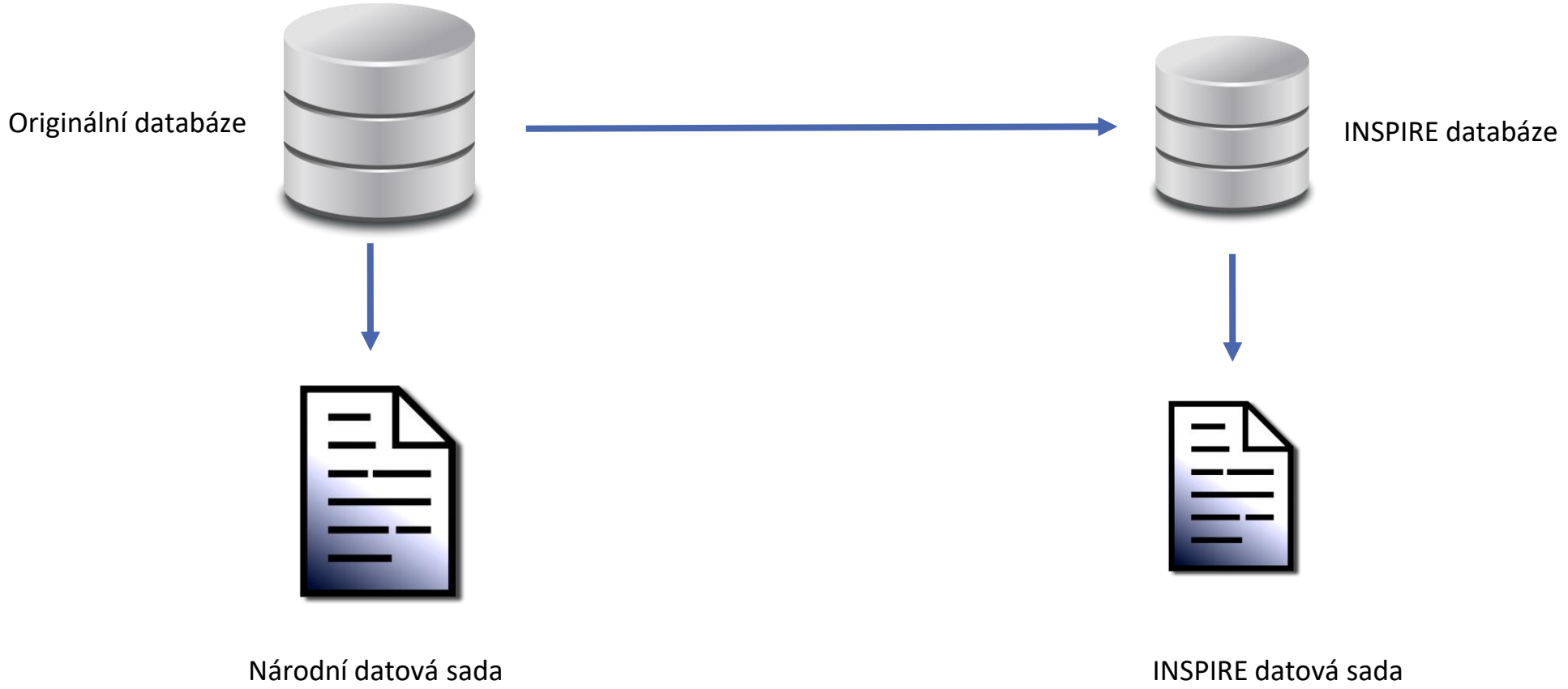
direct access

ESPUS

Efektívna správa priestorových údajov a služieb

Implementace a mapování

Publikace v praxi



Publikace v praxi

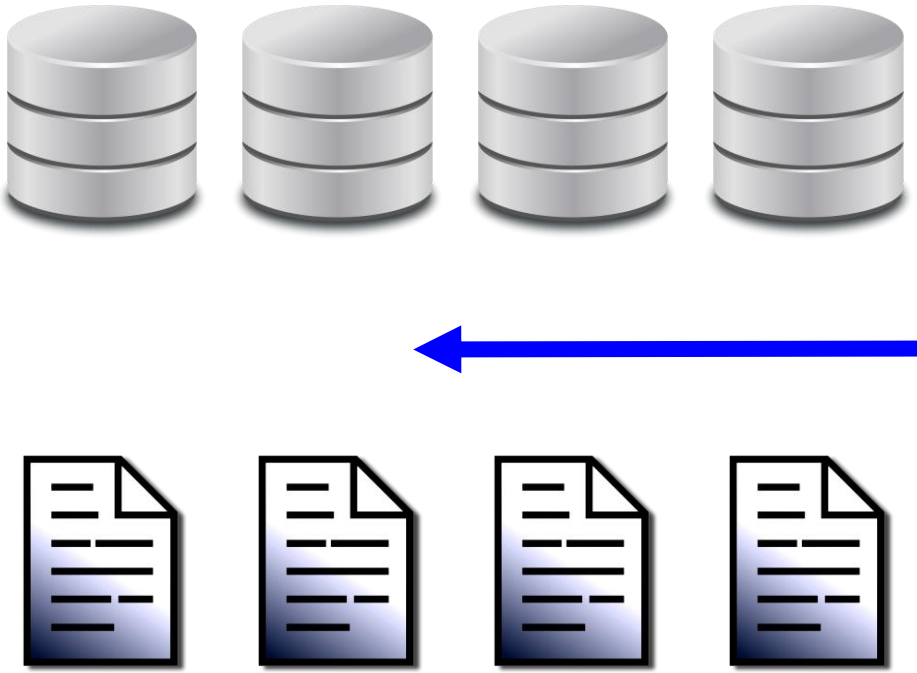
Národní datová sada	INSPIRE datová sada
Plné údaje	Pouze údaje odpovídající INSPIRE modelu
Kompletní historie	Pouze aktuální data
Proprietární formát	Standardizovaný formát
Komplikovaný přístup k datům	Přístup přes standardizované služby
Jedinečná datová struktura	Datový model sdílený napříč EU

Publikace v praxi

Rozšířená INSPIRE datová sada

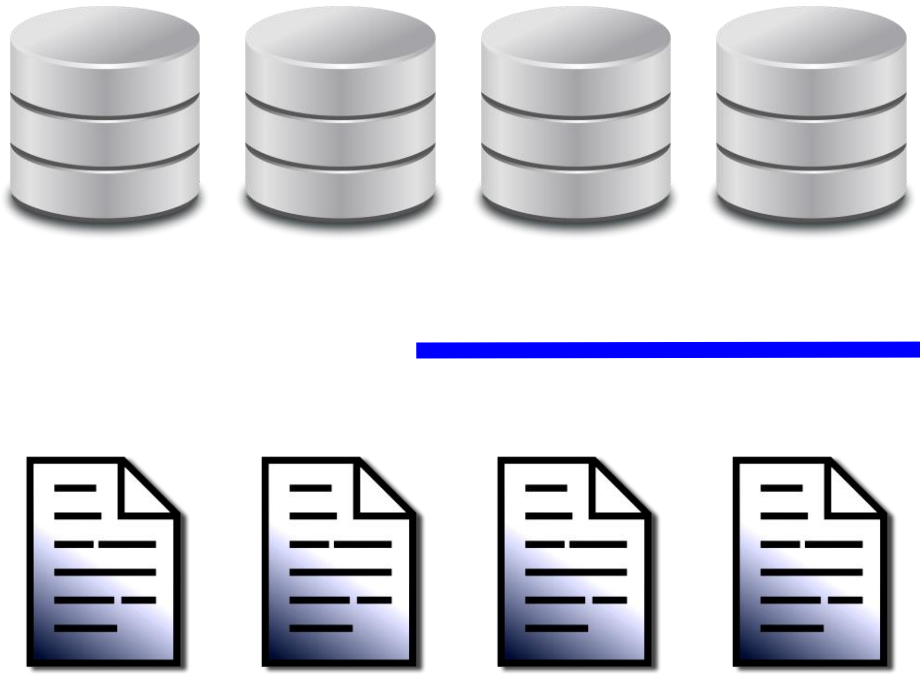
Plné údaje
Kompletní historie
Standardizovaný formát
Přístup přes standardizované služby
Datový model sdílený napříč EU

Motivace k publikaci



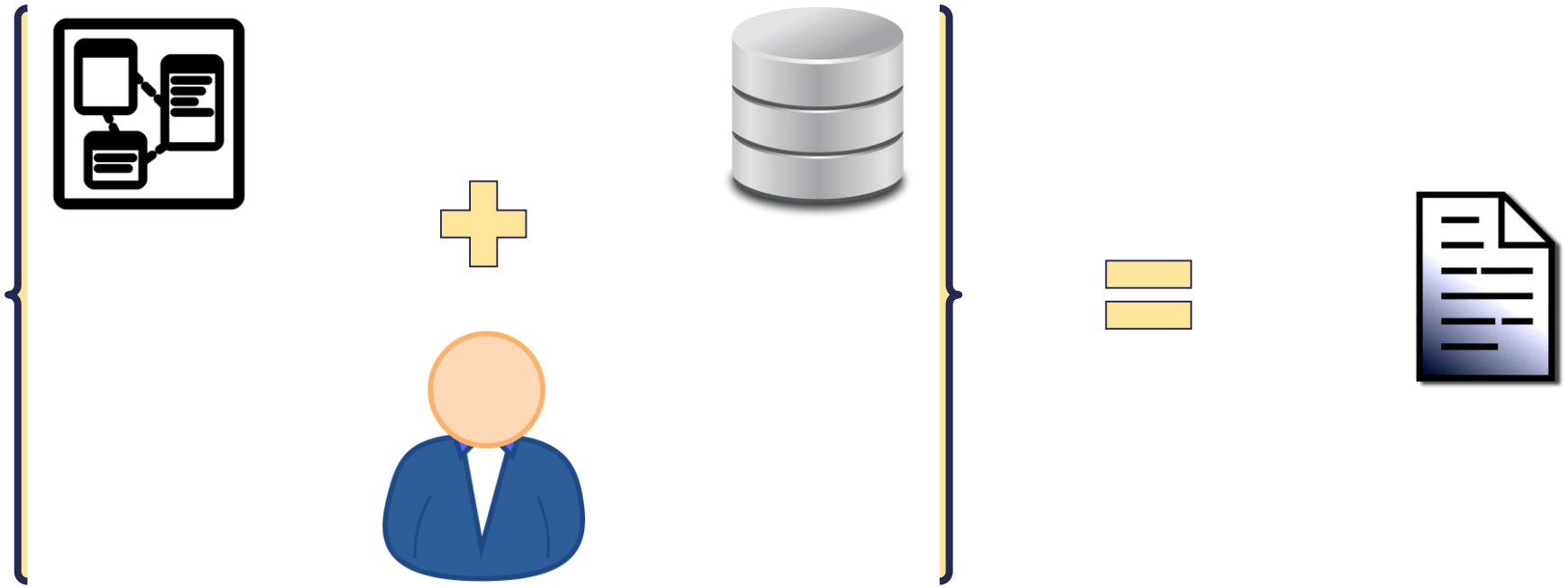
- Agricultural and aquaculture facilities
- Area management / restriction / regulation zones & reporting units
- Atmospheric conditions
- Bio-geographical regions
- Buildings
- Energy Resources
- Environmental monitoring Facilities
- Habitats and biotopes
- Human health and safety
- Land use
- Meteorological geographical features
- Mineral Resources
- Natural risk zones
- Oceanographic geographical features
- Population distribution and demography
- Production and industrial facilities
- Sea regions
- Soil
- Species distribution
- Statistical units
- Utility and governmental services

Motivace k publikaci

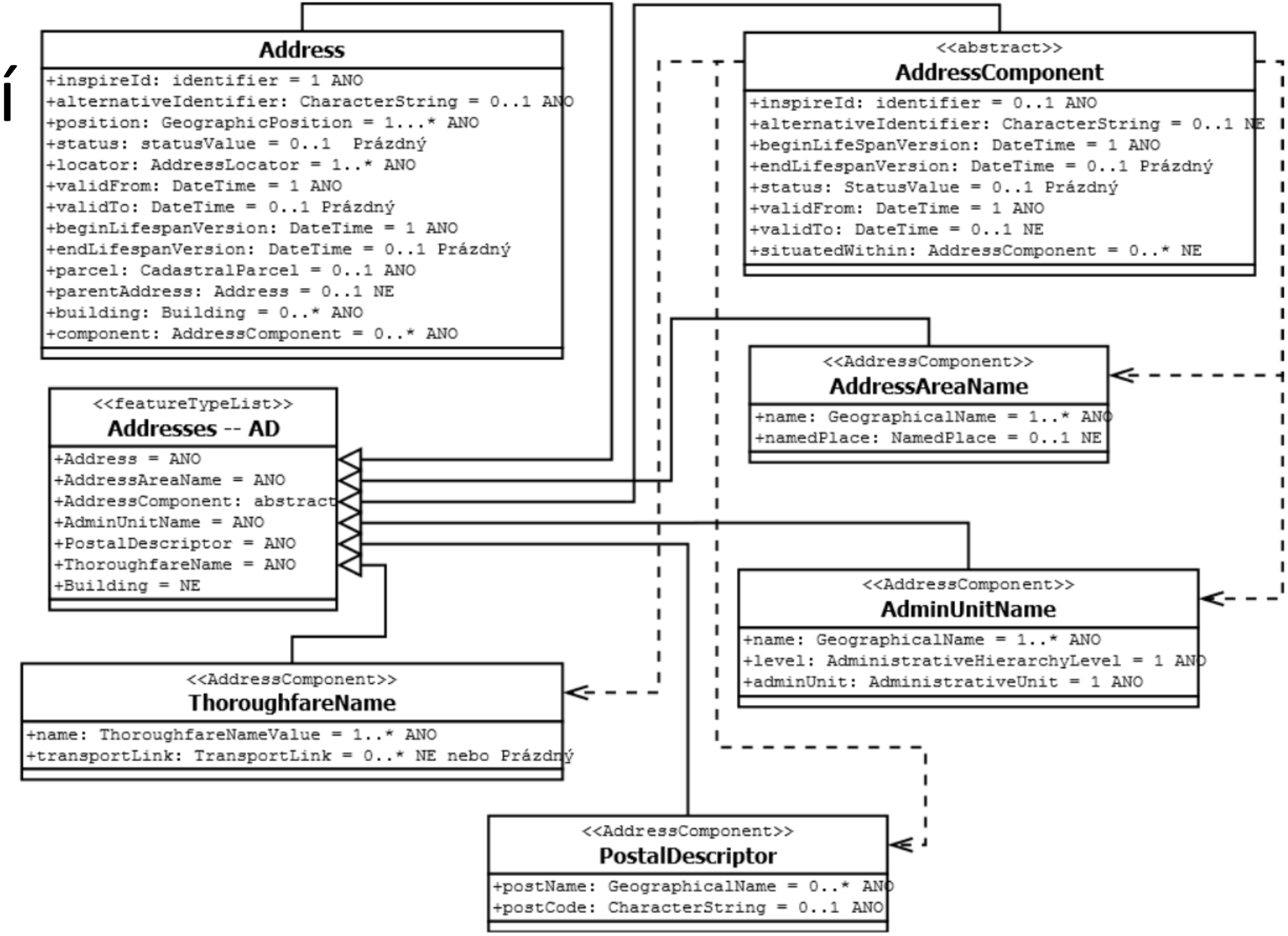


- Agricultural and aquaculture facilities
- Area management / restriction / regulation zones & reporting units
- Atmospheric conditions
- Bio-geographical regions
- Buildings
- Energy Resources
- Environmental monitoring Facilities
- Habitats and biotopes
- Human health and safety
- Land use
- Meteorological geographical features
- Mineral Resources
- Natural risk zones
- Oceanographic geographical features
- Population distribution and demography
- Production and industrial facilities
- Sea regions
- Soil
- Species distribution
- Statistical units
- Utility and governmental services

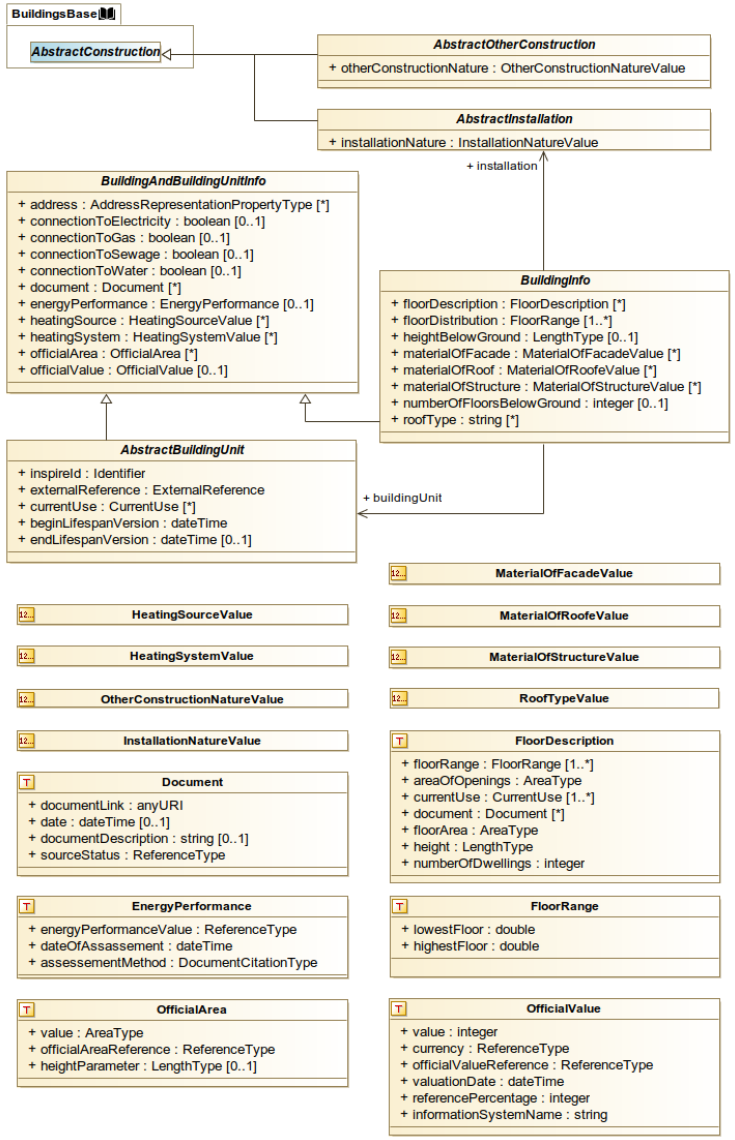
Mapování



Mapování


Address
+inspireId: identifier = 1 ANO
+alternativeIdentifier: CharacterString = 0..1 ANO
+position: GeographicPosition = 1...* ANO
+status: statusValue = 0..1 Prázdný
+locator: AddressLocator = 1..* ANO
+validFrom: DateTime = 1 ANO
+validTo: DateTime = 0..1 Prázdný
+beginLifespanVersion: DateTime = 1 ANO
+endLifespanVersion: DateTime = 0..1 Prázdný
+parcel: CadastralParcel = 0..1 ANO
+parentAddress: Address = 0..1 NE
+building: Building = 0..* ANO
+component: AddressComponent = 0..* ANO
<<abstract>>
AddressComponent
+inspireId: identifier = 0..1 ANO
+alternativeIdentifier: CharacterString = 0..1 NE
+beginLifeSpanVersion: DateTime = 1 ANO
+endLifespanVersion: DateTime = 0..1 Prázdný
+status: StatusValue = 0..1 Prázdný
+validFrom: DateTime = 1 ANO
+validTo: DateTime = 0..1 NE
+situatedWithin: AddressComponent = 0..* NE
<<featureTypeList>>
Addresses -- AD
+Address = ANO
+AddressAreaName = ANO
+AddressComponent: abstract
+AdminUnitName = ANO
+PostalDescriptor = ANO
+ThoroughfareName = ANO
+Building = NE
<<AddressComponent>>
AddressAreaName
+name: GeographicalName = 1..* ANO
+namedPlace: NamedPlace = 0..1 NE
<<AddressComponent>>
AdminUnitName
+name: GeographicalName = 1..* ANO
+level: AdministrativeHierarchyLevel = 1 ANO
+adminUnit: AdministrativeUnit = 1 ANO
<<AddressComponent>>
ThoroughfareName
+name: ThoroughfareNameValue = 1..* ANO
+transportLink: TransportLink = 0..* NE nebo Prázdný
<<AddressComponent>>
PostalDescriptor
+postName: GeographicalName = 0..* ANO
+postCode: CharacterString = 0..1 ANO

Mapování



ISÚI_CONSTRUCTION_OBJECTS

P	*	KOD	NUMBER (9)
		NESPRAVNY	VARCHAR2 (3)
		IDENTIFIKACNI_PARCELA_ID	NUMBER (18)
		MOMC_KOD	NUMBER (6)
		COBCE_KOD	NUMBER (6)
		BUDOVA_ID	NUMBER (18)
		DOKONCENI	DATE
		JE_VYTAH_KOD	NUMBER (4)
		ZMENA_GRAFIKY	VARCHAR2 (3 CHAR)
		DRUH_KONSTRUKCE_KOD	NUMBER (4)
		ZMENA_DETAILU	VARCHAR2 (3 CHAR)
		OBESTAVENY_PROSTOR	NUMBER (8)
		POCET_BYTU	NUMBER (4)
		POCET_PODLAZI	NUMBER (4)
		PODLAHOVA_PLOCHA	NUMBER (6)
		PRIPOJ_EL_ENERGIE	VARCHAR2 (3 BYTE)
		PRIPOJ_KANAL_SIT_KOD	NUMBER (4)
		PRIPOJ_PLYN_KOD	NUMBER (4)
		PRIPOJ_VODOVOD_KOD	NUMBER (4)
		TYP_KOD	NUMBER (1)
		ZASTAVENA_PLOCHA	NUMBER (6)
		ZPUSOB_VYTAPENI_KOD	NUMBER (4)
		ZPUSOB_VYUZITI_KOD	NUMBER (4)
		PLATI_OD	DATE
		PLATI_DO	DATE
		ZRUSENY	VARCHAR2 (3 BYTE)
		NZ_ID_GLOBALNI	NUMBER (18)
		NZ_ID_ISUI	NUMBER (18)
		ZALOZIL_KDY	TIMESTAMP (3) WITH TIME ZONE
		ZALOZIL_KDO	VARCHAR2 (150 BYTE)
		ZMENIL_KDY	TIMESTAMP (3) WITH TIME ZONE
		ZMENIL_KDO	VARCHAR2 (150 BYTE)
		ODSTRANENI	DATE
		KATUZ_KOD	NUMBER (6)

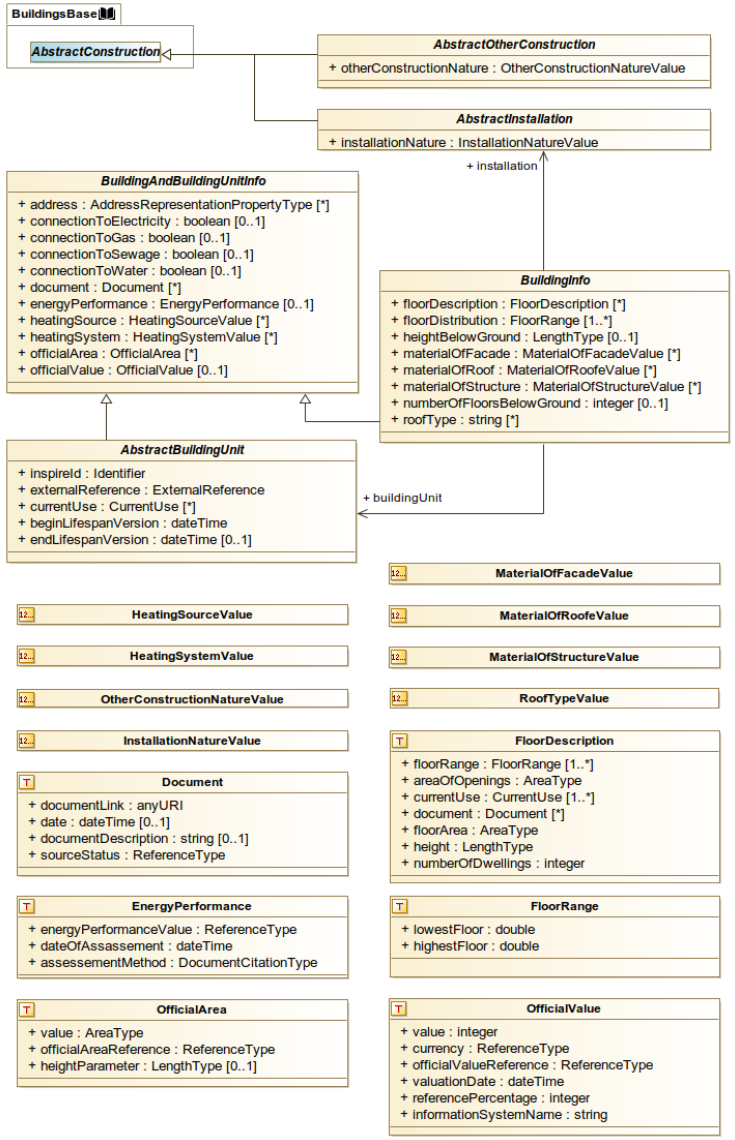
ISÚI_CONSTRUCTION_OBJECTS_PK (KOD)

ISUI.UI_DETAILNI_TEA

P	*	KOD	NUMBER (8)
		STAVOBJ_KOD	NUMBER (9)
		NESPRAVNY	VARCHAR2 (3 BYTE)
		POCET_BYTU	NUMBER (3)
		POCET_PODLAZI	NUMBER (3)
		DRUH_KONSTRUKCE_KOD	NUMBER (4)
		PRIPOJ_KANAL_SIT_KOD	NUMBER (4)
		PRIPOJ_PLYN_KOD	NUMBER (4)
		PRIPOJ_VODOVOD_KOD	NUMBER (4)
		PRIPOJ_EL_ENERGIE	VARCHAR2 (3 BYTE)
		ZPUSOB_VYTAPENI_KOD	NUMBER (4)
		PLATI_OD	DATE
		PLATI_DO	DATE
		ZRUSENY	VARCHAR2 (2 BYTE)
		NZ_ID_GLOBALNI	NUMBER (18)
		NZ_ID_ISUI	NUMBER (18)
		ZALOZIL_KDY	TIMESTAMP (3) WITH TIME ZONE
		ZALOZIL_KDO	VARCHAR2 (150 BYTE)
		ZMENIL_KDY	TIMESTAMP (3) WITH TIME ZONE
		ZMENIL_KDO	VARCHAR2 (150 BYTE)

ISUI.UI_DETAILNI_TEA_PK (KOD)

Mapování



ISÚI_CONSTRUCTION_OBJECTS

P *	KOD	NUMBER (9)
	NESPRAVNY	VARCHAR2 (3)
	IDENTIFIKACNI_PARCELA_ID	NUMBER (18)
	MOMC_KOD	NUMBER (6)
	COBCE_KOD	NUMBER (6)
	BUDOVA_ID	NUMBER (18)
	DOKONCENI	DATE
	JE_VYTAH_KOD	NUMBER (4)
	ZMENA_GRAFIKY	VARCHAR2 (3 CHAR)
	DRUH_KONSTRUKCE_KOD	NUMBER (4)
	ZMENA_DETAILU	VARCHAR2 (3 CHAR)
	OBESTAVENY_PROSTOR	NUMBER (8)
	POCET_BYTU	NUMBER (4)
	POCET_PODLAZI	NUMBER (4)
	PODLAHOVA_PLOCHA	NUMBER (6)
	PRIPOJ_EL_ENERGIE	VARCHAR2 (3 BYTE)
	PRIPOJ_KANAL_SIT_KOD	NUMBER (4)
	PRIPOJ_PLYN_KOD	NUMBER (4)
	PRIPOJ_VODOVOD_KOD	NUMBER (4)
	TYP_KOD	NUMBER (1)
	ZASTAVENA_PLOCHA	NUMBER (6)
	ZPUSOB_VYTAPENI_KOD	NUMBER (4)
	ZPUSOB_VYUZITI_KOD	NUMBER (4)
	PLATI_OD	DATE
	PLATI_DO	DATE
	ZRUSENY	VARCHAR2 (3 BYTE)
	NZ_ID_GLOBALNI	NUMBER (18)
	NZ_ID_ISUI	NUMBER (18)
	ZALOZIL_KDY	TIMESTAMP (3) WITH TIME ZONE
	ZALOZIL_KDO	VARCHAR2 (150 BYTE)
	ZMENIL_KDY	TIMESTAMP (3) WITH TIME ZONE
	ZMENIL_KDO	VARCHAR2 (150 BYTE)
	ODSTRANENI	DATE
	KATUZ_KOD	NUMBER (6)

ISÚI_CONSTRUCTION_OBJECTS_PK (KOD)

ISUI.UI_DETAILNI_TEA

P *	KOD	NUMBER (8)
	STAVOBJ_KOD	NUMBER (9)
	NESPRAVNY	VARCHAR2 (3 BYTE)
	POCET_BYTU	NUMBER (3)
	POCET_PODLAZI	NUMBER (3)
	DRUH_KONSTRUKCE_KOD	NUMBER (4)
	PRIPOJ_KANAL_SIT_KOD	NUMBER (4)
	PRIPOJ_PLYN_KOD	NUMBER (4)
	PRIPOJ_VODOVOD_KOD	NUMBER (4)
	PRIPOJ_EL_ENERGIE	VARCHAR2 (3 BYTE)
	ZPUSOB_VYTAPENI_KOD	NUMBER (4)
	PLATI_OD	DATE
	PLATI_DO	DATE
	ZRUSENY	VARCHAR2 (2 BYTE)
	NZ_ID_GLOBALNI	NUMBER (18)
	NZ_ID_ISUI	NUMBER (18)
	ZALOZIL_KDY	TIMESTAMP (3) WITH TIME ZONE
	ZALOZIL_KDO	VARCHAR2 (150 BYTE)
	ZMENIL_KDY	TIMESTAMP (3) WITH TIME ZONE
	ZMENIL_KDO	VARCHAR2 (150 BYTE)

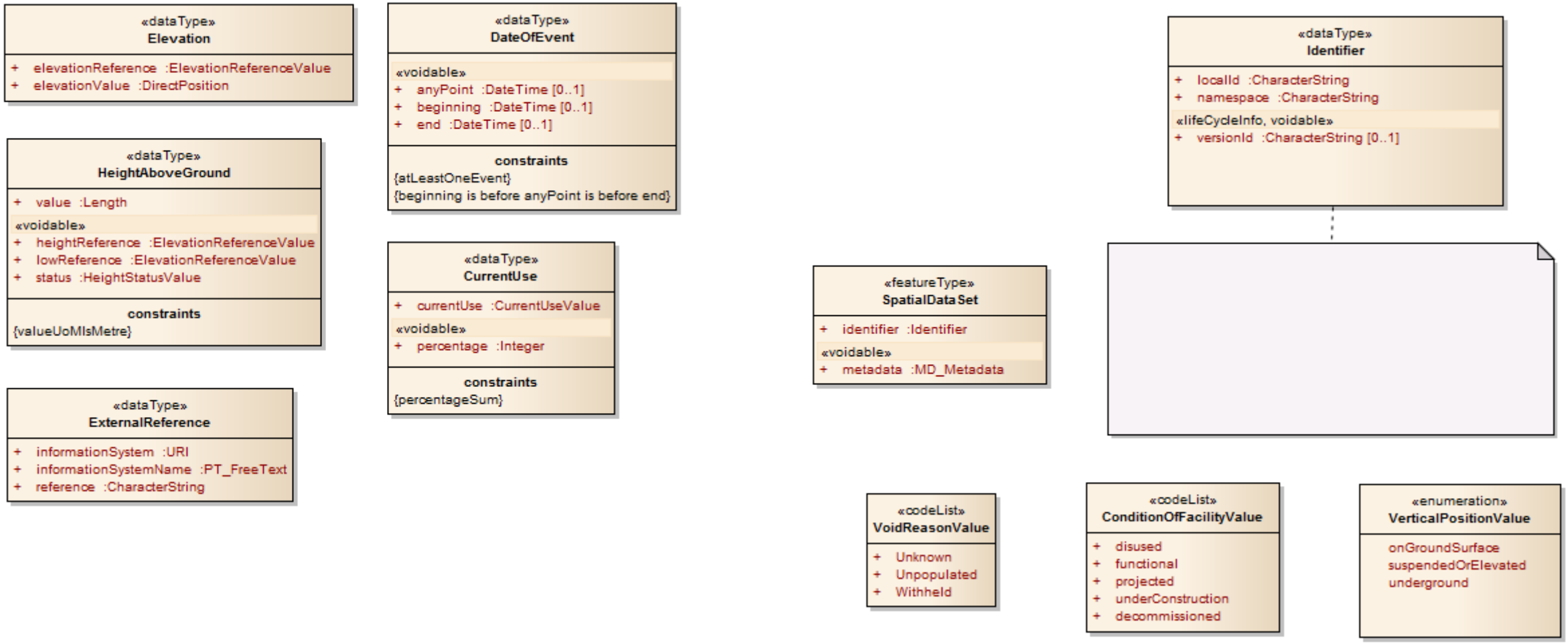
ISUI.UI_DETAILNI_TEA_PK (KOD)

ISKN_BUILDINGS

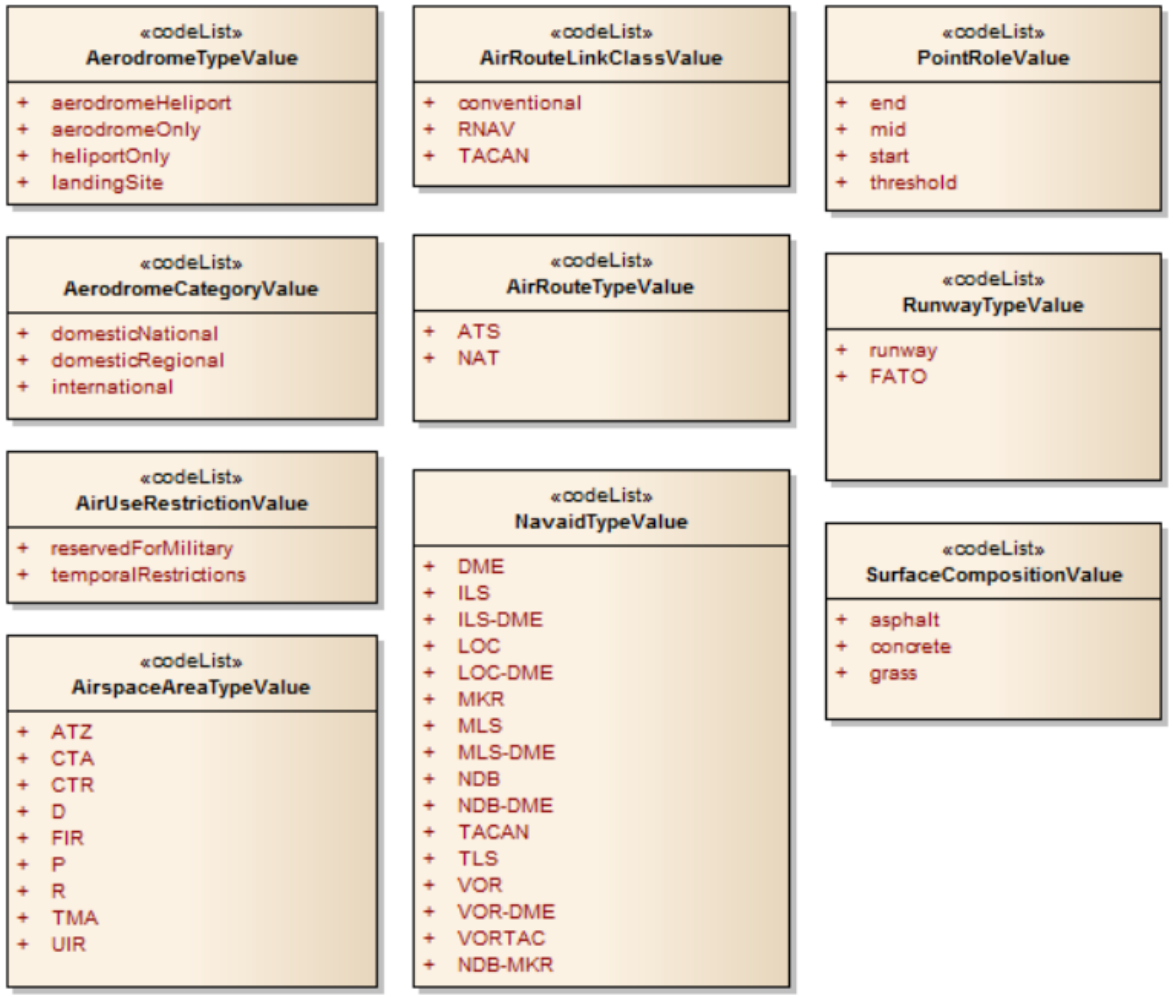
P *	ID	NUMBER (30)
	VERZE	NUMBER (30)
	STAV_DAT	NUMBER (2)
	DATUM_VZNIKU	DATE
	DATUM_ZANIKU	DATE
	RIZENI_ID_VZNIKU	NUMBER (30)
	RIZENI_ID:ZANIKU	NUMBER (30)
	CREATED_BY	VARCHAR2 (30 CHAR)
	CREATE_DATE	DATE
	UPDATED_BY	VARCHAR2 (30 CHAR)
	UPDATE_DATE	DATE
	TYPBUD_KOD	NUMBER (1)
	CAOBCE_KOD	NUMBER (6)
	CISLO_DOMOVNI	NUMBER (4)
	POPIS_BUDOVY	VARCHAR2 (1 CHAR)
	CENA_NEMOVITOSTI	NUMBER (14)
	ZPVYBU_KOD	NUMBER (4)
	TEL_ID	NUMBER (30)
	PAR_ID	NUMBER (30)
	PRARES_KOD_OWN	NUMBER (3)
	DOCASNA_STAVBA	VARCHAR2 (1 CHAR)
	JE_SOUCASTI	VARCHAR2 (1 CHAR)
	PS_ID	NUMBER (30)

ISKN_BUILDINGS_PK (ID)

Mapování - komplexní typy a baseTypes



Mapování - codelisty



List of attributes

Name	Data Type	Definition	
nilReason	NilReasonEnumeration		
AD	string	Aerodrome only.	Inherited from CodeAirportHeliportBaseType
AH	string	Aerodrome with heliport landing area.	Inherited from CodeAirportHeliportBaseType
HP	string	Heliport only.	Inherited from CodeAirportHeliportBaseType
LS	string	Landing site.	Inherited from CodeAirportHeliportBaseType
OTHER	string	Other	Inherited from CodeAirportHeliportBaseType

https://www.aixm.aero/sites/aixm.aero/files/imce/AIXM511HTML/AIXM/DataType_CodeAirportHeliportType.html

Mapovací tabulky - codelisty

Mapování na HILUCS		
kód DP	**Druh pozemku**	**HILUCS**
0	lesné porasty	http://inspire.ec.europa.eu/codelist/HILUCSValue/1_2_2_ForestryBasedOnIntermediateOrLongRotation
1	lesné škôlky	http://inspire.ec.europa.eu/codelist/HILUCSValue/1_2_Forestry
2	lesné semenné sady	http://inspire.ec.europa.eu/codelist/HILUCSValue/1_2_Forestry
3	rozdeľovacie prieseky	http://inspire.ec.europa.eu/codelist/HILUCSValue/1_2_Forestry
4	lesné cesty	http://inspire.ec.europa.eu/codelist/HILUCSValue/4_1_1_RoadTransport
5	lesné sklady	http://inspire.ec.europa.eu/codelist/HILUCSValue/1_2_Forestry
8	neúrodné lesné pozemky	http://inspire.ec.europa.eu/codelist/HILUCSValue/6_3_1_LandAreasNotInOtherEconomicUse
10	iné lesné pozemky	http://inspire.ec.europa.eu/codelist/HILUCSValue/1_2_Forestry
12	čierne plochy	http://inspire.ec.europa.eu/codelist/HILUCSValue/6_OtherUses
61	pozemky slúžiace poľovnému hospodáreniu	http://inspire.ec.europa.eu/codelist/HILUCSValue/1_5_OtherPrimaryProduction
62	pozemky tvorby a ochrany prír.prostredia	http://inspire.ec.europa.eu/codelist/HILUCSValue/6_3_1_LandAreasNotInOtherEconomicUse
71	elektrovody	http://inspire.ec.europa.eu/codelist/HILUCSValue/4_3_1_ElectricityGasAndThermalPowerDistributionServices
72	ostatné produktovody	http://inspire.ec.europa.eu/codelist/HILUCSValue/4_3_1_ElectricityGasAndThermalPowerDistributionServices
121	čierne plochy – vody	http://inspire.ec.europa.eu/codelist/HILUCSValue/6_3_2_WaterAreasNotInOtherEconomicUse
122	čierne plochy – budovy	http://inspire.ec.europa.eu/codelist/HILUCSValue/6_OtherUses
9	vysokohorské pozemky, hole	http://inspire.ec.europa.eu/codelist/HILUCSValue/6_3_NaturalAreasNotInOtherEconomicUse
11	pozemky bez HÚL	---

Mapovací tabulky - data

Název anglicky	Popis slovensky	Datový typ		Zdrojová struktura NLC
Povinné informace o typu prostorových objektů Súbor údajov existujúceho využitie územia				
inspireId	Externý identifikátor priestorového objektu.	Identifier	localId	KPL
			namespace	Base IRI podle Meatúdajového profilu
extent	Hranica geometrického spojenia všetkých výskytov typu priestorových objektov ExistingLandUseObject.	GM_MultiSurface		union geometrií všech ExistingLandUseUnit v DS
name	Ľudsky zrozumiteľný názov súboru údajov.	CharacterString		Název KPL
member	Referencia na LandUseObjects, ktoré patria k tomuto ExistingLandUseDataSet.	ExistingLandUseObject		link na inspireId všech ExistingLandUseUnit kombinací namespace/localId
Podmíněné informace o typu prostorových objektů Súbor údajov existujúceho využitie územia				
beginLifespanVersion	Dátum a čas, keď bola táto verzia priestorového objektu vložená do súboru priestorových údajov alebo zmenená v súbore priestorových údajov.	DateTime		buď nejstarší beginLiespanVersion mezi ExistingLandUseUnit, nebo datum vzniku DS, pokud je známé
endLifespanVersion	Dátum a čas, keď bola táto verzia priestorového objektu nahradená v súbore priestorových údajov alebo vyradená zo súboru priestorových údajov.	DateTime		nil
validFrom	Čas, keď súbor údajov existujúceho využitia územia začal existovať v reálnom svete.	Date		nil
validTo	Čas, od ktorého tento súbor údajov existujúceho využitia územia už neexistuje v reálnom svete.	Date		nil

Způsoby mapování

XSLT

From Wikipedia, the free encyclopedia

XSLT (**Extensible Stylesheet Language Transformations**) is a language originally designed for transforming XML documents into other XML documents,[1] or other formats such as HTML for web pages, plain text or XSL Formatting Objects, which may subsequently be converted to other formats, such as PDF, PostScript and PNG.[2] Support for JSON and plain-text transformation was added in later updates to the XSLT 1.0 specification.

As of August 2022, the most recent stable version of the language is XSLT 3.0, which achieved Recommendation status in June 2017.

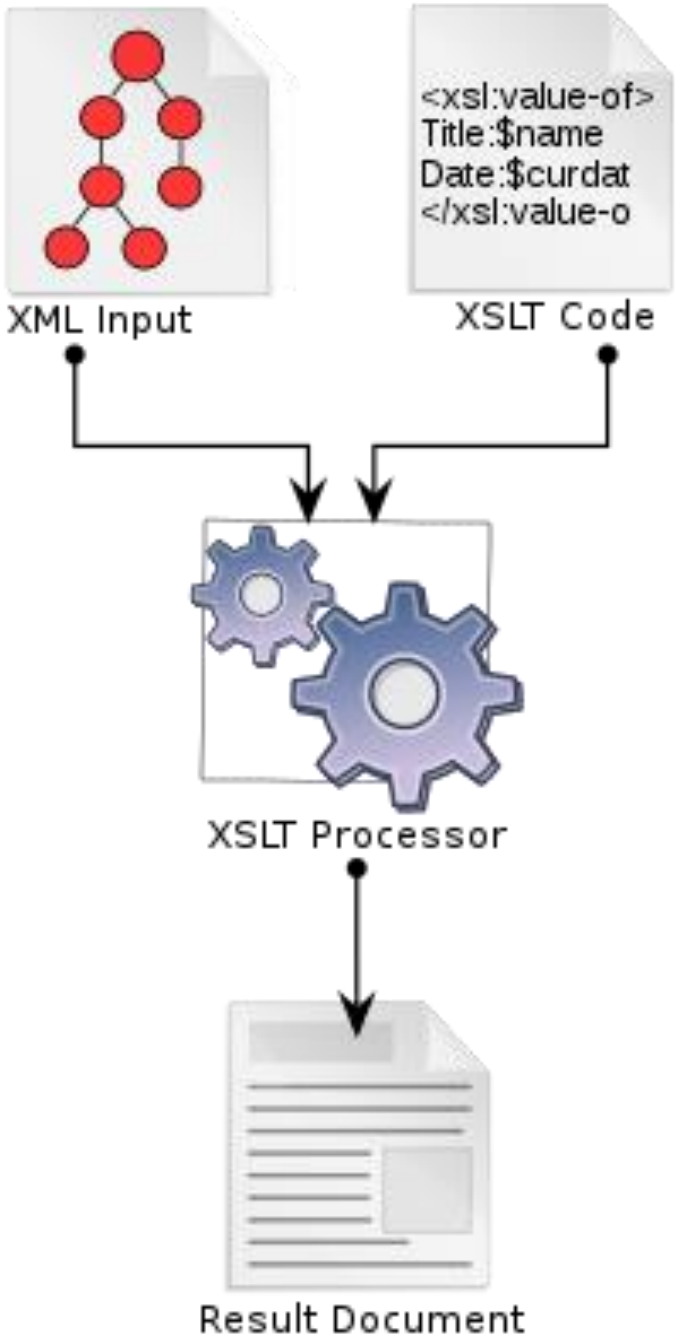
XSLT 3.0 implementations support Java, .NET, C/C++, Python, PHP and NodeJS. An XSLT 3.0 Javascript library can also be hosted within the Web Browser. Modern web browsers.[3] also include native support for XSLT 1.0.

For an XSLT document transformation, the original document is not changed; rather, a new document is created based on the content of an existing one.[4] Typically, input documents are XML files, but anything from which the processor can build an XQuery and XPath Data Model can be used, such as relational database tables or geographical information systems.[1]

While XSLT was originally designed as a special-purpose language for XML transformation, the language is Turing-complete, making it theoretically capable of arbitrary computations.[5]

XSLT

Paradigm	Declarative
Developer	World Wide Web Consortium (W3C)
First appeared	1998
Stable release	3.0 / June 8, 2017; 5 years ago
Filename extensions	.xslt
Website	www.w3.org/TR/xslt-30/
Major implementations	
libxslt, Saxon, Xalan	
Influenced by	
DSSSL	



Způsoby mapování

hale»studio features

Creation of GML/CityGML /XPlanGML data sets

Database-to-database migration

Assessment of migration risks, mismatches

Integration of data from multiple sources

Environmental reporting

Creation of INSPIRE data sets

Způsoby mapování

```
<typeMappings>
    <FeatureTypeMapping>
        <sourceDataStore>datastore</sourceDataStore>
        <sourceType>LSAG_SACO_171932</sourceType><!-- db table name -->
        <targetElement>frequentis:sampleFeature</targetElement>
        <groupBy />

        <attributeMappings>
            <AttributeMapping>
                <targetAttribute>frequentis:sampleFeature</targetAttribute>
                <idExpression>
                    <OCQL>gml_id</OCQL>
                </idExpression>
            </AttributeMapping>
            <AttributeMapping>
                <targetAttribute>frequentis:upperLimit/frequentis:limit</targetAttribute>
                <sourceExpression>
                    <OCQL>upperLimit</OCQL>
                </sourceExpression>
            </AttributeMapping>
            <AttributeMapping>
                <targetAttribute>frequentis:upperLimit/frequentis:unitsOfMeasure</targetAttribute>
                <sourceExpression>
                    <OCQL>upperLimit_uom</OCQL>
                </sourceExpression>
            </AttributeMapping>
            <AttributeMapping>
                <targetAttribute>frequentis:direction</targetAttribute>
                <idExpression>
                    <OCQL>directionOfMotion</OCQL>
                </idExpression>
                <ClientProperty>
                    <name>gml:uom</name>
                    <value>directionOfMotion_uom</value>
                </ClientProperty>
            </AttributeMapping>
        </attributeMappings>
    </FeatureTypeMapping>
</typeMappings>
```

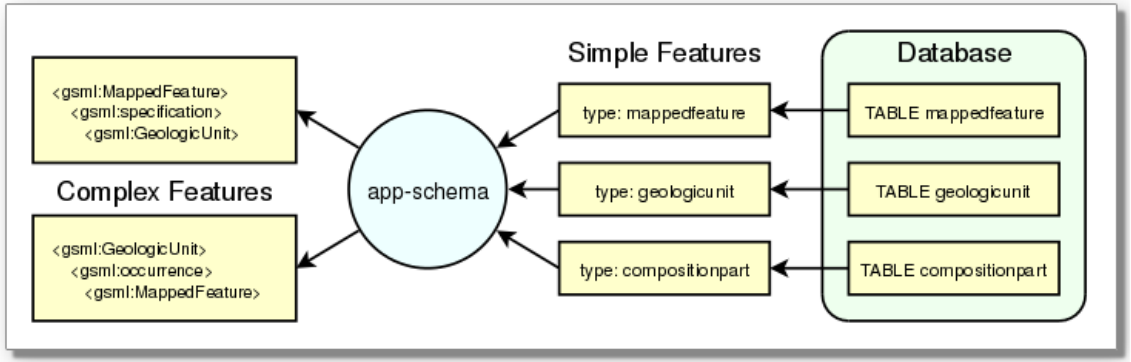
GeoServer

Application schemas

The application schema support (app-schema) extension provides support for Complex Features in GeoServer WFS.

Note: You must install the app-schema plugin to use Application Schema Support.

GeoServer provides support for a broad selection of simple feature data stores, including property files, shapefiles, and JDBC data stores such as PostGIS and Oracle Spatial. The app-schema module takes one or more of these simple feature data stores and applies a mapping to convert the simple feature types into one or more complex feature types conforming to a GML application schema.



Three tables in a database are accessed using GeoServer simple feature support and converted into two complex feature types.

ESPUS

Efektívna správa priestorových údajov a služieb

Ďakujem za pozornosť!

Michal Med
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ESPUS

https://inspire.gov.sk/projekty/espus

Operačný program Efektívna verejná správa

Európska únia
Európsky sociálny fond