



ICEG Building: Thematic Workshop #4

Welcome!

Wednesday November 30th 2022

Virtual working group – Google Meet



Practicalities

Audience sound is muted by default.



Use the hand in Google Meet if you want to say something.

Questions, comments and suggestions can be communicated via the chat function. Interaction is encouraged!



A yes/no question can be answered simply and quickly via the chat:

Agree = +1
Do not agree = - 1
Indifferent = 0



Agenda

#1 Welcome

#2 Process, input and timeline

#3 Presentation of the latest version of the model, including public review changes

#4 Distributions

#5 Closing

Goal for today

Presentation of the final version of the model.



**Summary of the previous
thematic workshop &
discussions on GitHub**



**Presentation of the final
version to the model**



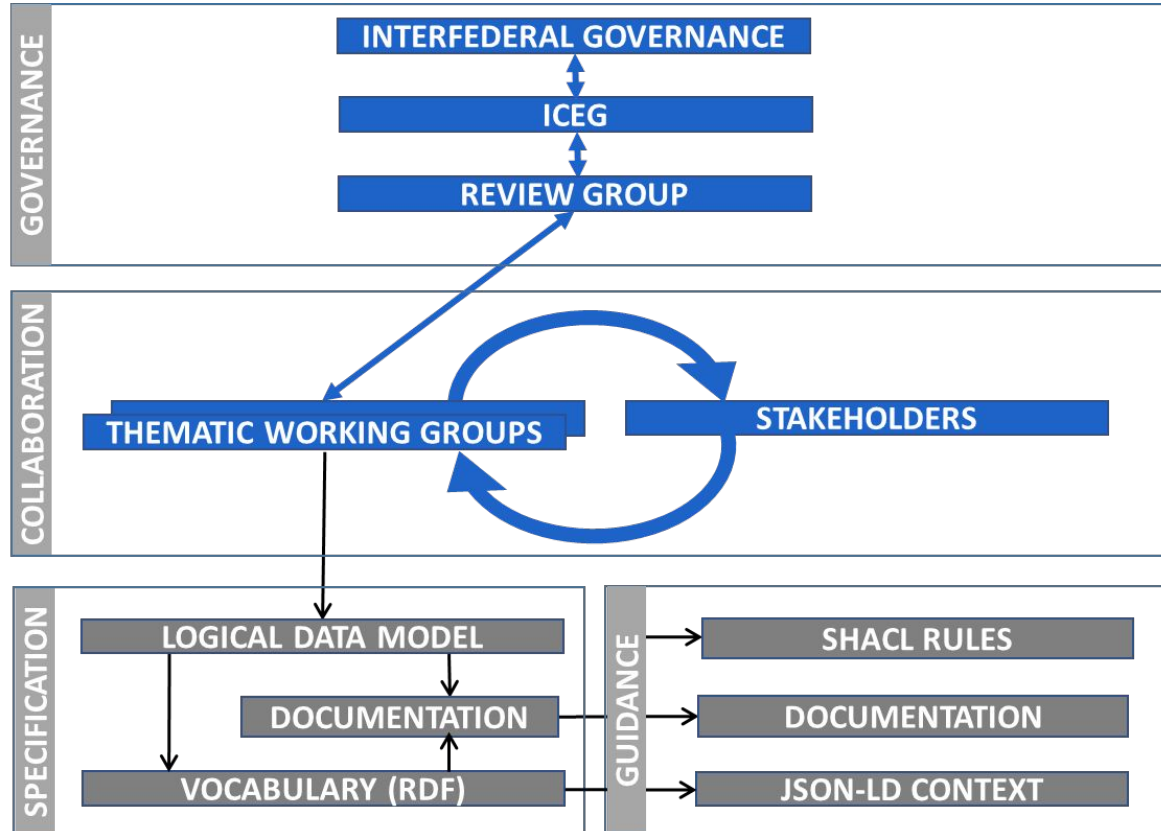
**Wrapping-up the ICEG
Building trajectory**



Process, input & timeline



Governance



Scalable process for registering, developing, changing and phasing out data standards.

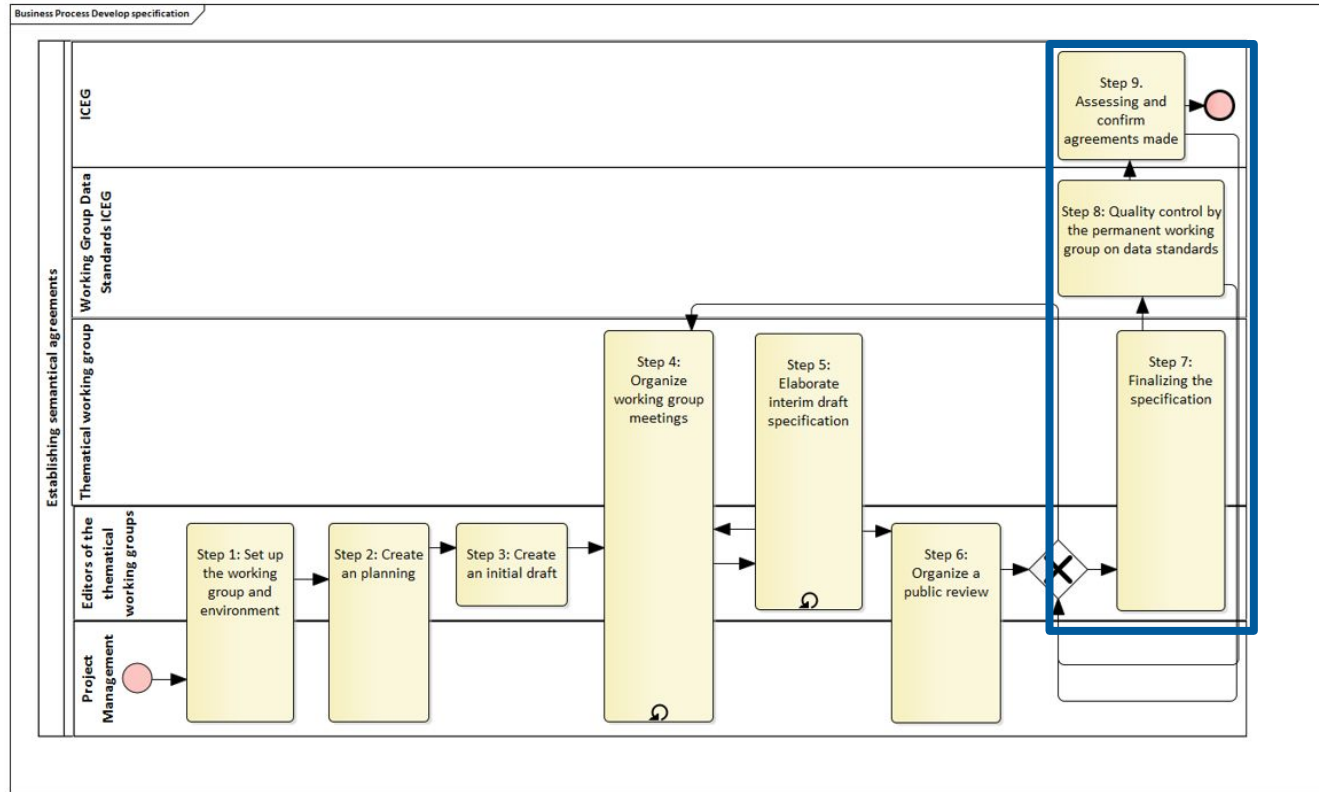


Full paper: English

W3C, IEEE, IETF, IAB en ISA, Open Stand, OSLO

How do we achieve this

Process and methodology defined by ICEG



INFORMATIE
VLAANDEREN

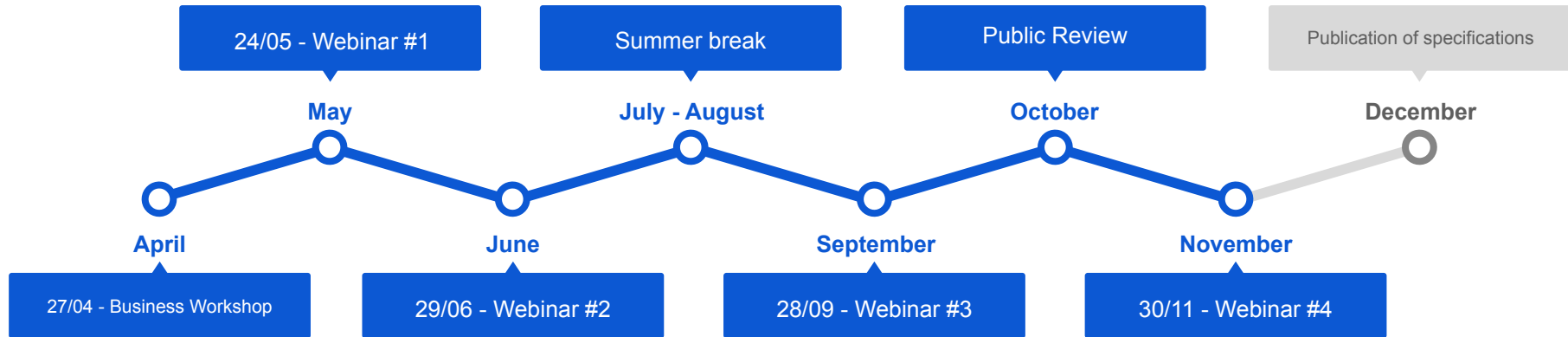


BO
SO
IG: Digitale Transformatie
IG: Based on Onderzoek
IG: Transformatie Agents
IG: Strategie en Appoi

PROCESS AND METHOD FOR THE DEVELOPMENT OF DATA STANDARDS

Version /// 1.0
Publication date /// 24 may 2019

Timeline





Presentation of the latest version of the model

Use cases in scope of ICEG building

Existing use cases from the Charter

Building units are addressable objects



Create a link between the following registers; parcels, buildings, building units and addresses



Create a link between a building and his quality criteria



Create a link between a building and urban development control and land use statistics



Create a link between a building and territorial resources allocation as transportation, roads, heating, sewer, electricity..



Create a link between a building and its value and taxation



Additional use cases from the business workshop

Building (units) have a unique identifier and a link with both the population register and the cadaster



A building / building unit has an entrance location and some indoor navigation instructions



Every building (unit) has a specific function (f.e. Police station, fire station, school, ...)



Buildings and building units consists of 2D and 3D information



Every building (unit) has a lifecycle



A building is linked with the official registration of buildings (building register)



Initial scope

Mandatory attributes imposed by INSPIRE

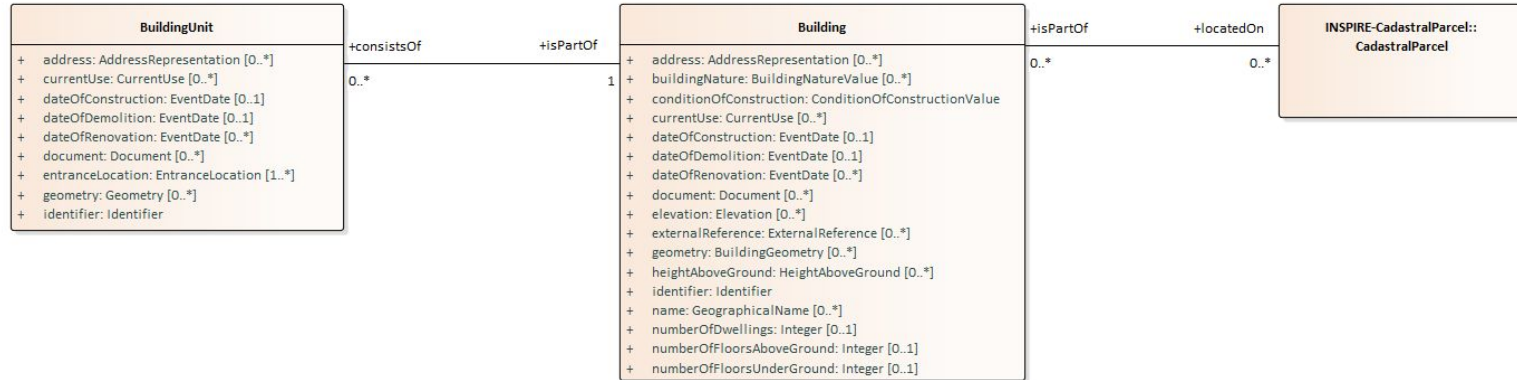
beginLifespanVersion	externalReference	numberOfBuildingUnits	■ Already proposed
endLifespanVersion	heightAboveGround	numberOfFloorsAboveGround	■ Added during public review period
conditionOfConstruction	name	buildingPart	■ Not included (not in scope)
dateOfConstruction	buildingNature	inspireID	
dateOfRenovation	currentUse	geometry2D	
elevation	numberOfDwellings	geometry3D	

Optional attributes suggested by INSPIRE

connectionToElectricity	heatingSource	numberOfFloorsBelowGround	■ Already proposed
connectionToGas	heatingSystem	floorDistribution	■ Can be added provided that the information exists in the respective Belgian entities
connectionToSewage	address	floorDescription	
connectionToWater	officialArea	roofType	
document	officialValue	materialOfFacade	■ Added during public review period
energyPerformance	cadastralParcel	materialOfRoof	
materialOfStructure			

Overview

class ICEG-Building_AP



Building

Updates since last [Webinar](#)

- [\[Issue #104\]](#) Request to improve the definition of Building ([see next slide](#))
- [\[Issue #102\]](#) Addition of two attributes to geographicalName
 - [NameStatusValue](#) → status of a geographical name
 - [Nativeness](#) → allowing for endonym & exonym
- [\[Issue #101\]](#) Addition of 'document' for e.g., EBP certificate, renting contract, etc.
- [\[Issue #100\]](#) Editorial changes to allow for better interoperability and make BuildingGeometry an Abstract
- [\[Issue #98\]](#) Addition links and contextual information for LOD geometries

class ICEG-Building_AP

Building

```
+ address: AddressRepresentation [0..*]  
+ buildingNature: BuildingNatureValue [0..*]  
+ conditionOfConstruction: ConditionOfConstructionValue  
+ currentUse: CurrentUse [0..*]  
+ dateOfConstruction: EventDate [0..1]  
+ dateOfDemolition: EventDate [0..1]  
+ dateOfRenovation: EventDate [0..*]  
+ document: Document [0..*]  
+ elevation: Elevation [0..*]  
+ externalReference: ExternalReference [0..*]  
+ geometry: BuildingGeometry [0..*]  
+ heightAboveGround: HeightAboveGround [0..*]  
+ identifier: Identifier  
+ name: GeographicalName [0..*]  
+ numberOfDwellings: Integer [0..1]  
+ numberOfFloorsAboveGround: Integer [0..1]  
+ numberOfFloorsUnderGround: Integer [0..1]
```

Building

Updates since last [Webinar](#)

- [\[Issue #95\]](#) Use of [locn:Address](#) URI for AddressRepresentation
- [\[Issue #94\]](#) 'DirectPosition' and 'EventDate' are modelled based on OpenGIS and time:TemporalEntity for better interoperability
- [\[Issue #86\]](#) Addition of terms to the currentUse code list
- [\[Issue #86\]](#) Addition of terms to the natureValue code list & their [definitions](#).
- [\[INSPIRE\]](#) Elevation cardinality [0..*]
- [\[INSPIRE\]](#) Addition of 'externalReference' to comply with requirements
- [\[INSPIRE\]](#) Addition of 'heightAboveGround' to comply with requirements
- [\[INSPIRE\]](#) Addition of 'numberOfDwellings' to comply with requirements
- [Editorial] Change of 'text' to 'GeographicalName' for 'name'
- [Editorial] Renamed '^identifier' to 'identifier'

class ICEG-Building_AP

Building

```
+ address: AddressRepresentation [0..*]  
+ buildingNature: BuildingNatureValue [0..*]  
+ conditionOfConstruction: ConditionOfConstructionValue  
+ currentUse: CurrentUse [0..*]  
+ dateOfConstruction: EventDate [0..1]  
+ dateOfDemolition: EventDate [0..1]  
+ dateOfRenovation: EventDate [0..*]  
+ document: Document [0..*]  
+ elevation: Elevation [0..*]  
+ externalReference: ExternalReference [0..*]  
+ geometry: BuildingGeometry [0..*]  
+ heightAboveGround: HeightAboveGround [0..*]  
+ identifier: Identifier  
+ name: GeographicalName [0..*]  
+ numberOfDwellings: Integer [0..1]  
+ numberOfFloorsAboveGround: Integer [0..1]  
+ numberOfFloorsUnderGround: Integer [0..1]
```


Definition

A enclosed and/or covered structure, **partially or not**, above and/or below ground, intended either for the shelter of persons, animals or things, or for the production of economic goods or the provision of services, and refers to any structure permanently constructed or erected on its site.

Addition of Usage

- Everything with a roof is a building, except for what is listed in the list of approaches and/or specific constructions.
- It is a group of buildings with the same (or similar) date of construction and a similar superstructure (except for minor volumes such as cellars or technical rooms in the roof).
- Its perimeter includes all premises communicating with each other by internal access [above ground] or sharing the same structural elements except for party walls.
- Covered courtyard is a building if isolated or adjoining another building, but not when integrated into another building and the latter houses it.
- HV cabin is a building when isolated.
- If two structures are connected by a gallery, they are considered as one building. However, if there is a public road/street underneath the gallery, these two structures are considered as two separate buildings .
- The gallery is part of the main building (unless its function is not limited to circulation between premises or it is built in a different structure or at a different time).

Passerelle / “Gallery”



Building

Updates considered:

- [\[Issue #109\]](#) How to locate a buildingUnit within a Building. There was a suggestion to add specific fields as 2D & 3D might not serve their purpose before years.
- [\[Issue #107\]](#) The set of two distinct volumes united by a gallery/walkway is nevertheless considered as a single building. Two volumes separated by a footbridge (which is above a public road) are considered as two distinct buildings which are in different sites (because they are different plots).
- [\[Issue #106\]](#) Cardinality already allows for mixed nature.
- [\[Issue #103\]](#) Request to describe whether a building is protected is not in line with the use cases. Can be addressed through the natureValue attribute or via a new attribute.
- [\[Issue #92\]](#) At the moment, entranceLocation is a BuildingUnit level. BeST states that the entrance of a building can be derived from the house number. Either we don't add anything, or we add entranceLocation with GeoCoordinates to Building.
- [\[Issue #108\]](#) Addition to Usage notes to specify *how* to count floors → main entrance
- [\[Issue #89\]](#) At the moment, only LOD1 and LOD2 are modelled. Should the working group want to add characteristics such as doors, windows, etc. LOD3 & LOD4 will need to be modelled.

class ICEG-Building_AP

Building

```
+ address: AddressRepresentation [0..*]  
+ buildingNature: BuildingNatureValue [0..*]  
+ conditionOfConstruction: ConditionOfConstructionValue  
+ currentUse: CurrentUse [0..*]  
+ dateOfConstruction: EventDate [0..1]  
+ dateOfDemolition: EventDate [0..1]  
+ dateOfRenovation: EventDate [0..*]  
+ document: Document [0..*]  
+ elevation: Elevation [0..*]  
+ externalReference: ExternalReference [0..*]  
+ geometry: BuildingGeometry [0..*]  
+ heightAboveGround: HeightAboveGround [0..*]  
+ identifier: Identifier  
+ name: GeographicalName [0..*]  
+ numberOfDwellings: Integer [0..1]  
+ numberOfFloorsAboveGround: Integer [0..1]  
+ numberOfFloorsUnderGround: Integer [0..1]
```

Building Unit

Updates since last [Webinar](#)

- [\[Issue #101\]](#) Addition of 'document'
- [\[Issue #101\]](#) Addition of dateOfConstruction and dateOfDemolition
- [Editorial] Renamed 'function' to 'currentUse' to align with INSPIRE
- [Editorial] Renamed 'Identifier' to 'identifier'

class ICEG-Building_AP

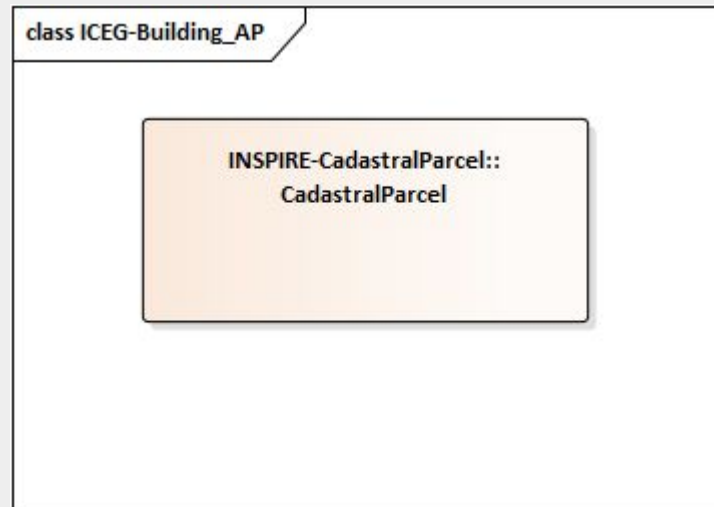
BuildingUnit

```
+ address: AddressRepresentation [0..*]  
+ currentUse: CurrentUse [0..*]  
+ dateOfConstruction: EventDate [0..1]  
+ dateOfDemolition: EventDate [0..1]  
+ dateOfRenovation: EventDate [0..*]  
+ document: Document [0..*]  
+ entranceLocation: EntranceLocation [1..*]  
+ geometry: Geometry [0..*]  
+ identifier: Identifier
```

CadastralParcel

Updates since last [Webinar](#)

- [\[Issue #96\]](#) Change of OSLO to INSPIRE-CadastralParcel



Data types

Updates since last [Webinar](#)

- Addition of GeographicalName with attributes
- Addition of percentage within CurrentUse
- Addition of ExternalReference
- Addition of attributes for Identifier
- Addition of Document
- [\[Issue #99\]](#) Addition of “language”, “spelling” to geographicalName and solve CamelCase issues
- [\[Issue #97\]](#) EventDate: suggestion to add description for anyPoint + cardinality [0..*]
- Geometry: added more information about LoD in usage notes
- Removal of primitive data types

class ICEG-Building_AP

«dataType»
GeographicalName

+ language: CharacterString
+ nameStatus: NameStatusValue [0..1]
+ nativeness: NativenessValue [0..1]
+ spelling: spellingOfName

class ICEG-Building_AP

«dataType»
CurrentUse

+ currentUse: CurrentUseValue
+ percentage: Integer [0..1]

class ICEG-Building_AP

«dataType»
Document

+ date: DateTime [0..1]
+ documentDescription: LangString [0..1]
+ sourceStatus: SourceStatusValue

class ICEG-Building_AP

«dataType»
Identifier

+ assignedBy: Agent [0..1]
+ assignedByString: LangString [0..1]
+ assignedOn: DateTime [0..1]
+ identifier: LangString [0..1]
+ structuredIdentifier: StructuredIdentifier [0..1]

class ICEG-Building_AP

«dataType»
EventDate

+ anyPoint: DateTime [0..1]
+ endDate: DateTime [0..1]
+ startDate: DateTime [0..1]

class ICEG-Building_AP

«dataType»
ExternalReference

+ informationSystem: Identifier
+ informationSystemName: LangString
+ reference: LangString

Enumeration

class ICEG-Building_AP

«enumeration» BuildingNatureValue
arch bunker canopy castle cave building chapel church dam greenhouse lighthouse mosque shed silo stadium storage tank tower synagogue windmill temple wind turbine parking airport school hospital port trainStation prison postOffice fireStation policeStation communityHouse telecommunicationTower hotel casino house

«enumeration» ConditionOfConstructionValue
declined demolished functional projected ruin under construction

«enumeration» ElevationReferenceValue
above ground envelope bottom of construction entrance point general eave general ground general roof general roof edge highest eave highest ground point highest point highest roof edge lowest eave lowest floor above ground lowest ground point lowest roof edge top of construction

«enumeration» CurrentUseValue
individualResidence collectiveResidence twoDwellings moreThanTwoDwellings residenceforCommunities agriculture industrial office trade publicServices ancillary placeOfWorship lavatory education retail recreation infrastructure military entertainment transportation medical room studentRoom apartment studio familyHome

«enumeration» HeightStatusValue
estimated measured

«enumeration» HorizontalGeometryReferenceValue
above ground envelope combined entrance point envelope footprint lower floor above ground point inside building point inside cadastral parcel roof edge

«enumeration» NameStatusValue
official standardised historical other

«enumeration» SourceStatusValue
official non-official

«enumeration» NativityValue
endonym exonym

Updates since last [Webinar](#)

- Addition of values for currentUseValue
- Addition of SourceStatusValue and NameStatusValue




Distributions



HTML documentation for the vocabulary

With terms and definitions

**VOCAB
BELGIF**

Home Lists Models Validation Contexts Contact

Lists

Taxonomies and thesauri (SKOS)

Models

Ontologies (RDF)

Validation

Validation rules (SHACL)

Contexts

JSON-LD context

5. Properties

This section provides a formal definition for every property.

Property *metadata*


Type	Property
URI	https://puz1.eu/ns/air-and-water/core#ObservationCollection.metadata
Domain	http://www.v3.org/ns/osa#ObservationCollection
Range	http://def.isoto211.org/iso19115/2006/MetadataEntitySetInformationEMD_Metadata
Definition	Link to the metadata of the observationCollection.

Property *parameter*

Type	Property
URI	https://puz1.eu/ns/air-and-water/core#ObservationCollection.parameter
Domain	http://www.v3.org/ns/osa#ObservationCollection
Range	http://def.isoto211.org/iso19115/2011/Observation#NamedValue
Definition	The parameter describes an arbitrary event-specific parameter. This might be an environmental parameter, an instrument setting or input, or an event-specific sampling parameter that is not tightly bound to either the feature of interest or to the observation procedure.

Domain name

Both specifications will be pushed on <https://vocab.belgif.be/> with a specific template



Vocab Belgif
Linked Open Data Thesauri

nl fr de en

Work in progress

Please contact opendata@belgium.be for more information.

Lists

Taxonomies and thesauri (SKOS)

Models

Ontologies (RDFS/OWL) and XSD schemas

Validation

Validation rules (SHACL)

Contexts

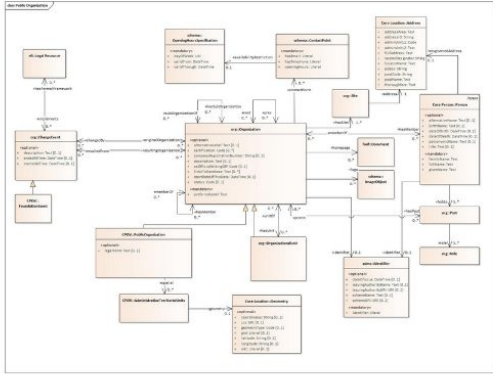
JSON-LD contexts

2017 - 2020 FPS.BOSA | [Github](#)

Overview

This document describes the usage of the following entities for a correct usage of the data model:

[Address](#) | [Administrative Territorial Units](#) | [Change Event](#) | [Contact Point](#) | [Document](#) | [Foundation Event](#) | [Geometry](#) | [Identifier](#) | [Image Object](#) | [Legal resource](#) | [Opening Hours Specification](#) | [Organization](#) | [Organizational Unit](#) | [Person](#) | [Post](#) | [Public Organization](#) | [Role](#) | [Site](#) |



SHACL validation rules & JSON-LD

```
shacl:class schemas:ContactPoint;
shacl:definition ""The contact point property links to a Contact Point that provides contact
information, in particular a phone number and e-mail address.""@en;
shacl:name "contact point"@en;
shacl:path schemas:contactPoint
], [
  shacl:class rdf:langString;
  shacl:definition "As defined in the ORG Ontology, a preferred label is used to provide the primary, legally recognised
name of the organization"@en;
  shacl:maxCount 1;
  shacl:minCount 1;
  shacl:name "preferred label"@en;
  shacl:path skos:prefLabel
], [
  shacl:class schemas:ImageObject;
  shacl:definition "A property to link an Organization to its logo."@en;
  shacl:name "logo"@en;
  shacl:path schemas:logo
```

SHACL
validation
rules

JSON-LD

What is SHACL (Shapes Constraint Language)?

- When implementing the specification, there is a possibility to validate the input against the specification constraints, i.e., set of conditions, thanks to the SHACL file.
- SHACL file comes in TTL and JSON
- SHACL can also integrate codelists
- ISA testbed can be used for validation

Further documentation on SHACL validation rules can be found here : <https://www.w3.org/TR/shacl/>

What is JSON-LD?

- It is a lightweight Linked Data format
- It is based on the JSON format and provides a way to help JSON data interoperate at Web-scale
- It is an ideal data format for programming environments, REST Web services

How to read?

- @context specifies the vocabulary(ies) referenced
- @type specify the item(s) being marked up
- Can be populated with attribute-value pairs, e.g, "familyName": "Smith"

```
"Person": "http://www.w3.org/ns/person#Person",
"Person.alternativeName": {
  "@id": "http://purl.org/dc/terms/alternative",
  "@type": "@id"
},
"Person.birthName": {
  "@id": "http://www.w3.org/ns/person#birthName",
  "@type": "@id"
},
"Person.dateOfBirth": {
  "@id": "http://schema.org/birthDate",
  "@type": "http://www.w3.org/2001/XMLSchema#dateTime"
},
"Person.dateOfDeath": {
  "@id": "http://schema.org/deathDate",
  "@type": "http://www.w3.org/2001/XMLSchema#dateTime"
},
"Person.familyName (surname)": {
  "@id": "http://xmlns.com/foaf/0.1/familyName",
  "@type": "@id"
},
```



Closing



Wrap-up and next steps

1. Core working group members will perform a quality review (step 8-9)
2. Project team members will publish the RDF Vocabulary and the HTML specification on vocab.belgif and GitHub.
3. Any questions/suggestions?



Thanks!

