



Vlaamse
overheid

OSLO : IMKL

Thematic Workshop 3

Welcome!

Thursday 7 September 2023

Microsoft Teams

We start at 13:35



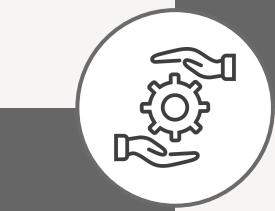
Practical arrangements

Sound of audience is muted by default



Use the **hand** icon if you want to say something. Collaboration is greatly appreciated!

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



Yes/no questions can be answered with:

Agree = +1
Dissagree = - 1
Indifferent = 0

Recording?



Today's Goal

Presentation of the entire modified model with data examples



Summary of the business
workgroup



Presentation and
discussion about the
improved model



Capturing input through
interactive exercise

Agenda

13u35 - 13u45	Welcome and agenda
13u45 - 14u00	Summary of previous workgroup
14u00 - 14u10	UML recap
14u20 - 15u00	Data examples
15u00 - 15u10	Pause
15u10 - 15u20	Different type of depths
15u20 - 15u35	Q&A and next steps

Who is who?



[MURAL-LINK](#)

Thematic workgroup 2: Summary



Vlaanderen
verbeelding werkt

What did we do in the previous workgroup?

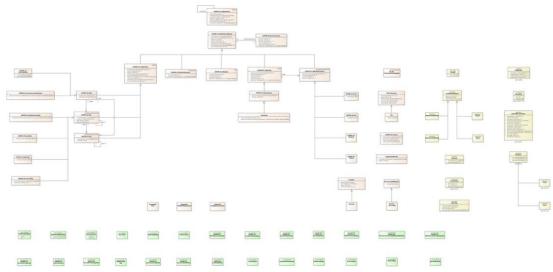


OSLO & UML Introduction

- Scope and goal of the project
- Overview of use cases
- UML basics to understand the model

Feedback captionation & complete renewed model

- Main guidelines for the transformation
- Overview of the complete model
- Benefits from the transformation to the renewed model



Benefits from transformation

- Depth and position are broadened with the help of 2.5D
- Lambert 2008, or any other coordinate system, is now available
- Uniform way to define underground and above ground positions
- Making specific elements generic to be future-proof
- Complete English model for use across language barriers (=todo)
- Simplified representation of model = more convenient for implementation and general operation of IMKL

Scope of the project

Develop a semantic framework for IMKL mapping and data sharing

Develop a sustainable application profile and vocabulary for IMKL.

We follow the OSLO Methodology, which means:



We start from use cases



We define items ourselves where necessary



We align as much as possible with existing standards

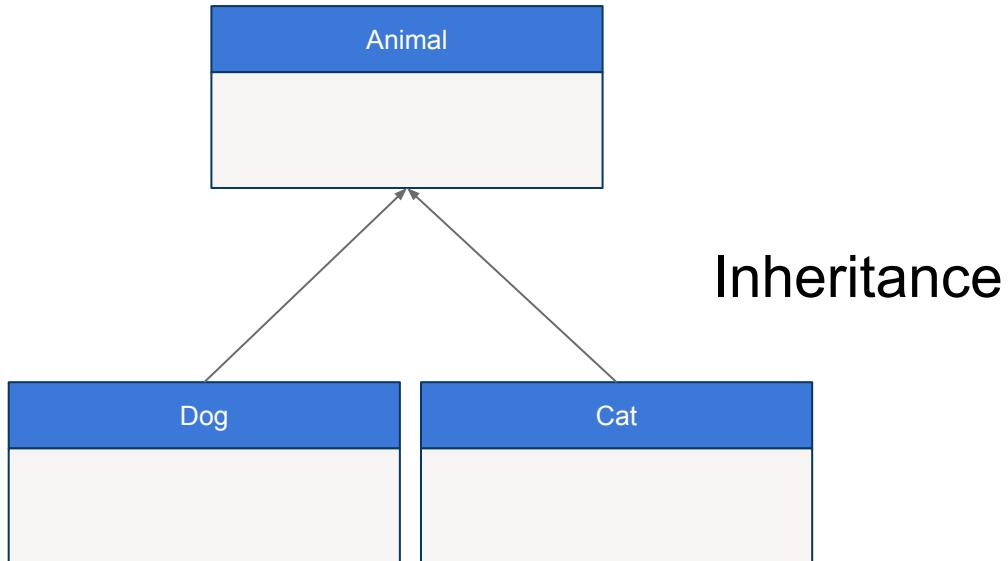
UML

Unified Modeling Language

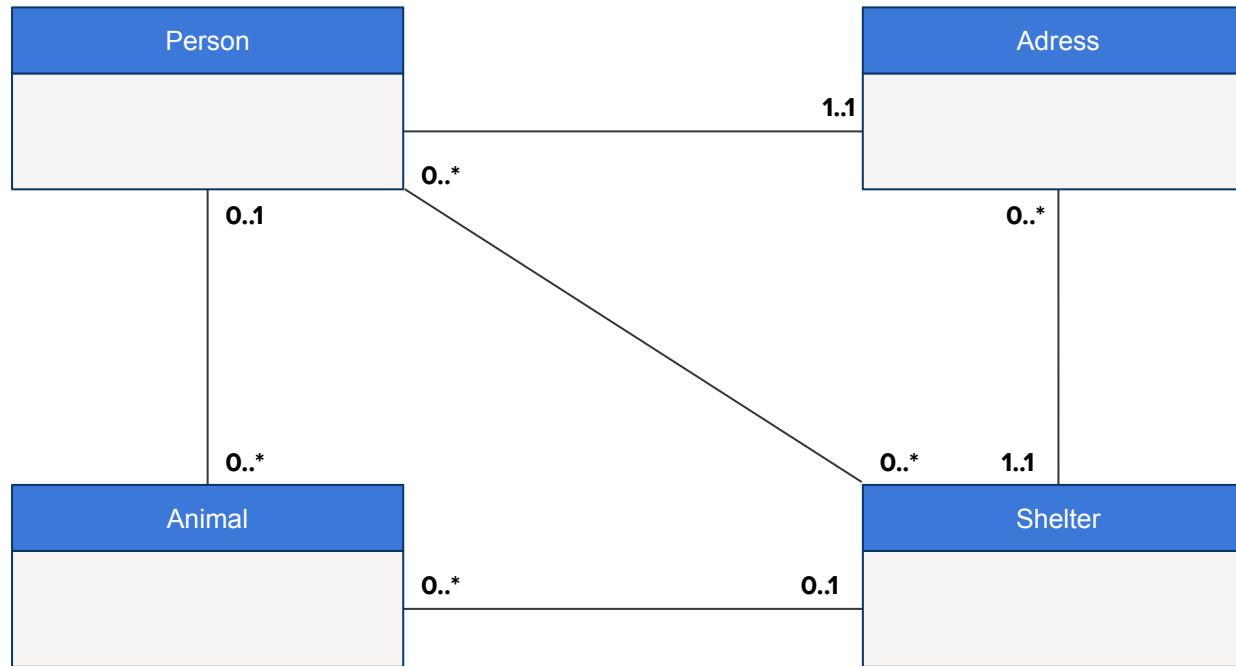


Vlaanderen
verbeelding werkt

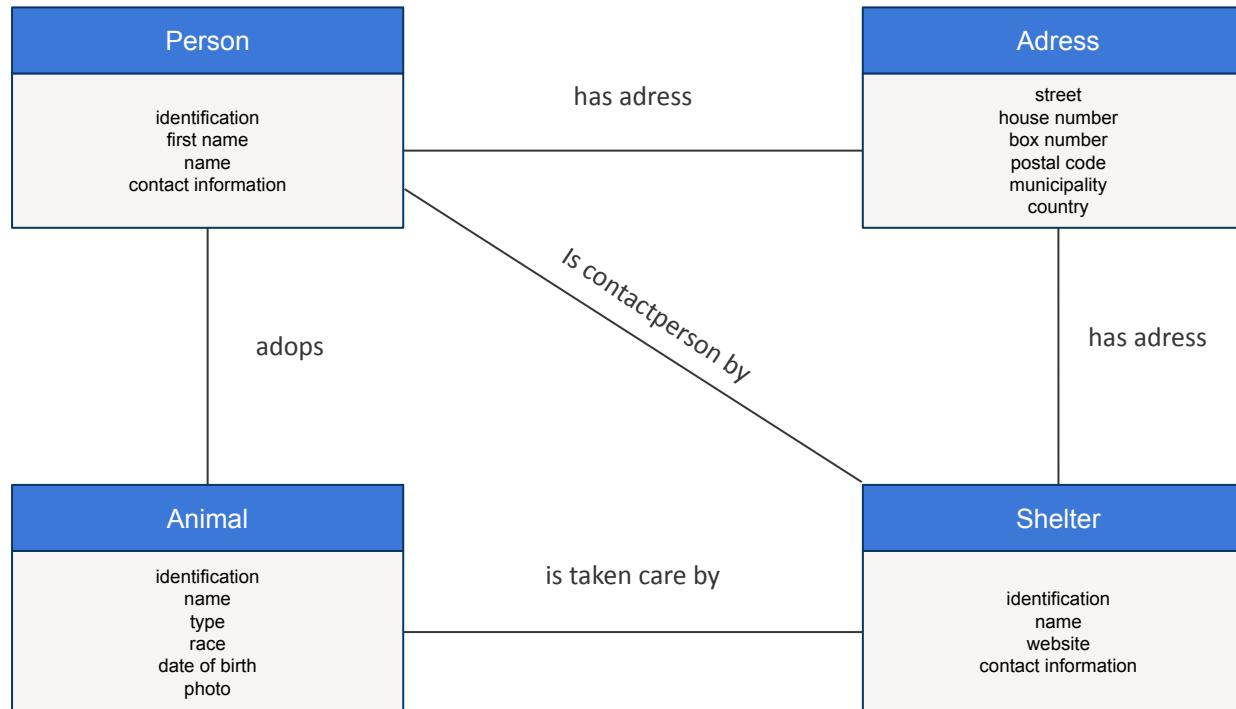
Generalisation



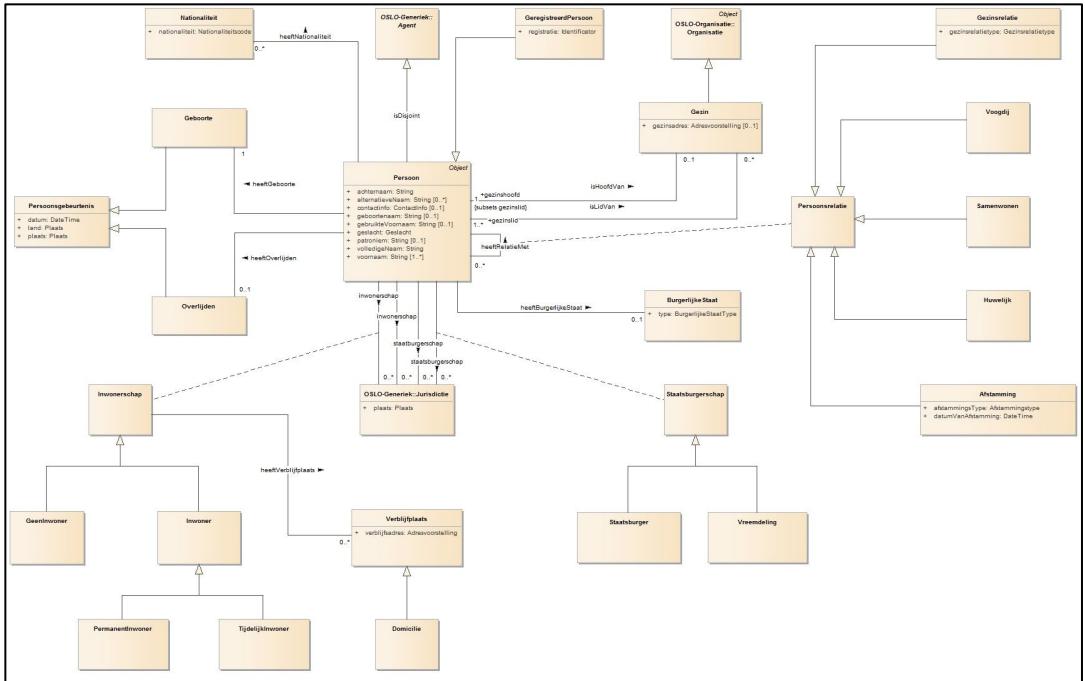
Multiplicity



Attributes



UML & HTML



Persoon

Beschrijving

Natuurlijk persoon.

Gebruik

In de rechtspraak betreft het een persoon (in de wettelijke betekenis, ttz met eigen rechtspersoonlijkheid) van de menselijke soort, ttz een fysiek persoon. Tegenhanger is de rechtspersoon, een juridische constructie die een private of publieke organisatie dezelfde rechtspersoonlijkheid geeft als een natuurlijk persoon (kan bv ook schulden hebben, contracten sluiten, aangeklaagd worden etc).

Eigenschappen

Voor deze entiteit zijn de volgende eigenschappen gedefinieerd: [achternaam](#), [alternatieve naam](#), [contactinfo](#), [geboortenaam](#), [gebruikte voornaam](#), [geslacht](#), [heeft burgerlijke staat](#), [heeft geboorte](#), [heeft inwonerschap](#), [heeft nationaliteit](#), [heeft overlijden](#), [heeft staatsburgerschap](#), [heeft Persoonrelatie](#), [inwonerschap](#), [is hoofd van](#), [is lid van](#), [patroniem](#), [staatsburgerschap](#), [volledige naam](#), [voornaam](#).

Eigenschap	Verwacht Type	Kardinaliteit	Beschrijving	Gebruik	Codelijst
achternaam	String	1	Gedeelte van de volledige naam vd persoon ontvangen van de vorige generatie.	Ook wel familienaam genoemd omdat de achternaam een familielijn verwantschap aanduidt.	
alternatieve naam	String	0..*	Alternatief voor de volledige naam vd persoon.	Bv pseudoniem, titel etc.	
contactinfo	Contactinfo	0..1	Informatie zoals email, telefoon die toelaat de Persoon te contacteren.		
geboortenaam	String	0..1	Volledige naam vd persoon bij geboorte.	De namen van een persoon kunnen jd loop vd tijd wijzigen, bv kan de achternaam wijzigen door huwelijk. De oorspronkelijke naam wordt echter dikwijls ook nog gebruikt.	

The renewed model



Vlaanderen
verbeelding werkt

Goal

Updating the ‘old’ IMKL 2.3 model, while keeping existing models and European obligations in mind.

Translation to English

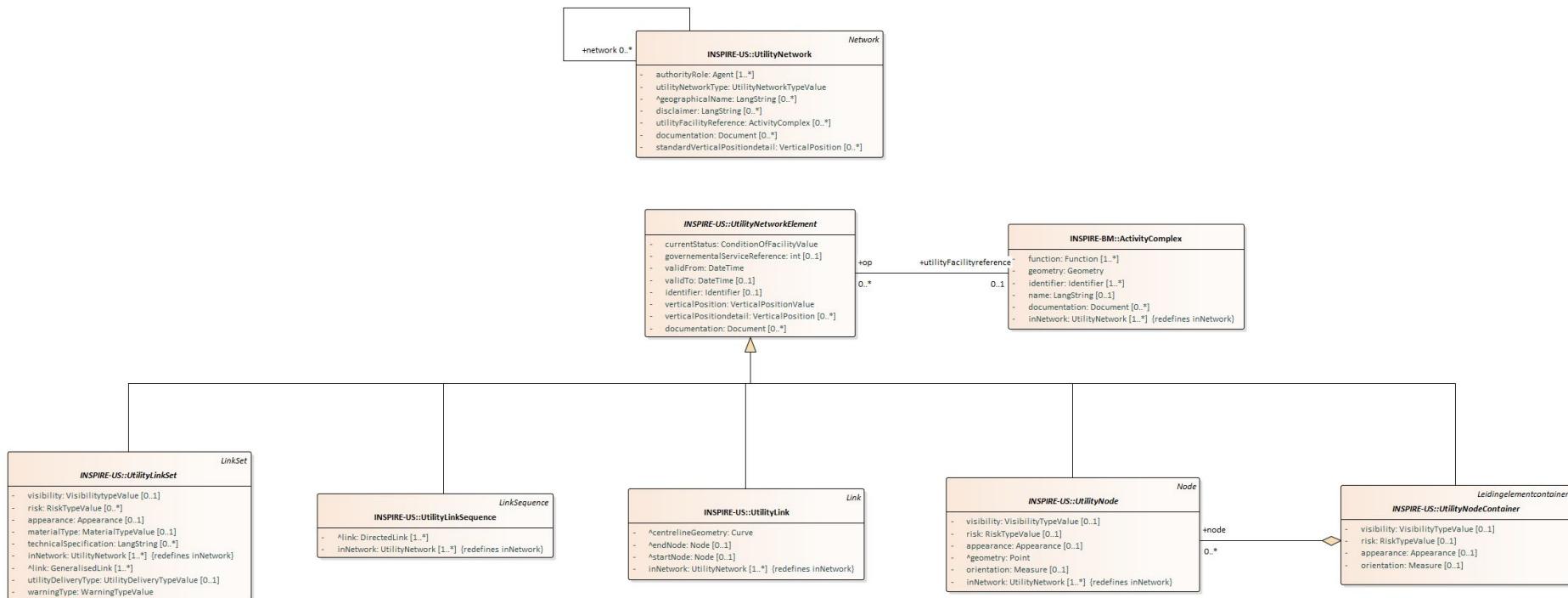
- The model is completely translated in English
- Maximises usability cross language border
- Descriptions further explained in the application profile

Data examples for renewed model

Real life data examples for:

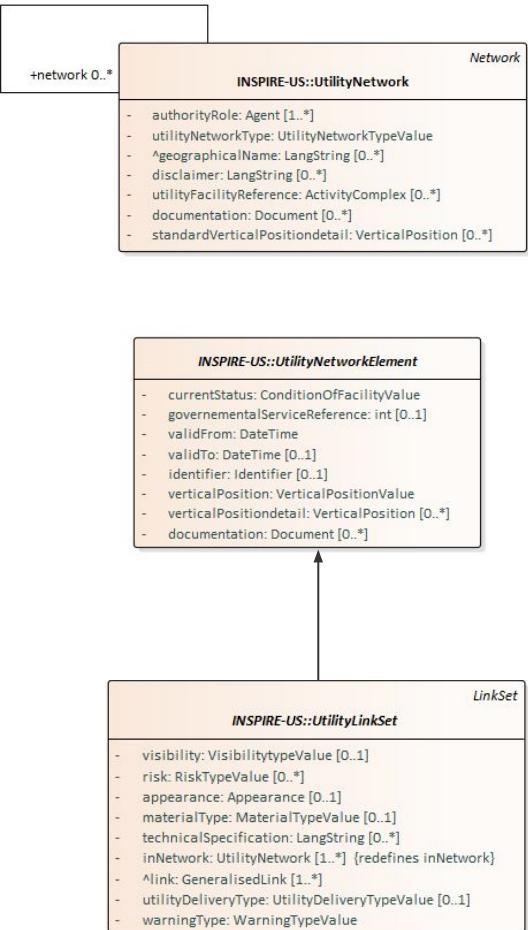
1. Pipe
2. Cable with depth
3. Different possibilities for depth

Network with elements



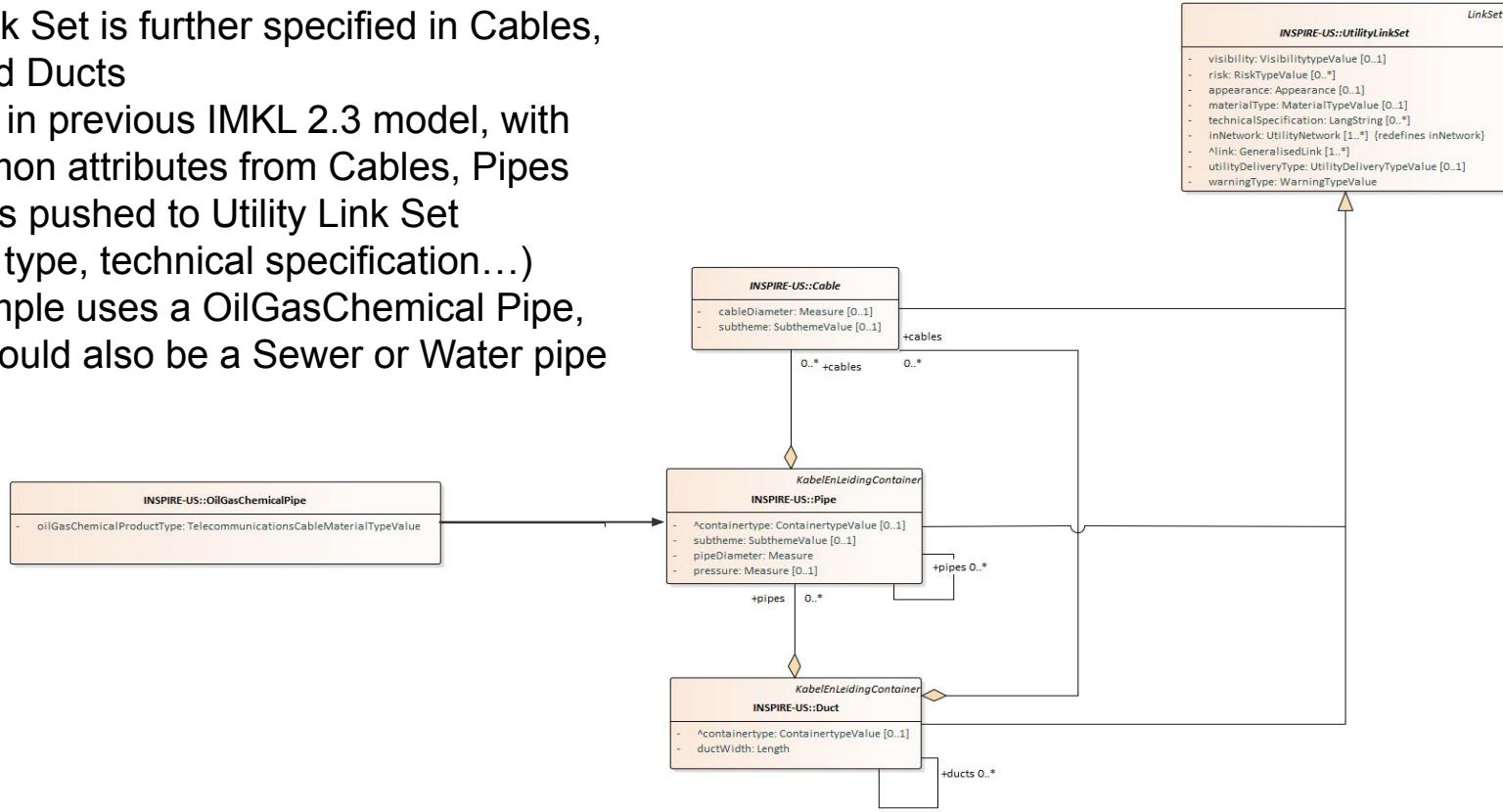
Network with elements

- Networks consist of different elements
- All information about positions are given in Utility Network Element, these can be inherited
- Utility Link Set is one of the elements that consist of the network

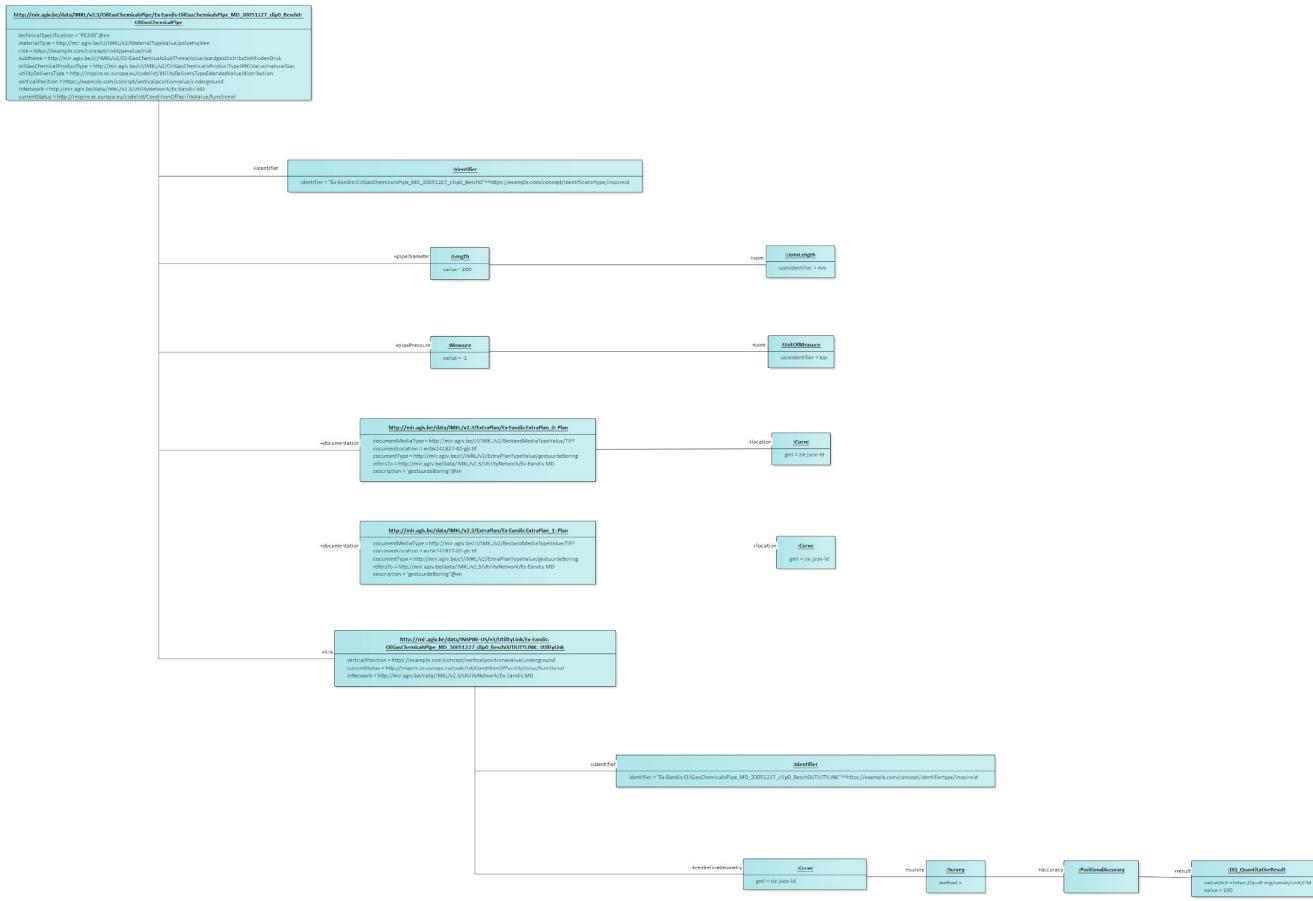


Pipe in data model

- Utility Link Set is further specified in Cables, Pipes and Ducts
- Same as in previous IMKL 2.3 model, with the common attributes from Cables, Pipes and Ducts pushed to Utility Link Set (Material type, technical specification...)
- Our example uses a OilGasChemical Pipe, but this could also be a Sewer or Water pipe



Overview example of a Pipe



Pipe in data model

http://mir.agiv.be/data/IMKL/v2.3/OilGasChemicalsPipe/Ex-Eandis:OilGasChemicalsPipe_MD_30051227_clip0_Besch0:OilGasChemicalPipe

```
technicalSpecification = "PE200"@en
materialType = http://mir.agiv.be/cl/IMKL/v2/MaterialTypeValue/polyethyleen
risk = https://example.com/concept/risktypevalue/risk
subtheme = http://mir.agiv.be/cl/IMKL/v2/OilGasChemicalsSubThemaValue/aardgasDistributieMiddenDruk
oilGasChemicalProductType = http://mir.agiv.be/cl/IMKL/v2/OilGasChemicalsProductTypeIMKLValue/naturalGas
utilityDeliveryType = http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeExtendedValue/distribution
verticalPosition = https://example.com/concept/verticalpositionvalue/underground
inNetwork = http://mir.agiv.be/data/IMKL/v2.3/UtilityNetwork/Ex-Eandis:MD
currentStatus = http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/functional
```

«enumeration»
INSPIRE-US::
OilGasChemicalProductTypeValue

«enumeration»
MaterialTypeValue

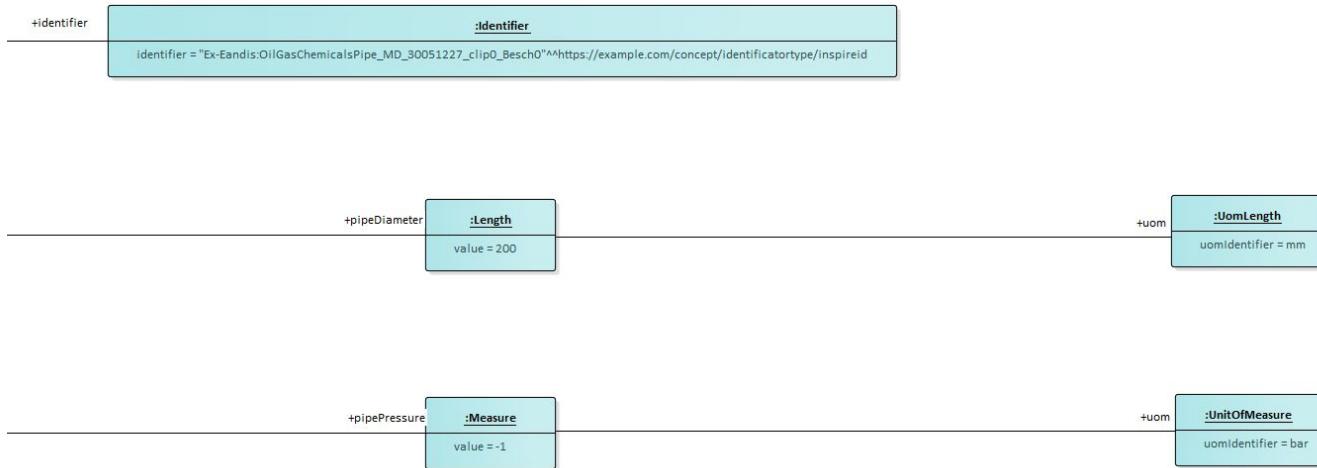
«enumeration»
RiskTypeValue

risk
noRisk

«enumeration»
INSPIRE-US::
UtilityDeliveryTypeValue

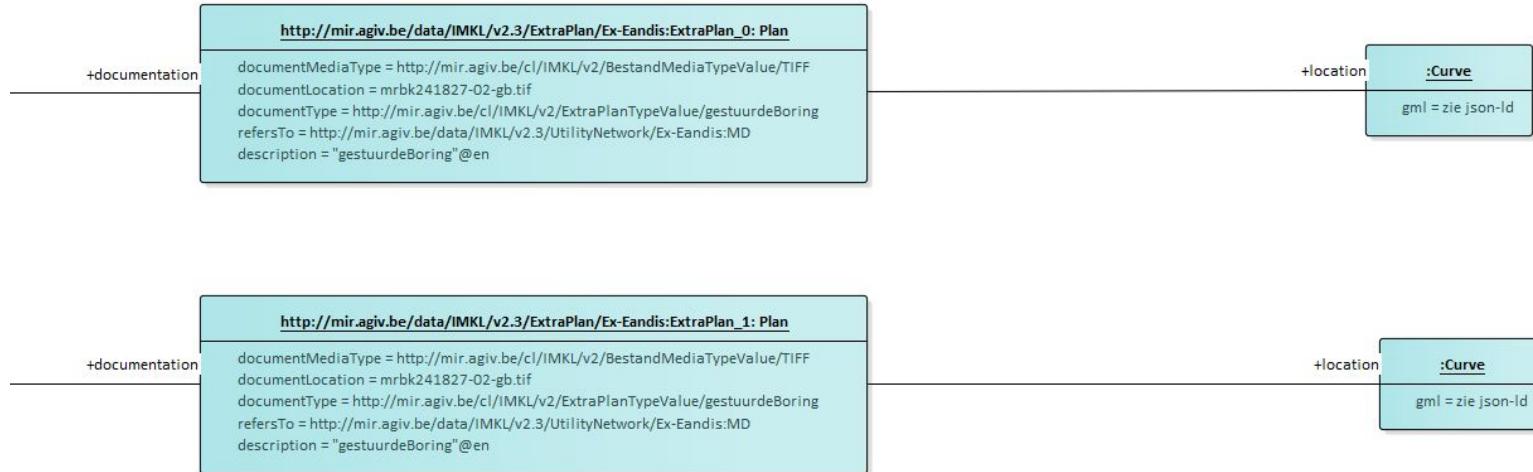
«enumeration»
INSPIRE-US::
ConditionOfFacilityValue

Pipe in data model



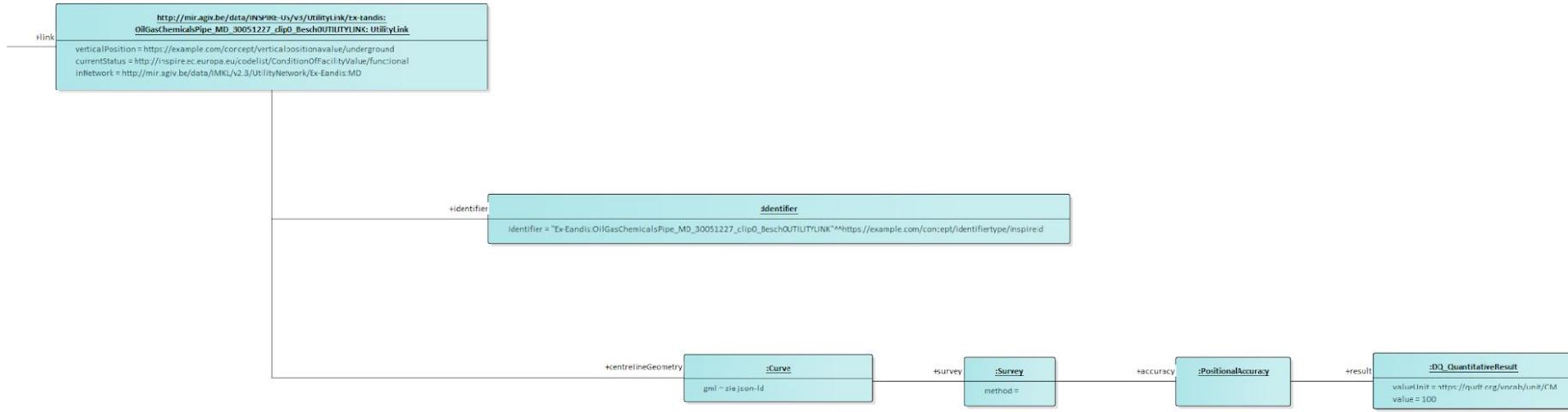
Pipe in data model

- Extra plan is now called Document
- In this example: used to express steered drillings
- Gml (Geography Markup Language): To express geographical features



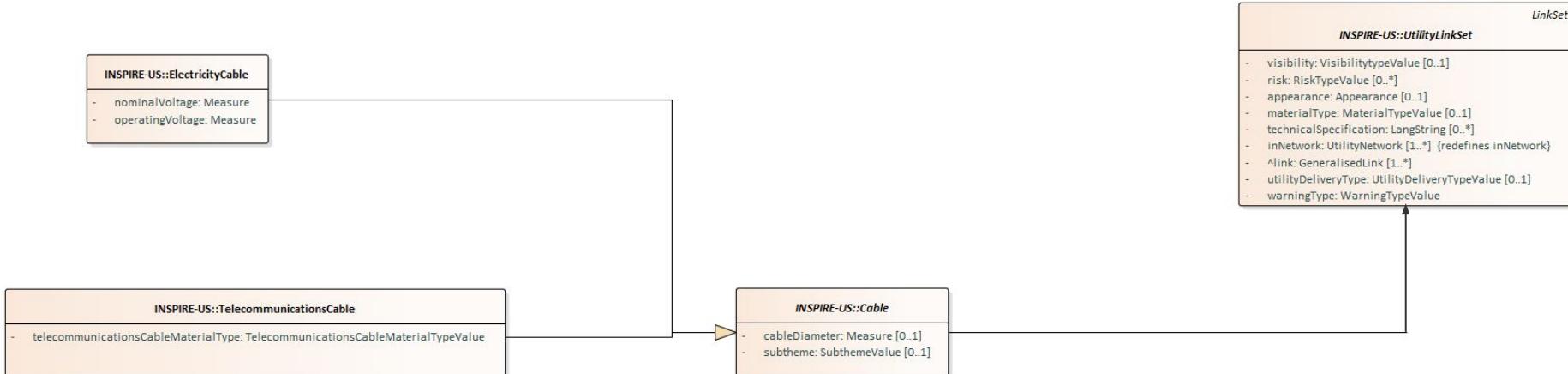
Pipe in data model

- Links to another Pipe, which is identified
- Curve, Survey (=opmeting), Positional Accuracy and Quantitative Result are given

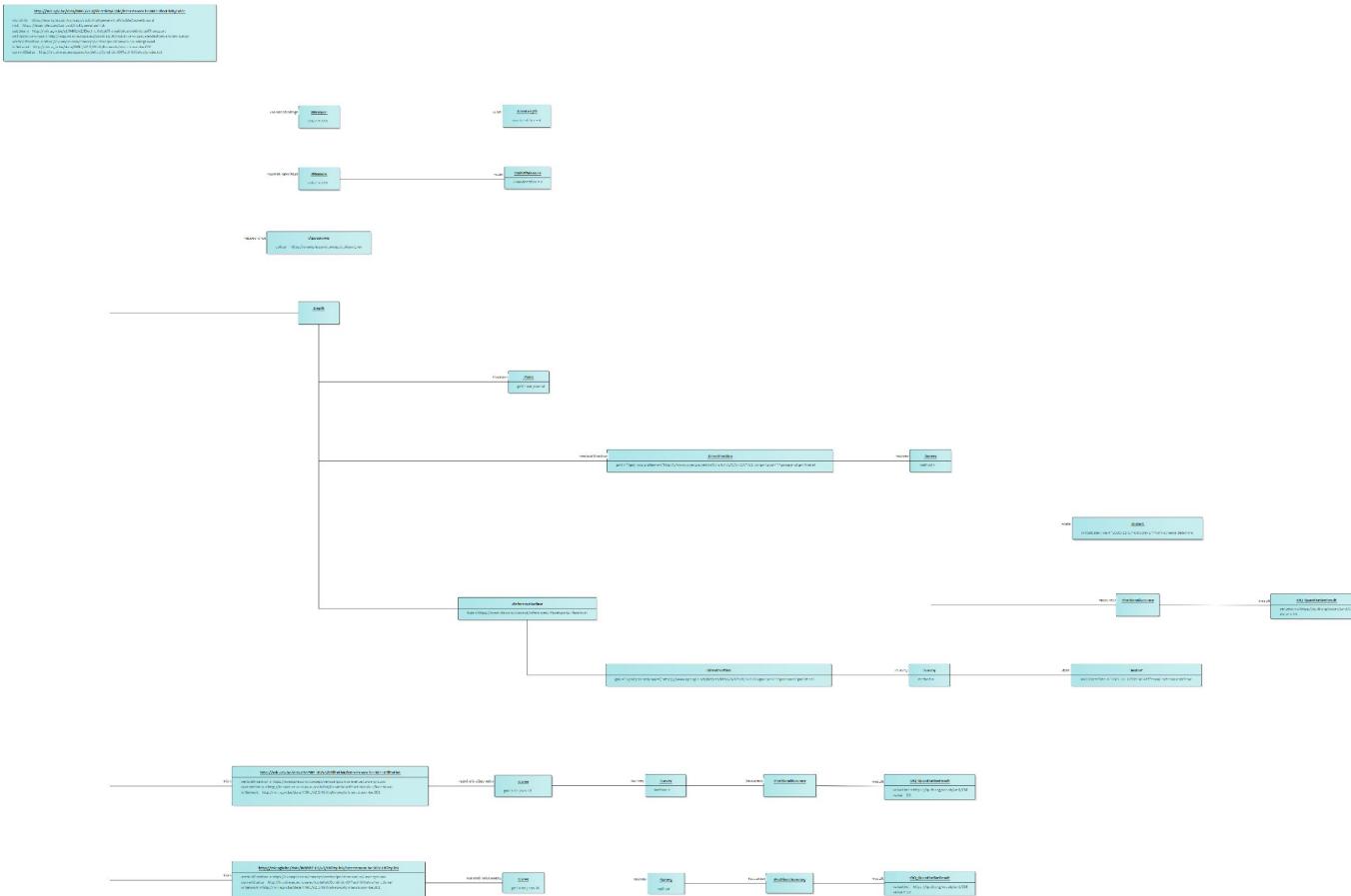


Electricity cable with depth

- Electricity cable inherits the characteristics of the INSPIRE-US Cable
- The Inspire defined cable inherits the characteristics of the Utility Link Set
- Cables are divided into electricity or telecommunications Cables
- This example will focus more on the depth



Electricity cable with depth



Electricity cable with depth

- Same principle as Pipe
- Visibility is extra defined

<http://mir.agiv.be/data/IMKL/v2.3/ElectricityCable/interstroom-be:002:ElectricityCable>

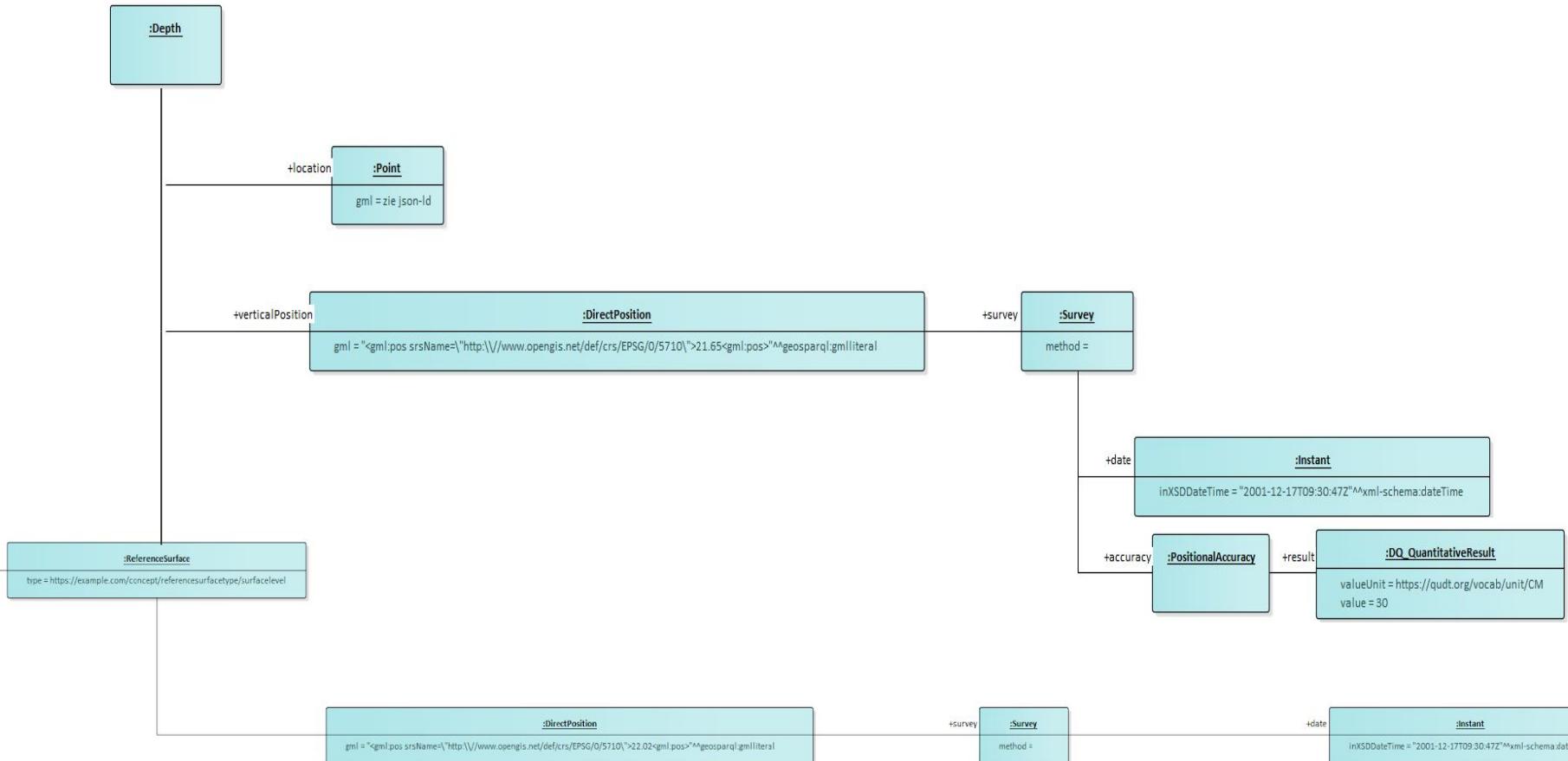
```
visibility = https://example.com/concept/visibilitytypevalue/notVisibleAboveGround  
risk = https://example.com/concept/risktypevalue/risk  
subtheme = http://mir.agiv.be/cl/IMKL/v2/ElectricitySubThemaValue/elektriciteitTransport  
utilityDeliveryType = http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeExtendedValue/distribution  
verticalPosition = https://example.com/concept/verticalpositionvalue/underground  
inNetwork = http://mir.agiv.be/data/IMKL/v2.3/UtilityNetwork/interstroom-be:001  
currentStatus = http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/projected
```

Electricity cable with depth

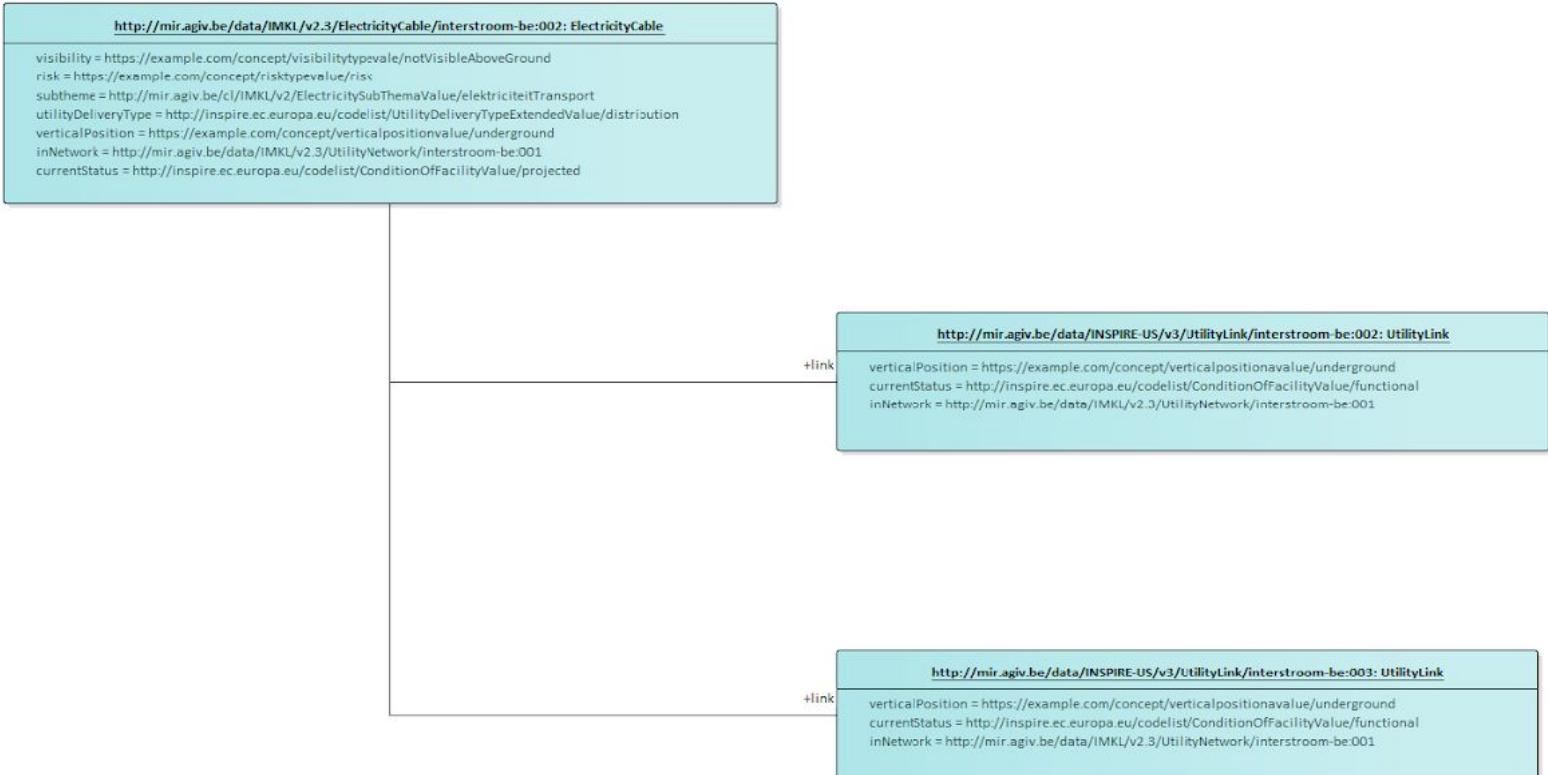
- Nominal and operation voltage are defined
- The appearance of the Cable is also given



Electricity cable with depth



Electricity cable with depth

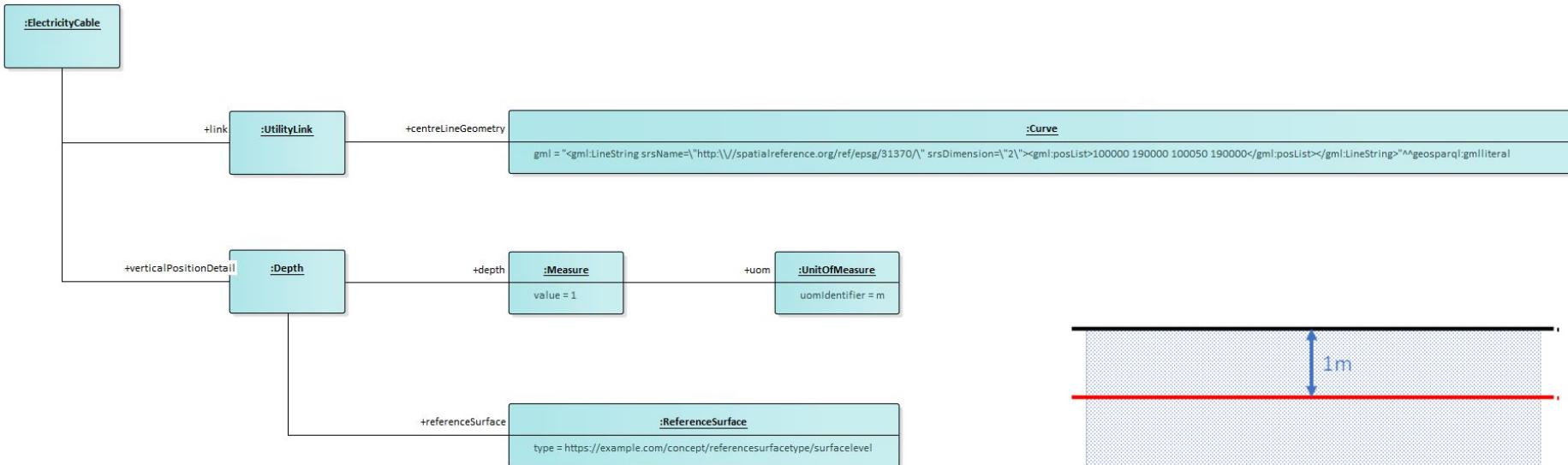




Break

Different possibilities for depth

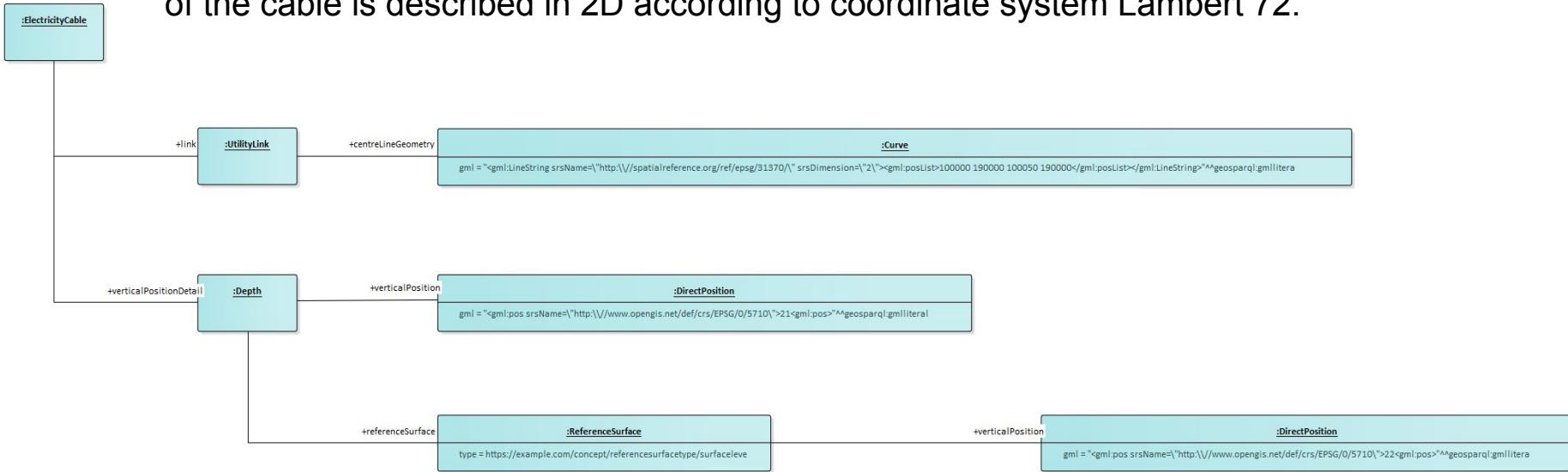
- VerticalPosition is specialised as Depth.
- Distance from reference surface is 1m.
- Reference surface is type: ground level (=maaiveld).
- Cable is 1m below ground level. No location given, depth implicitly applies to entire cable.
- Potential problem if cable has altering depth over its entire length.
- Geometry of the cable is described in 2D according to Lambert 72 coordinate system.



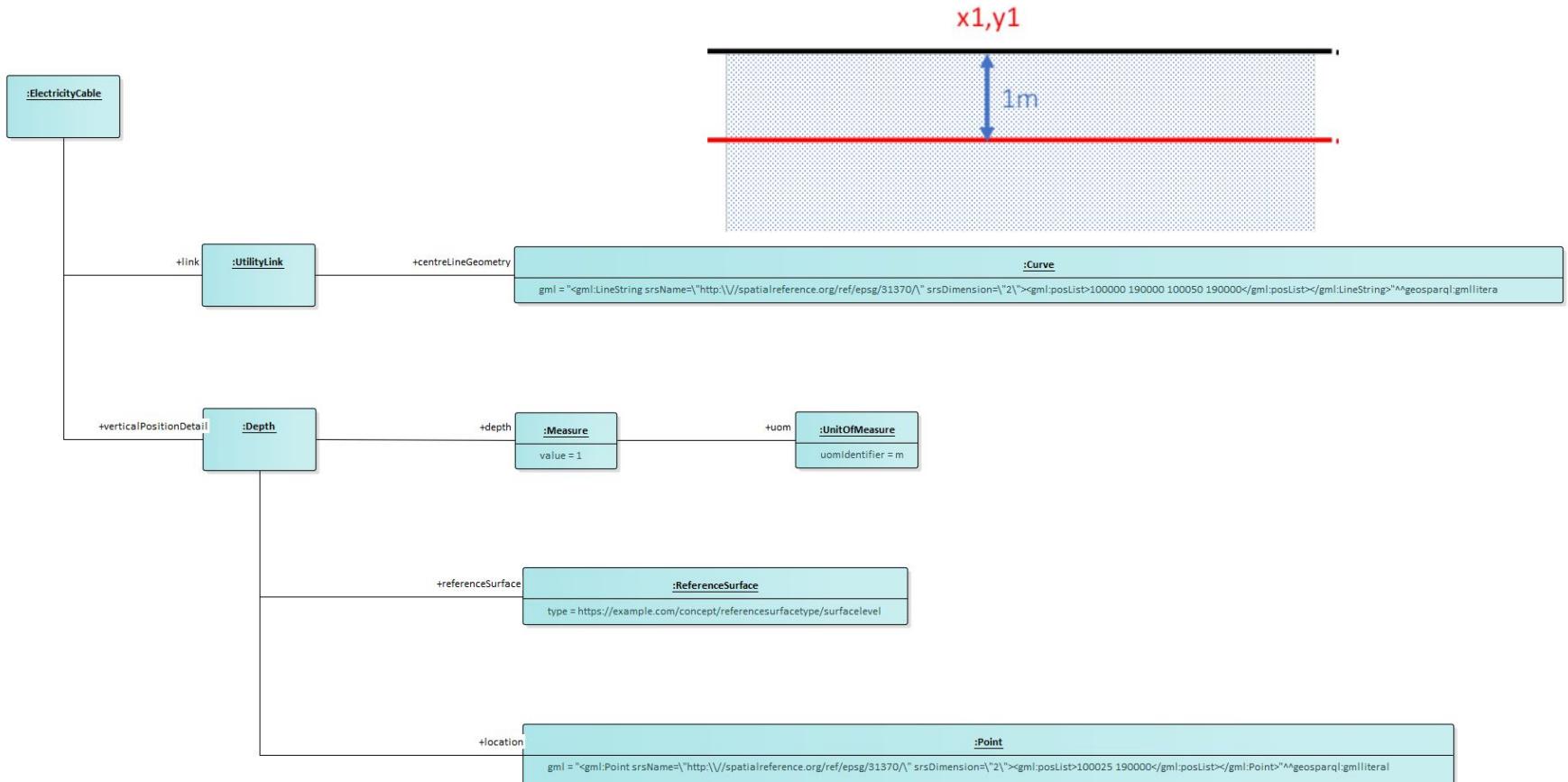
Different possibilities for depth



- VerticalPosition is specialised as Depth and at 21m TAW.
- Reference surface has type surface level.
- Ground surface at 22m TAW. No distance to ground level given, due to given vertical positions.
- Cable is 1m below ground level. No location given, depth implicitly applies to entire cable.
- Potential problem if cable is not at the same depth along its entire length. The geometry of the cable is described in 2D according to coordinate system Lambert 72.



Different possibilities for depth

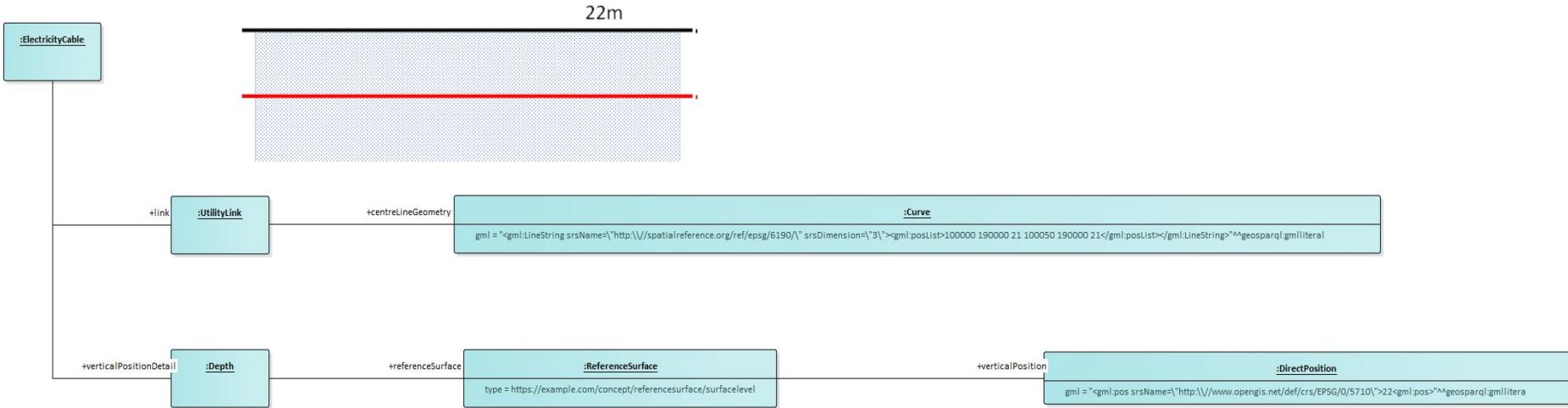


Different possibilities for depth

- Like option 1 but Depth applies to a given horizontal position.
- So assumed it coincides with a point on cable.
- Advantage of the horizontal location is that it can indicate that the specified depth is not necessarily valid for the entire length of the cable.
- The geometry of the cable is described in 2D according to coordinate system Lambert 72.

Different possibilities for depth

- Like option 2, but depth of cable is in its geometry.
- Geometry cable is described in 2.5D according to a combined coordinate system Lambert 72 + TAW.
- No location given, depth implicitly applies to entire cable.
- However: because z -coordinate is related to the cable, the actual depth can be determined for each point of the cable.
- Useful if cable is not equally deep. Alternative could be specifying a depth for each horizontal position.



Online specification

- Online specification where all classes, attributes and relations are explained

This document describes an **application profile**, in this case **OSLO IMKL (Application Profile)**. This application profile answers the question of how the corresponding domain model can be applied in practice. The restrictions (cardinality, code lists) are explained and the corresponding (RDF) terms are listed.

Resume

The OSLO-IMKL application profile shows how terms from the corresponding **vocabulary** should be used to represent cable and pipeline information, both above-ground and underground.

With this data, the aim is to reduce excavation damage underground by mapping key elements.

The model consists of five parts. The first part is the upper part of the model. This describes the components of a network, as defined in INSPIRE's European standard - Utility Services.

The second part is on the left side of the model, under the Utility Link Set. Below this, it distinguishes between cables, pipes and ducts. In turn, ducts are also further subdivided into the different types of pipes.

The third section describes the subdivision of Utility Node and Utility Node Container. The Utility Node represents how a node is represented in the network. The Utility Node Container represents which elements comprise the node.

The fourth part is the code lists at the bottom. These non-terminal lists represent the completion of specific attributes.

The last part are the data types on the right-hand side. This section describes all the different data types.

DirectPosition

Description

Holder of the coordinates of a position in a coordinate reference system.

Usage

Typically used to describe the geometry of a spatial object or the geometric primitives (eg point, line, plane...) that make up that object. However, a DirectPosition can also stand alone to describe a position in space. The position is given in a coordinate reference system. That reference system is specified explicitly at the DirectPosition, unless it is part of a spatial object (eg a geometric primitive) where a reference system is already stated. FYI: A coordinate reference system differs from an indirect spatial reference system in that positions are specified directly by coordinates rather than indirectly by an address or place name.

Characteristics

The following properties are defined for this data type: [gml](#) , [measurement](#) , [wkt](#) .

Characteristic	Expect Type	Cardinality	Description	Usage	Code list
gml	literal	0..1	Direct position expressed in gml format.	Use gmlliteral as data type.	
measurement	measurement	0..1	The way the position was determined.		
wkt	literal	0..1	Direct position expressed in wkt format.	Use wktliteral as data type.	

Geometry

Description

Shape and position characteristics of an object.

Usage

Describes these features using points, lines, polygons and coordinates.

Characteristics

The following properties are defined for this data type: [gml](#) , [wkt](#) .

Complete model



[MURAL-LINK](#)

Q&A en Next Steps



Vlaanderen
verbeelding werkt

Next steps



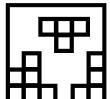
Processing all inputs from this thematic workgroup.



Send out a report of this working group. Feedback is certainly welcome.



Capturing feedback via GitHub.



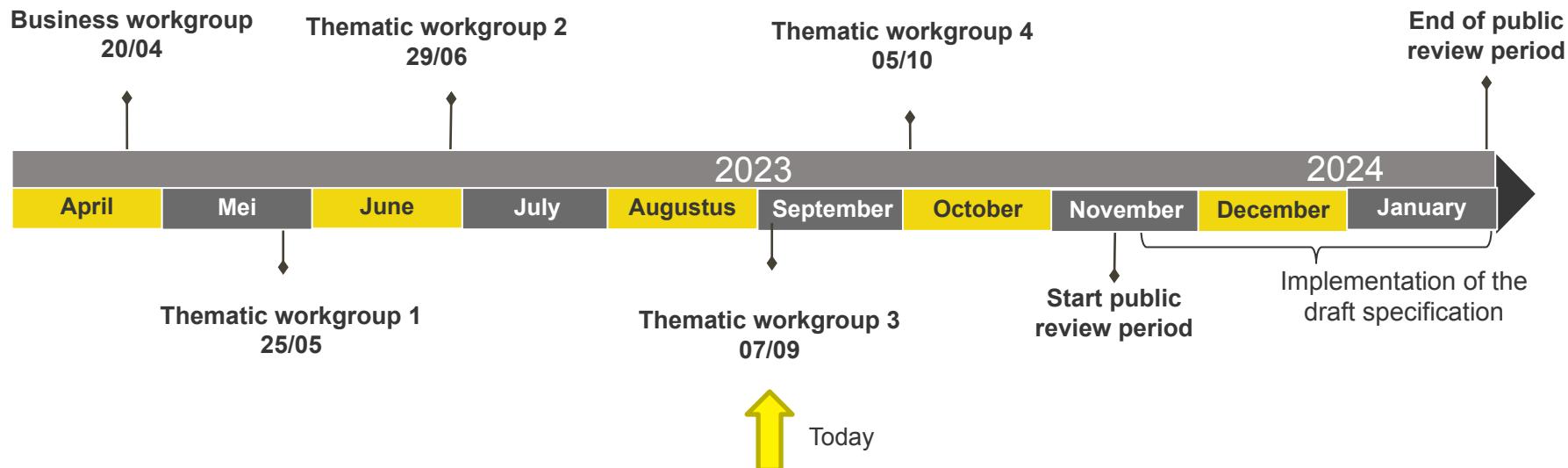
Publishing the application specification on test.data.vlaanderen.be



Finetuning the model to be ready for publication

OSLO timeline

Thematic workgroup 4 on **5th of October**: 13u30 - 16u30
Register via the following link: [4th thematic workgroup](#)



Feedback & Cooperation OSLO



Feedback can be given by e-mail to the following people:

- digitaal.vlaanderen@vlaanderen.be
- jef.liekens@vlaanderen.be
- laurens.vercauterden@vlaanderen.be



Feedback/input can be given via GitHub:
<https://github.com/Informatievlaanderen/OSLOthema-imkl>

Through the creation of **issues**

Why do we...?

Shouldn't we add ...?

Can't we ...?

What is ...?



Thank you for your effort!



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