

# IMKL 3 Data Model

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# 1 References

## 1.1 Other documents

| Document                                                                                                                                          | Description                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| imkl_3_0.xsd                                                                                                                                      | The XSD of IMKL 3.0.<br>The XSD is available for download at the following URL: <a href="http://vocab.belgif.be/ns/imkl/3.0/imkl_3_0.xsd">http://vocab.belgif.be/ns/imkl/3.0/imkl_3_0.xsd</a> |
| IMKL 3 vs IMKL 2.3 – What, Why and How.pdf                                                                                                        | This document describes in detail what the differences between IMKL 2.3 and IMKL 3.0 are.                                                                                                     |
| IMKL2.3 to IMKL3 migration guide.pdf                                                                                                              | This document describes step-by-step how a valid IMKL 2.3 document can be converted into a valid IMKL 3 document.                                                                             |
| IMKL3_Codelists.xlsx                                                                                                                              | This document contains an overview of the codelists, where they are used and what their values are.                                                                                           |
| IMKL3_ExtraRules_v1.xlsx                                                                                                                          | This document contains an overview of the properties per object type and the corresponding validation rules. This information is also included in chapter 4 of the current document.          |
| <a href="https://belgif.github.io/thematic/models/cable-pipe/index_en.html">https://belgif.github.io/thematic/models/cable-pipe/index_en.html</a> | ICEG Cables and Pipes application profile (English).                                                                                                                                          |
| <a href="https://belgif.github.io/thematic/models/cable-pipe/index_fr.html">https://belgif.github.io/thematic/models/cable-pipe/index_fr.html</a> | ICEG Cables and Pipes application profile (French).                                                                                                                                           |
| <a href="https://belgif.github.io/thematic/models/cable-pipe/index_nl.html">https://belgif.github.io/thematic/models/cable-pipe/index_nl.html</a> | ICEG Cables and Pipes application profile (Dutch).                                                                                                                                            |
| <a href="https://github.com/belgif/ICEGthema-imkl">https://github.com/belgif/ICEGthema-imkl</a>                                                   | ICEG repository for the IMKL thema.                                                                                                                                                           |

## 1.2 Glossary

| Term | Description                                                               |
|------|---------------------------------------------------------------------------|
| DNG  | <i>Deuxième Nivellement Général</i><br>French-speaking equivalent of TAW. |



|                      |                                                                                                                                                                                                                    |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ERD                  | Entity Relationship Diagram<br>A type of diagram often used to visualize a conceptual data model.                                                                                                                  |
| GML                  | Geography Markup Language<br>An XML-based encoding standard used to represent geographical features and their properties.                                                                                          |
| ICEG                 | Inter-Communaal Overleg e-Government                                                                                                                                                                               |
| INSPIRE              | INfrastructure for Spatial InfoRmation in the European Community                                                                                                                                                   |
| INSPIRE US           | INSPIRE Utility Services                                                                                                                                                                                           |
| IMKL                 | <i>Informatiemodel Kabels en Leidingen</i><br>Information Model for Cables and Conduits.                                                                                                                           |
| OSLO                 | Open Standaarden voor Linkende Organisaties                                                                                                                                                                        |
| UtilityLinkSet       | An abstract utility network class. <i>Cable</i> , <i>Pipe</i> and <i>Duct</i> objects are a type of <i>UtilityLinkSet</i> .                                                                                        |
| UtilityNode          | Point-shaped spatial object that plays an important role in a Utility Network. <i>Appurtenance</i> and <i>Connection</i> objects are a type of <i>UtilityNode</i> .                                                |
| UtilityNodeContainer | Point shaped Utility Network Element, potential carrier of Utility Nodes. <i>Cabinet</i> , <i>Manhole</i> , <i>Pole</i> and <i>Tower</i> are a type of <i>UtilityNodeContainer</i> .                               |
| UtilityNodeElement   | Abstract base type representing an utility network element in an utility network. All <i>UtilityLinkSet</i> , <i>UtilityNode</i> and <i>UtilityNodeContainer</i> objects are a type of <i>UtilityNodeElement</i> . |
| TAW                  | <i>Tweede Algemene Waterpassing</i><br>Dutch-speaking equivalent of DNG.                                                                                                                                           |
| URI                  | Uniform Resource Identifier                                                                                                                                                                                        |
| URL                  | Uniform Resource Locator                                                                                                                                                                                           |
| URN                  | Uniform Resource Name                                                                                                                                                                                              |
| XML                  | Extensible Markup Language                                                                                                                                                                                         |
| XSD                  | W3C XML Schema Definition Language                                                                                                                                                                                 |

## 2 Introduction

For the planning and execution of excavation works, plan applicants (contractors, engineering firms, etc.) require information about the location and nature of underground cables and pipelines. This information is held by various utility network operators (utility companies, public authorities, etc.).

For the integration of cable and pipeline information from different parties, it is essential to have a common framework of terms, allowing information from various types of cables, pipelines, and sectors (gas, electricity, drinking water, wastewater, telecommunications, etc.) to be provided in a uniform manner in response to a plan request. This common framework is established by the Information Model for Cables and Conduits (IMKL).

IMKL focuses on the information that is needed to minimize excavation damage by exchanging information about network infrastructure in a clear manner. The emphasis is not on information exchange for network analysis, operational maintenance planning, or similar activities.

The scope of this document is to define and describe the IMKL 3 data model.

The remainder of the document contains the following chapters:

- **IMKL concept:** An introduction to the Cables and Pipes application profile and the IMKL 3 implementation model.
- **IMKL data dictionary:** An overview of all objects and their properties and relationships.
- **Codelists:** A description of all codelists and their contents used in the context of IMKL 3.
- **Getting started:** Information on how to start with creating IMKL 3 compliant XML files.
- **Best practices:** Best practices for providing specific information in IMKL 3.

## 3 IMKL 3 concept

### 3.1 Introduction

IMKL 3 is an update of the existing IMKL 2.3 standard. The design and implementation of IMKL 3 occurred in two phases. In the first phase, a semantic data model was developed, which resulted in the *Cables and Pipes* application profile. This profile defines the terms that are relevant in the context of IMKL.

Next, based on this application profile, an implementation model was created. This implementation model precisely defines how data must be encoded to comply with the IMKL 3 standard.

In Belgium, IMKL 3 is the first regional (OSLO = Open Standaarden voor Linkende Organisaties) data model that has been ratified at interfederal level (ICEG = Inter-Communautair Overleg E-government). This means that the various regional authorities as well as the federal government and the private sector were involved in the development and approval of this model. Both the semantic datamodel as the application profile were developed in an interregional co-creation set-up. While the IMKL 2.3 model was only used in Flanders, the IMKL 3 model will be implemented and rolled out across the country. This means that both public and private actors will speak the same language when it comes to exchanging information about underground cables and pipes.

Section 3.2 contains a short introduction of the *Cables and Pipes* application profile. More information can be found on the following website: [https://belgif.github.io/thematic/models/cable-pipe/index\\_en.html](https://belgif.github.io/thematic/models/cable-pipe/index_en.html). The remainder of this document (as from 3.3) focuses on the implementation of this application profile in XML, i.e. the IMKL 3 standard.

### 3.2 The Cables and Pipes application profile

The Cables and Pipes application profile shows how terms from the associated vocabulary should be used to describe cables, pipes and ducts. These can be located both above and below ground. As far as the underground cables and pipes or ducts are concerned, the description is such that all elements are present that contribute to limiting excavation damage.

The model builds on *INSPIRE Utility Services* and models on which that model is based, mainly *INSPIRE Networks*.

Utilities such as cables and pipes or ducts are conceived as a network (a *UtilityNetwork*) in which they form linear elements, connected by point objects such as splitters, connectors, connections mounted in or on cabinets, towers, poles, etc.

Cables and pipes or ducts are collections of links in the network, *UtilityLinkSets* composed of *UtilityLinkSequences* or *Links*. The main types of link sets are *Cables*, *Pipes* and *Ducts*. *Pipes* and *Ducts* are conduits: they carry substances such as water, waste water, gas or contain *Cables* or other *Pipes* or *Ducts*.

The *Cables* class is divided into *Electrical Cables* and *Telecommunications Cables*. In *Pipes*, a distinction is made between *OilGasChemicalsPipes*, *SewerPipes*, *WaterPipes* and *ThermalPipes*.

The point objects that realize the connections in the network (For example couplings, connections, pumps, meters) are the nodes of the network, the so-called *Utility Nodes*. They can stand alone but are typically mounted on larger sized point objects such as Poles or Towers or sit in Cabinets on the street. We call these *Utility Node Containers*.

Some *Utility Elements* together form a facility or installation that can be separately described as an *Activity Complex*.

The model includes various supporting classes and data types, including to supplement the network information with topographical information (class *Topographic Element*) or zones where certain regulations apply when carrying out works (class *Protected Area*) or to annotate the objects (class *Annotation*).

The geometry of cables and pipes and nodes in the network can be described in 2D or 2.5D.

If 2.5D is not possible or is insufficient, additional information about the *VerticalPosition* can be provided, both relative (to a *Reference Surface*) and absolute (*Direct Position* in a vertical coordinate system such as TAW/DNG). This information is important to avoid excavation damage.

The documentation of the application profile can be found on the following website:

[https://belgif.github.io/thematic/models/cable-pipe/index\\_en.html](https://belgif.github.io/thematic/models/cable-pipe/index_en.html).

### 3.3 IMKL 3 implementation model

The IMKL 3 implementation model is an implementation of the *Cables and Pipes* application profile described in the previous section. The European exchange standard for cable and pipeline information (INSPIRE Utility Services, hereafter abbreviated as 'INSPIRE US') was used as the foundation for the IMKL 3 implementation model. This standard has been extended with several IMKL-specific elements that are relevant for the use cases of IMKL.

The INSPIRE technical guidelines define XML as the default encoding for all INSPIRE spatial data themes. Since the IMKL 3 implementation model is based on this, XML is also used as the exchange format for IMKL 3. The IMKL 3 implementation model consists of an XSD and a set of guidelines that define how data must be encoded.

For cable and pipeline operators subject to INSPIRE requirements, this integrated modelling approach offers operational benefits, as there is no need to develop an additional transformation service to comply with both the KLIP/KLIM decree and the INSPIRE directive. By filtering out the IMKL-specific elements, it is possible to exchange a subset of cable and pipeline information in an INSPIRE-compliant manner using the same information service.

The following chapters in this document contain a detailed description of the objects and requirements as included in the IMKL 3 implementation model and instructions to get started with converting data into valid IMKL 3 XML documents.

### 3.4 Differences between IMKL 2.3 and IMKL 3

For more information on the differences between IMKL 2.3 and IMKL 3.0, please refer to the following documents:

- IMKL2.3 to IMKL3 migration guide.pdf.
- IMKL 3 vs IMKL 2.3 – What, Why and How.pdf



## 4 IMKL 3 data dictionary

### 4.1 Introduction

The Data Dictionary in this chapter describes each data object, the properties of these objects and their associations with other objects or codelists. The values from the codelists are detailed in chapter 5.

For each concept, a table provides the definition, a description, and its origin. Next, the properties of each object are listed. Additionally, an *Entity Relationship Diagram* (ERD) is provided for each object, illustrating how the object relates to other objects.

Some attributes consist of multiple elements. These attributes are referred to as Data Types, which are described in section 4.4.

Section 4.5 lists all properties present in the data model. For each property the following information is listed:

- Namespace: The namespace of the property
- Definition: The definition of the property
- Description: A description of the property
- Type: The data type of the property
- Occurrence: listing the objects in which the property is used
- NilReason: whether a nilReason is allowed (Yes) or not (No). More information on nilReasons is given in section 6.6.

Since most data objects are spatial objects or *features*, the data dictionary can also be considered a *feature catalogue*. All of the data objects listed in this chapter are instantiable. Abstract data objects are not described individually in this data dictionary.

### 4.2 Feature Objects

#### 4.2.1 ActivityComplex

##### 4.2.1.1 Overview

| Name        | ActivityComplex                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | Technical and economic unit managed by the same operator where certain activities regarding production and services take place.                                                                                                                                                                                                                                                                                                                  |
| Description | In practice, a site, plot, facility, installation, building where the activity takes place. In the context of cables and pipes, it refers to for example a power plant, a pumping station, a sewage treatment plant, etc. An <i>ActivityComplex</i> includes the infrastructure, equipment and material required for it and may include several sites as long as they are part of the same complex. The activity is identified by NACEBEL codes. |

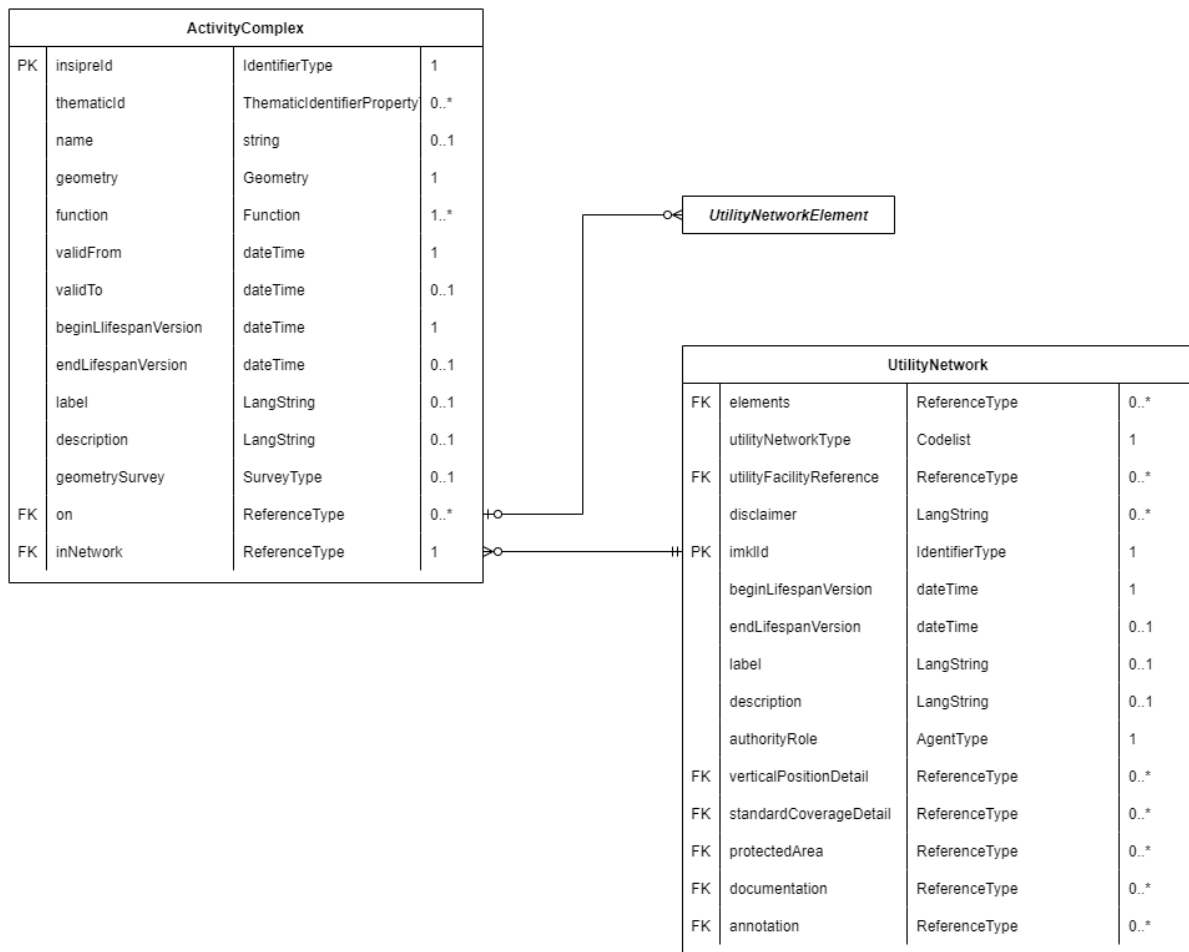
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | An <i>ActivityComplex</i> object is always associated with a <i>UtilityNetwork</i> object via the <i>inNetwork</i> association. An <i>ActivityComplex</i> can also be associated with multiple <i>UtilityNetworkElement</i> objects via the <i>on</i> association. When an <i>ActivityComplex</i> is associated with the <i>UtilityNetwork</i> as a whole and is not associated with specific <i>UtilityNetworkElement</i> objects, the <i>on</i> associations can be omitted. |
| <b>Inherits from</b> | INSPIRE act-core 4.0 - ActivityComplex                                                                                                                                                                                                                                                                                                                                                                                                                                         |

#### 4.2.1.2 Properties and associations

| Property name        | Namespace | Cardinality | Type                           |
|----------------------|-----------|-------------|--------------------------------|
| inspireId            | act-core  | 1           | IdentifierPropertyType         |
| thematicId           | act-core  | 0..*        | ThematicIdentifierPropertyType |
| name                 | act-core  | 0..1        | string                         |
| geometry             | act-core  | 1           | Geometry                       |
| function             | act-core  | 1..*        | Function                       |
| validFrom            | act-core  | 1           | dateTime                       |
| validTo              | act-core  | 0..1        | dateTime                       |
| beginLifespanVersion | act-core  | 1           | dateTime                       |
| endLifespanVersion   | act-core  | 0..1        | dateTime                       |
| label                | imkl      | 0..1        | PT_FreeText_PropertyType       |
| description          | imkl      | 0..1        | PT_FreeText_PropertyType       |
| geometrySurvey       | imkl      | 0..1        | SurveyType                     |
| on                   | imkl      | 0..*        | ReferenceType                  |
| inNetwork            | imkl      | 1           | ReferenceType                  |



### 4.2.1.3 Entity Relationship Diagram



## 4.2.2 Annotation

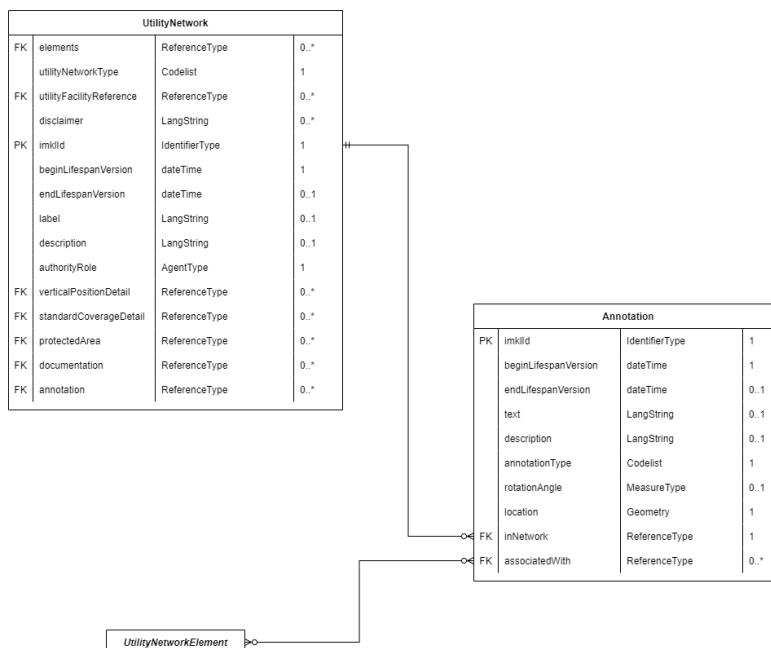
### 4.2.2.1 Overview

| Name          | Annotation                                                                                                                                                                                                                                                                                                                                               |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | An object that displays additional information in the form of annotations and dimensions.                                                                                                                                                                                                                                                                |
| Description   | <p><i>Annotations</i> can be used to provide additional information in the form of annotations and dimensions. The <i>annotationType</i> property can be used to specify the type of the <i>Annotation</i>.</p> <p>The position of the <i>Annotation</i> must be specified via the location property. The location must be a point or line geometry.</p> |
| Inherits from | N/A                                                                                                                                                                                                                                                                                                                                                      |

#### 4.2.2.2 Properties and associations

| Property name        | Namespace | Cardinality | Type                     |
|----------------------|-----------|-------------|--------------------------|
| imklId               | imkl      | 1           | IdentifierPropertyType   |
| beginLifespanVersion | imkl      | 1           | dateTime                 |
| endLifespanVersion   | imkl      | 0..1        | dateTime                 |
| text                 | imkl      | 0..1        | PT_FreeText_PropertyType |
| description          | imkl      | 0..1        | PT_FreeText_PropertyType |
| annotationType       | imkl      | 1           | ReferenceType            |
| rotationAngle        | imkl      | 0..1        | MeasureType              |
| location             | imkl      | 1           | Geometry                 |
| inNetwork            | imkl      | 1           | ReferenceType            |
| associatedWith       | imkl      | 0..*        | ReferenceType            |

#### 4.2.2.3 Entity Relationship Diagram





## 4.2.3 Appurtenance

### 4.2.3.1 Overview

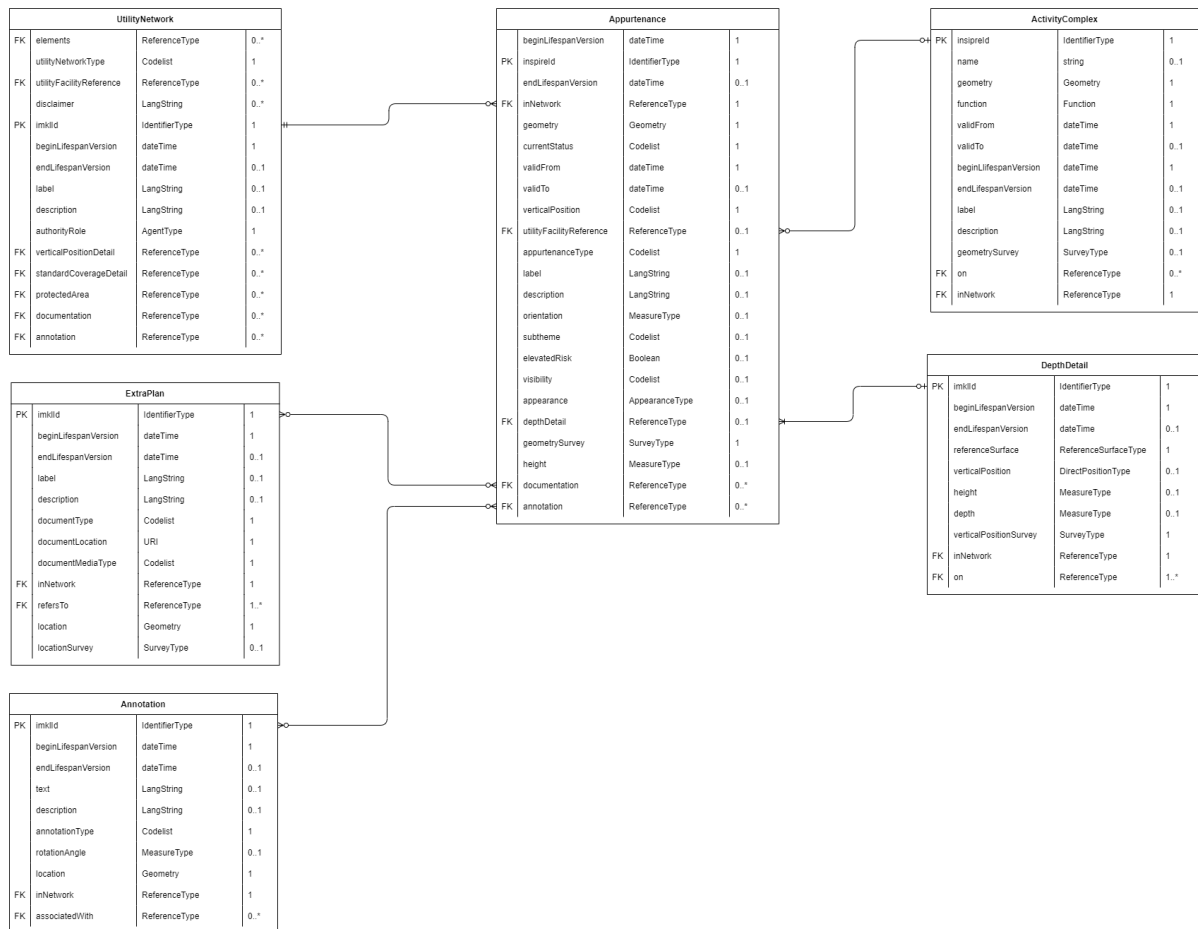
| Name          | Appurtenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | Physical point-shaped part of the <i>UtilityNetwork</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description   | <p>An <i>Appurtenance</i> can stand alone as a <i>UtilityNode</i>, but is often mounted on a carrier (a <i>UtilityNodeContainer</i>).</p> <p>The <i>appurtenanceType</i> property describes the type of the <i>Appurtenance</i> and corresponds to the INSPIRE classification of the <i>Appurtenance</i>. For the use cases of IMKL, IMKL specific options are added to this classification.</p> <p>The <i>specificAppurtenanceType</i> property is not used for the use cases of IMKL.</p> |
| Inherits from | INSPIRE us-net-common 4.0 - Appurtenance                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### 4.2.3.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                     |
|------------------------------|---------------|-------------|--------------------------|
| beginLifespanVersion         | net           | 1           | dateTime                 |
| inspireId                    | net           | 1           | IdentifierPropertyType   |
| endLifespanVersion           | net           | 0..1        | dateTime                 |
| inNetwork                    | net           | 1           | ReferenceType            |
| geometry                     | net           | 1           | Geometry                 |
| spokeEnd                     | net           | 0..*        | ReferenceType            |
| spokeStart                   | net           | 0..*        | ReferenceType            |
| currentStatus                | us-net-common | 1           | ReferenceType            |
| validFrom                    | us-net-common | 1           | dateTime                 |
| validTo                      | us-net-common | 0..1        | dateTime                 |
| verticalPosition             | us-net-common | 1           | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType            |
| appurtenanceType             | us-net-common | 1           | ReferenceType            |
| specificAppurtenanceType     | us-net-common | 0..1        | ReferenceType            |
| label                        | imkl          | 0..1        | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1        | PT_FreeText_PropertyType |

|                |      |      |                |
|----------------|------|------|----------------|
| orientation    | imkl | 0..1 | MeasureType    |
| subtheme       | imkl | 0..1 | ReferenceType  |
| visibility     | imkl | 0..1 | ReferenceType  |
| appearance     | imkl | 0..1 | AppearanceType |
| depthDetail    | imkl | 0..1 | ReferenceType  |
| geometrySurvey | imkl | 1    | SurveyType     |
| height         | imkl | 0..1 | MeasureType    |
| documentation  | imkl | 0..* | ReferenceType  |
| annotation     | imkl | 0..* | ReferenceType  |

#### 4.2.3.3 Entity Relationship Diagram





## 4.2.4 Cabinet

### 4.2.4.1 Overview

| Name          | Cabinet                                                                                                                                                                                                    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | Simple <i>UtilityNodeContainer</i> that takes the shape of a cabinet.                                                                                                                                      |
| Description   | A <i>Cabinet</i> typically contains smaller mountable <i>Appurtenances</i> . The <i>nodes</i> association can be used to track the association between the <i>Cabinet</i> and these <i>Appurtenances</i> . |
| Inherits from | INSPIRE us-net-common 4.0 - Cabinet                                                                                                                                                                        |

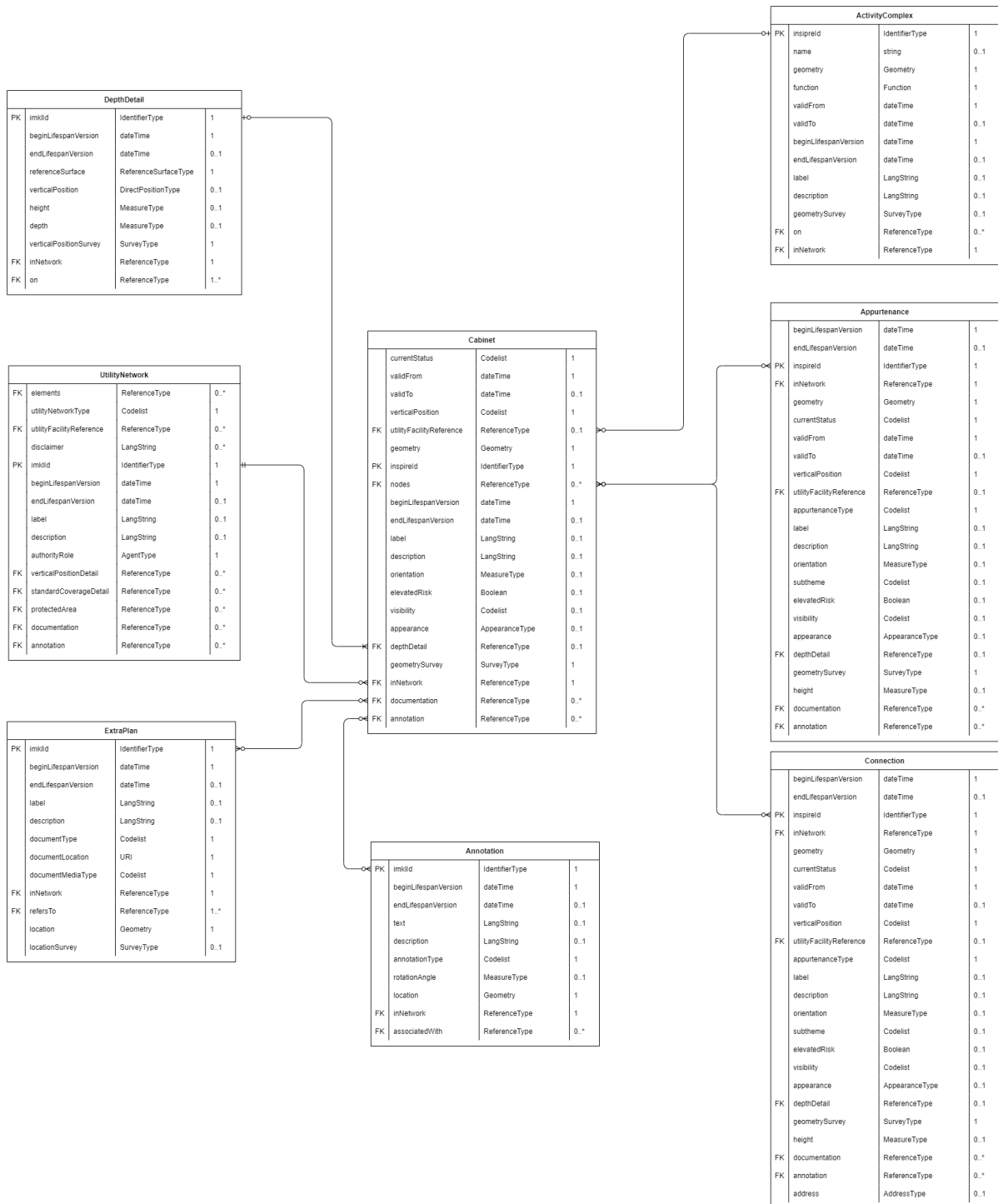
### 4.2.4.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                     |
|------------------------------|---------------|-------------|--------------------------|
| currentStatus                | us-net-common | 1           | ReferenceType            |
| validFrom                    | us-net-common | 1           | dateTime                 |
| validTo                      | us-net-common | 0..1        | dateTime                 |
| verticalPosition             | us-net-common | 1           | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType            |
| geometry                     | us-net-common | 1           | Geometry                 |
| inspireId                    | us-net-common | 1           | IdentifierPropertyType   |
| nodes                        | us-net-common | 0..*        | ReferenceType            |
| beginLifespanVersion         | imkl          | 1           | dateTime                 |
| endLifespanVersion           | imkl          | 0..1        | dateTime                 |
| label                        | imkl          | 0..1        | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1        | PT_FreeText_PropertyType |
| orientation                  | imkl          | 0..1        | MeasureType              |
| visibility                   | imkl          | 0..1        | ReferenceType            |
| appearance                   | imkl          | 0..1        | AppearanceType           |
| depthDetail                  | imkl          | 0..1        | ReferenceType            |
| geometrySurvey               | imkl          | 1           | SurveyType               |
| inNetwork                    | imkl          | 1           | ReferenceType            |

|               |      |      |               |
|---------------|------|------|---------------|
| documentation | imkl | 0..* | ReferenceType |
| annotation    | imkl | 0..* | ReferenceType |



#### 4.2.4.3 Entity Relationship Diagram



## 4.2.5 Connection

### 4.2.5.1 Overview

| Name                 | Connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>    | Specific type of <i>Appurtenance</i> describing the connection of a <i>Cable</i> or <i>Pipe</i> to a building or other physical object.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>   | <p>A <i>Connection</i> is a specific type of <i>Appurtenance</i> that is used to describe the connection of a <i>Cable</i> or <i>Pipe</i> to a building or other physical object.</p> <p>A <i>Connection</i> object must have one of the following <i>appurtenanceTypes</i>:</p> <ul style="list-style-type: none"> <li>• WaterAppurtenanceTypeIMKLValue – deliveryPoint</li> <li>• ThermalAppurtenanceTypeIMKLValue – deliveryPoint</li> <li>• ElectricityAppurtenanceTypeValue – deliveryPoint</li> <li>• OilGasChemicalsAppurtenanceTypeValue – deliveryPoint</li> <li>• TelecommunicationsAppurtenanceTypeIMKLValue – termination</li> <li>• SewerAppurtenanceTypeIMKLValue – deliveryPoint</li> </ul> <p>The <i>address</i> property can be used to include information on the address of the connection.</p> |
| <b>Inherits from</b> | IMKL 3.0 - Appurtenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

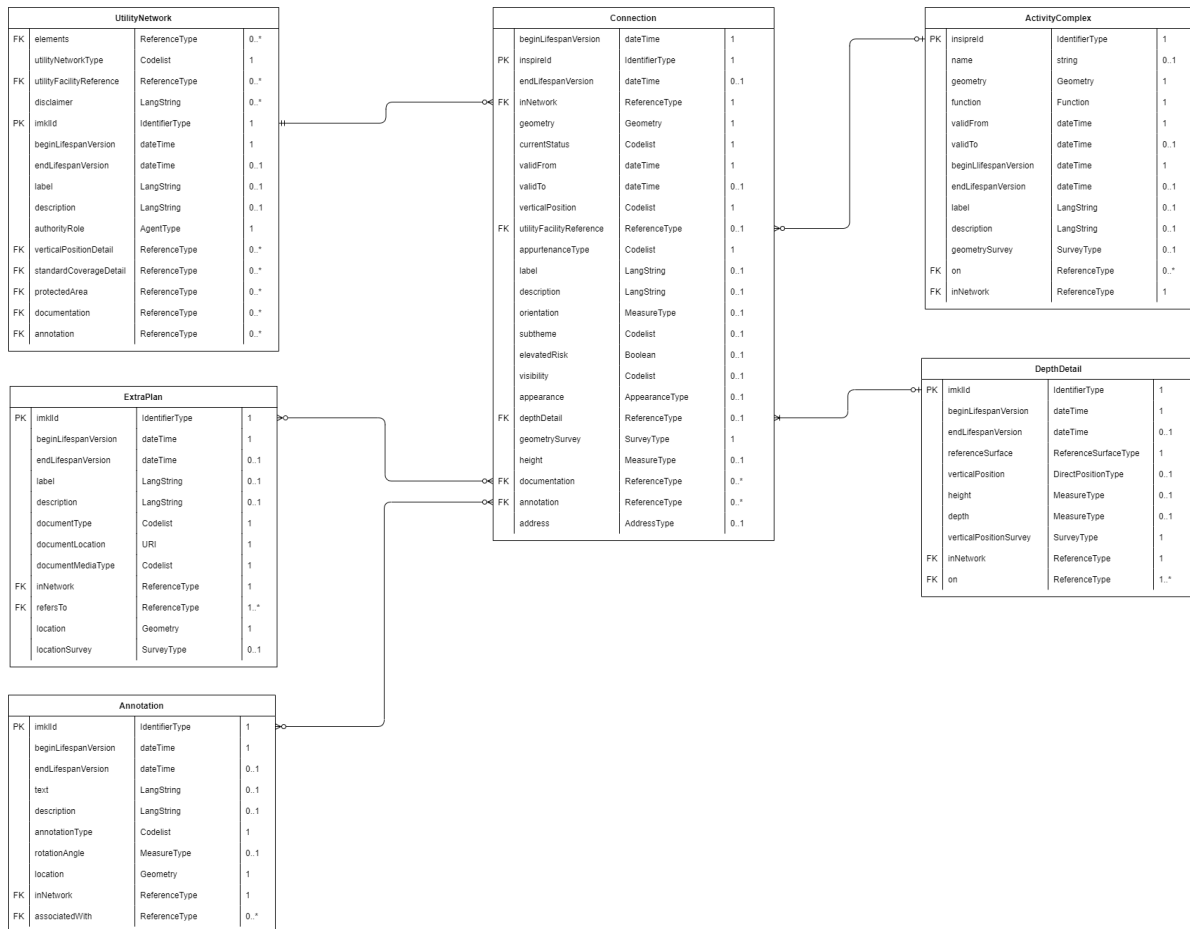
### 4.2.5.2 Properties and associations

| Property name        | Namespace     | Cardinality | Type                   |
|----------------------|---------------|-------------|------------------------|
| beginLifespanVersion | net           | 1           | dateTime               |
| inspireId            | net           | 1           | IdentifierPropertyType |
| endLifespanVersion   | net           | 0..1        | dateTime               |
| inNetwork            | net           | 1           | ReferenceType          |
| geometry             | net           | 1           | Geometry               |
| spokeEnd             | net           | 0..*        | ReferenceType          |
| spokeStart           | net           | 0..*        | ReferenceType          |
| currentStatus        | us-net-common | 1           | ReferenceType          |
| validFrom            | us-net-common | 1           | dateTime               |
| validTo              | us-net-common | 0..1        | dateTime               |



|                              |               |      |                          |
|------------------------------|---------------|------|--------------------------|
| verticalPosition             | us-net-common | 1    | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1 | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1 | ReferenceType            |
| appurtenanceType             | us-net-common | 1    | ReferenceType            |
| specificAppurtenanceType     | us-net-common | 0..1 | ReferenceType            |
| label                        | imkl          | 0..1 | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1 | PT_FreeText_PropertyType |
| orientation                  | imkl          | 0..1 | MeasureType              |
| subtheme                     | imkl          | 0..1 | ReferenceType            |
| visibility                   | imkl          | 0..1 | ReferenceType            |
| appearance                   | imkl          | 0..1 | AppearanceType           |
| depthDetail                  | imkl          | 0..1 | ReferenceType            |
| geometrySurvey               | imkl          | 1    | SurveyType               |
| height                       | imkl          | 0..1 | MeasureType              |
| documentation                | imkl          | 0..* | ReferenceType            |
| annotation                   | imkl          | 0..* | ReferenceType            |
| address                      | imkl          | 0..1 | AddressType              |

### 4.2.5.3 Entity Relationship Diagram



## 4.2.6 CoverageDetail

### 4.2.6.1 Overview

| Name        | CoverageDetail                                                                                                                                                                                                                                                                                                                                             |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | <p>Object used to represent:</p> <ul style="list-style-type: none"> <li>the distance from the surface level to the top of a <i>UtilityLinkSet</i> object.</li> <li>The distance in absolute value – expressed in TAW/DNG level – from the TAW/DNG zero point to the top of a <i>UtilityLinkSet</i> object.</li> </ul>                                      |
| Description | <p><i>CoverageDetail</i> can be used to provide information on the depth or vertical position of <i>UtilityLinkSet</i> objects. For these objects the depth or vertical position information should be measured to the top of the object.</p> <p><i>UtilityLinkSet</i> objects are:</p> <ul style="list-style-type: none"> <li>ElectricityCable</li> </ul> |



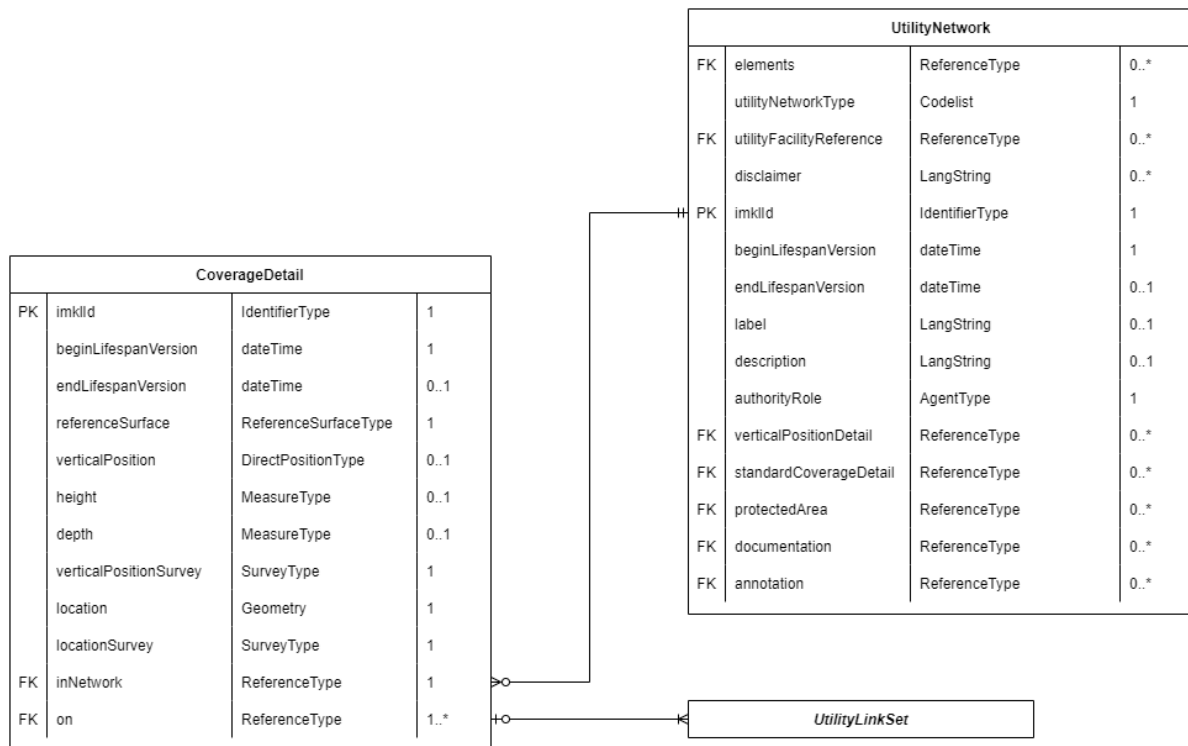
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <ul style="list-style-type: none"> <li>• TelecommunicationsCable</li> <li>• Pipe</li> <li>• OilGasChemicalsPipe</li> <li>• SewerPipe</li> <li>• WaterPipe</li> <li>• ThermalPipe</li> <li>• Duct</li> </ul> <p><i>CoverageDetail</i> can be used to represent both a relative height (i.e. a distance above the surface) or depth (i.e. a distance below the surface) as well as an absolute TAW/DNG level.</p> <p>Every <i>CoverageDetail</i> object should have one (and at most one) of the following properties:</p> <ul style="list-style-type: none"> <li>• <b>depth:</b> Represents the depth below the surface.</li> <li>• <b>height:</b> The <i>height</i> property is similar to the <i>depth</i>, but it represents a height above the surface.</li> <li>• <b>verticalPosition:</b> The <i>verticalPosition</i> property should be used to provide a TAW/DNG level.<br/>Note that the <i>srsName</i> and <i>srsDimension</i> attributes are required for this element.</li> </ul> <p>A single <i>CoverageDetail</i> can be associated with multiple <i>UtilityLinkSet</i> objects. If multiple objects have the same depth, height or vertical position, the <i>CoverageDetail</i> can be reused and needs to be provided only once.</p> <p>The location of a <i>CoverageDetail</i> must be provided via the <i>location</i> property. This location can be a Point or Line geometry.</p> |
| Inherits from | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

#### 4.2.6.2 Properties and associations

| Property name          | Namespace | Cardinality | Type                   |
|------------------------|-----------|-------------|------------------------|
| imklId                 | imkl      | 1           | IdentifierPropertyType |
| beginLifespanVersion   | imkl      | 1           | dateTime               |
| endLifespanVersion     | imkl      | 0..1        | dateTime               |
| referenceSurface       | imkl      | 1           | ReferenceSurfaceType   |
| verticalPosition       | imkl      | 0..1        | DirectPositionType     |
| height                 | imkl      | 0..1        | MeasureType            |
| depth                  | imkl      | 0..1        | MeasureType            |
| verticalPositionSurvey | imkl      | 1           | SurveyType             |

|                |      |      |               |
|----------------|------|------|---------------|
| location       | imkl | 1    | Geometry      |
| locationSurvey | imkl | 1    | SurveyType    |
| inNetwork      | imkl | 1    | ReferenceType |
| on             | imkl | 1..* | ReferenceType |

#### 4.2.6.3 Entity Relationship Diagram



### 4.2.7 DepthDetail

#### 4.2.7.1 Overview

| Name        | DepthDetail                                                                                                                                                                                                                                                                                                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | <p>Object used to represent:</p> <ul style="list-style-type: none"> <li>the distance from the surface level to the bottom of a <i>UtilityNode</i> or <i>UtilityNodeContainer</i> object.</li> <li>The distance in absolute value – expressed in TAW/DNG level – from the TAW/DNG zero point to the bottom of a <i>UtilityNode</i> or <i>UtilityNodeContainer</i> object.</li> </ul> |
| Description | <i>DepthDetail</i> can be used to provide information on the depth of <i>UtilityNode</i> or <i>UtilityNodeContainer</i> objects. For these objects (having a point geometry) the                                                                                                                                                                                                    |



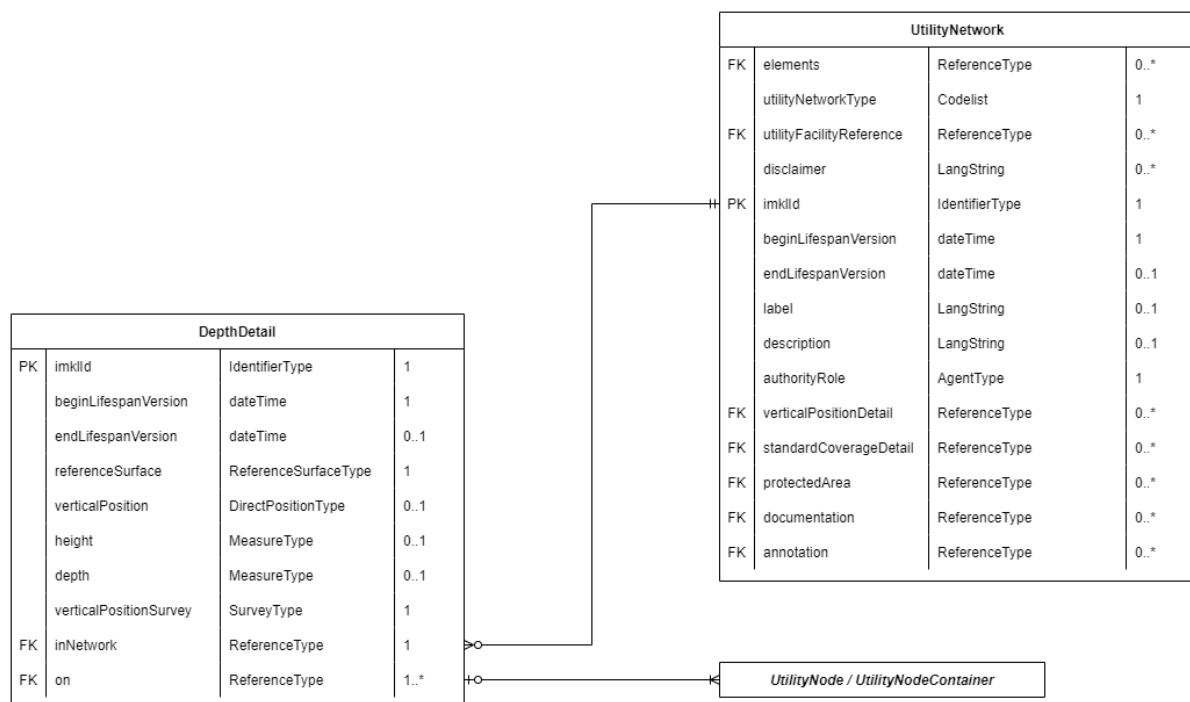
|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <p>depth or vertical position information should be measured to the lowest point of the object.</p> <p><i>UtilityNode</i> objects are:</p> <ul style="list-style-type: none"><li>• Appurtenance</li><li>• Connection</li></ul> <p><i>UtilityNodeContainer</i> objects are:</p> <ul style="list-style-type: none"><li>• Tower</li><li>• Pole</li><li>• Cabinet</li><li>• Manhole</li></ul> <p><i>DepthDetail</i> can be used to represent both a relative height (i.e. a distance above the surface) or depth (i.e. a distance below the surface) as well as an absolute TAW/DNG level.</p> <p>Every <i>DepthDetail</i> object should have one (and at most one) of the following properties:</p> <ul style="list-style-type: none"><li>• <b>depth:</b> Represents the depth below the surface.</li><li>• <b>height:</b> The <i>height</i> property is similar to the <i>depth</i>, but it represents a height above the surface.</li><li>• <b>verticalPosition:</b> The <i>verticalPosition</i> property should be used to provide a TAW/DNG level.<br/>Note that the <i>srsName</i> and <i>srsDimension</i> attributes are required for this element.</li></ul> <p>A single <i>DepthDetail</i> can be associated with multiple <i>UtilityNode</i> or <i>UtilityNodeContainer</i> objects. If multiple objects have the same depth, height or vertical position, the <i>DepthDetail</i> can be reused and needs to be provided only once.</p> |
| Inherits from | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

#### 4.2.7.2 Properties and associations

| Property name        | Namespace | Cardinality | Type                   |
|----------------------|-----------|-------------|------------------------|
| imklId               | imkl      | 1           | IdentifierPropertyType |
| beginLifespanVersion | imkl      | 1           | dateTime               |
| endLifespanVersion   | imkl      | 0..1        | dateTime               |
| referenceSurface     | imkl      | 1           | ReferenceSurfaceType   |
| verticalPosition     | imkl      | 0..1        | DirectPositionType     |

|                        |      |      |               |
|------------------------|------|------|---------------|
| height                 | imkl | 0..1 | MeasureType   |
| depth                  | imkl | 0..1 | MeasureType   |
| verticalPositionSurvey | imkl | 1    | SurveyType    |
| inNetwork              | imkl | 1    | ReferenceType |
| on                     | imkl | 1..* | ReferenceType |

#### 4.2.7.3 Entity Relationship Diagram



### 4.2.8 Document

#### 4.2.8.1 Overview

| Name          | Document                                                                                                                                              |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | Object that provides extra information on a <i>UtilityNetwork</i> via an attached file.                                                               |
| Description   | A <i>Document</i> should always be associated to a <i>UtilityNetwork</i> . This is done via the <i>inNetwork</i> association of the <i>Document</i> . |
| Inherits from | N/A                                                                                                                                                   |

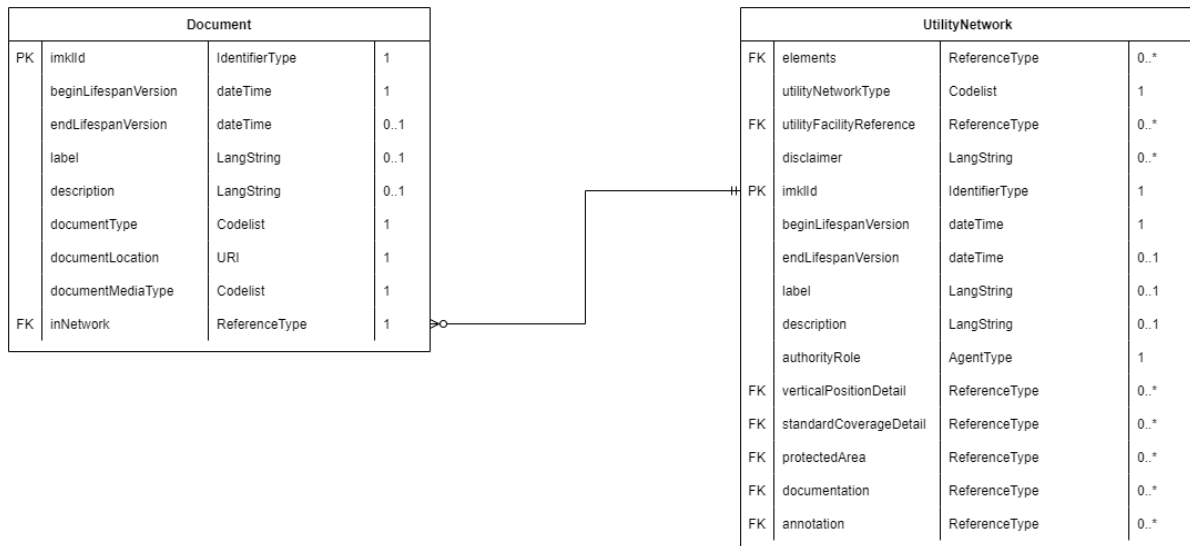
#### 4.2.8.2 Properties and associations

| Property name | Namespace | Cardinality | Type |
|---------------|-----------|-------------|------|
|---------------|-----------|-------------|------|



|                      |      |      |                          |
|----------------------|------|------|--------------------------|
| imklId               | imkl | 1    | IdentifierPropertyType   |
| beginLifespanVersion | imkl | 1    | dateTime                 |
| endLifespanVersion   | imkl | 0..1 | dateTime                 |
| label                | imkl | 0..1 | PT_FreeText_PropertyType |
| description          | imkl | 0..1 | PT_FreeText_PropertyType |
| documentType         | imkl | 1    | ReferenceType            |
| documentLocation     | imkl | 1    | anyURI                   |
| documentMediaType    | imkl | 1    | ReferenceType            |
| inNetwork            | imkl | 1    | ReferenceType            |

#### 4.2.8.3 Entity Relationship Diagram



#### 4.2.9 Duct

##### 4.2.9.1 Overview

| Name        | Duct                                                                                                                                                                                                                                                                                                      |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | A <i>UtilityLinkSet</i> used to protect and route cables and pipes through an enclosing structure.                                                                                                                                                                                                        |
| Description | <p>The <i>ductWidth</i> property is used to describe the width of the <i>Duct</i>.</p> <p>Through the associations <i>cables</i>, <i>pipes</i> and <i>ducts</i>, references can be made to the respective <i>Cable</i>, <i>Pipe</i> and <i>Duct</i> objects contained within this <i>Duct</i> object.</p> |

Inherits from | INSPIRE US 4.0 - Duct

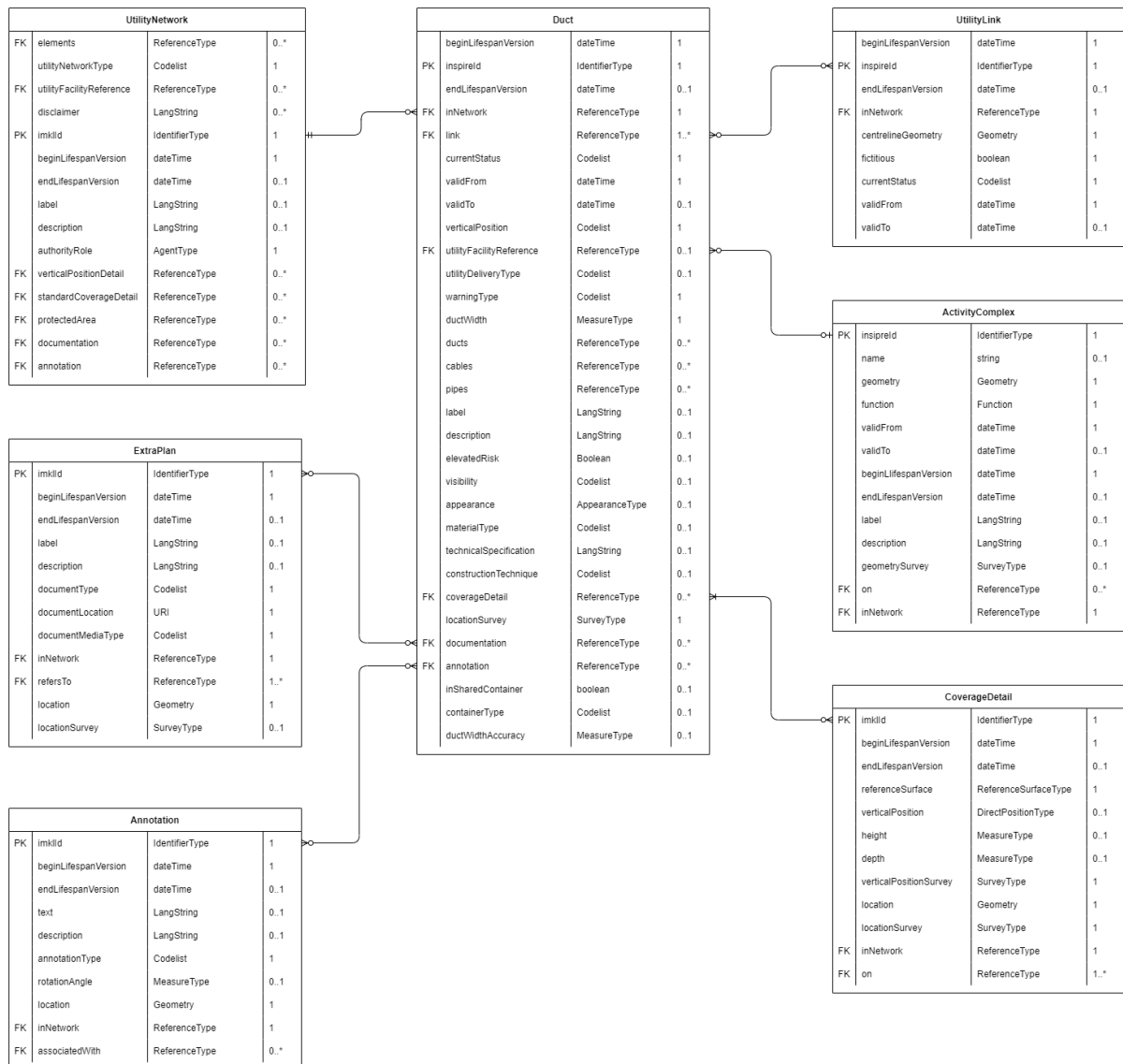
#### 4.2.9.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                     |
|------------------------------|---------------|-------------|--------------------------|
| beginLifespanVersion         | net           | 1           | dateTime                 |
| inspireId                    | net           | 1           | IdentifierPropertyType   |
| endLifespanVersion           | net           | 0..1        | dateTime                 |
| inNetwork                    | net           | 1           | ReferenceType            |
| link                         | net           | 1..*        | ReferenceType            |
| currentStatus                | us-net-common | 1           | ReferenceType            |
| validFrom                    | us-net-common | 1           | dateTime                 |
| validTo                      | us-net-common | 0..1        | dateTime                 |
| verticalPosition             | us-net-common | 1           | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType            |
| utilityDeliveryType          | us-net-common | 0..1        | ReferenceType            |
| warningType                  | us-net-common | 1           | ReferenceType            |
| ductWidth                    | us-net-common | 1           | MeasureType              |
| ducts                        | us-net-common | 0..*        | ReferenceType            |
| cables                       | us-net-common | 0..*        | ReferenceType            |
| pipes                        | us-net-common | 0..*        | ReferenceType            |
| label                        | imkl          | 0..1        | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1        | PT_FreeText_PropertyType |



|                        |      |      |                          |
|------------------------|------|------|--------------------------|
| visibility             | imkl | 0..1 | ReferenceType            |
| appearance             | imkl | 0..1 | AppearanceType           |
| materialType           | imkl | 0..1 | ReferenceType            |
| technicalSpecification | imkl | 0..1 | PT_FreeText_PropertyType |
| constructionTechnique  | imkl | 0..1 | ReferenceType            |
| coverageDetail         | imkl | 0..* | ReferenceType            |
| locationSurvey         | imkl | 1    | SurveyType               |
| documentation          | imkl | 0..* | ReferenceType            |
| annotation             | imkl | 0..* | ReferenceType            |
| inSharedContainer      | imkl | 0..1 | boolean                  |
| containerType          | imkl | 0..1 | ReferenceType            |
| ductWidthAccuracy      | imkl | 0..1 | MeasureType              |

### 4.2.9.3 Entity Relationship Diagram



### 4.2.10 ElectricityCable

#### 4.2.10.1 Overview

| Name        | ElectricityCable                                                                                                                                                                                |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | A cable used to transport electricity from one location to another.                                                                                                                             |
| Description | <p><i>ElectricityCable</i> is a subtype of <i>UtilityLinkSet</i>.</p> <p>The nominal voltage represents the voltage without load. The operating voltage represents the voltage during load.</p> |



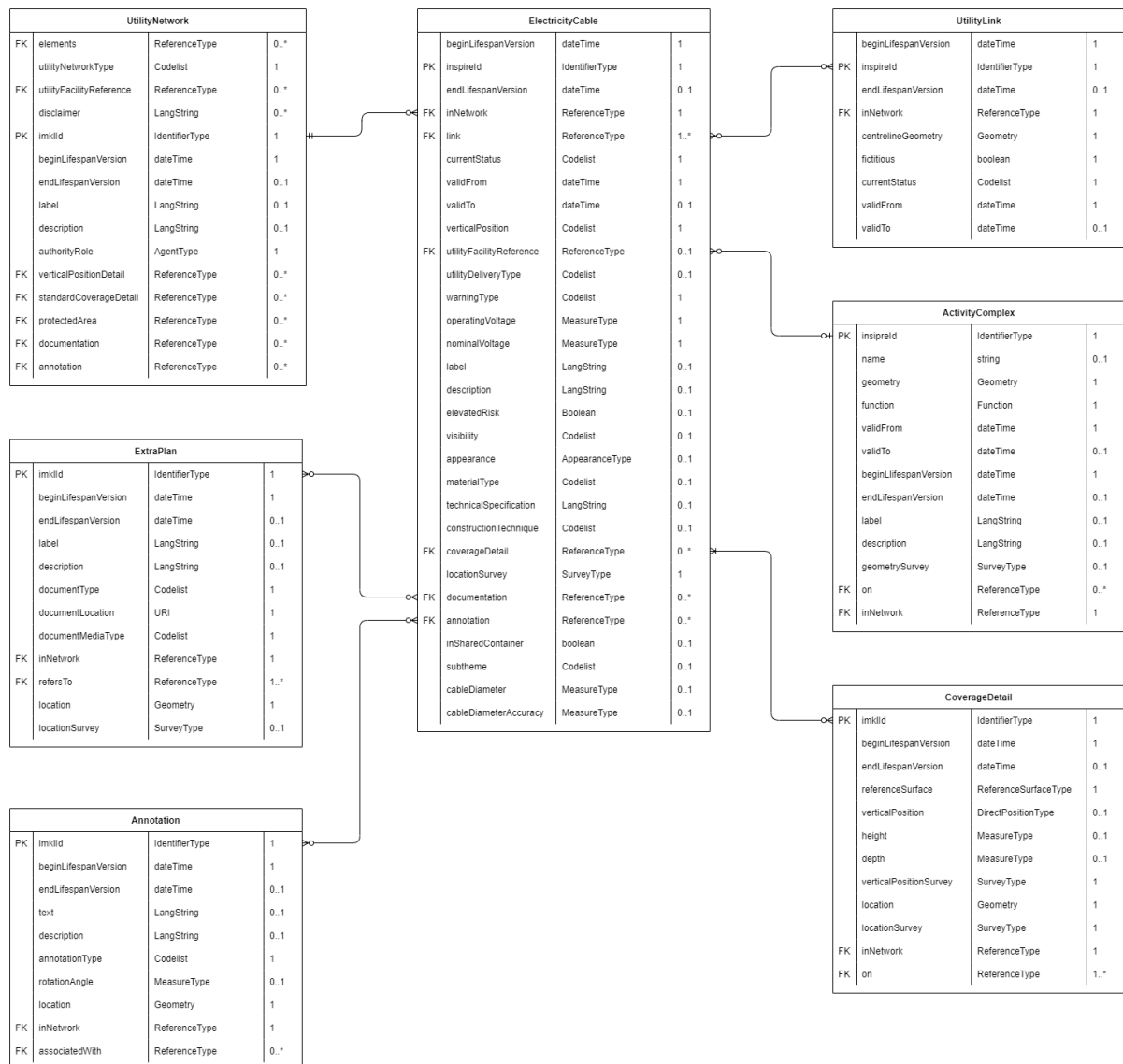
Inherits from | INSPIRE US 4.0 - ElectricityCable

#### 4.2.10.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                     |
|------------------------------|---------------|-------------|--------------------------|
| beginLifespanVersion         | net           | 1           | dateTime                 |
| inspireId                    | net           | 1           | IdentifierPropertyType   |
| endLifespanVersion           | net           | 0..1        | dateTime                 |
| inNetwork                    | net           | 1           | ReferenceType            |
| link                         | net           | 1..*        | ReferenceType            |
| currentStatus                | us-net-common | 1           | ReferenceType            |
| validFrom                    | us-net-common | 1           | dateTime                 |
| validTo                      | us-net-common | 0..1        | dateTime                 |
| verticalPosition             | us-net-common | 1           | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType            |
| utilityDeliveryType          | us-net-common | 0..1        | ReferenceType            |
| warningType                  | us-net-common | 1           | ReferenceType            |
| operatingVoltage             | us-net-el     | 1           | MeasureType              |
| nominalVoltage               | us-net-el     | 1           | MeasureType              |
| label                        | imkl          | 0..1        | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1        | PT_FreeText_PropertyType |
| visibility                   | imkl          | 0..1        | ReferenceType            |
| appearance                   | imkl          | 0..1        | AppearanceType           |
| materialType                 | imkl          | 0..1        | ReferenceType            |
| technicalSpecification       | imkl          | 0..1        | PT_FreeText_PropertyType |
| constructionTechnique        | imkl          | 0..1        | ReferenceType            |
| coverageDetail               | imkl          | 0..*        | ReferenceType            |
| locationSurvey               | imkl          | 1           | SurveyType               |
| documentation                | imkl          | 0..*        | ReferenceType            |

|                       |      |      |               |
|-----------------------|------|------|---------------|
| annotation            | imkl | 0..* | ReferenceType |
| inSharedContainer     | imkl | 0..1 | boolean       |
| subtheme              | imkl | 0..1 | ReferenceType |
| cableDiameter         | imkl | 0..1 | MeasureType   |
| cableDiameterAccuracy | imkl | 0..1 | MeasureType   |

#### 4.2.10.3 Entity Relationship Diagram





## 4.2.11 ExtraPlan

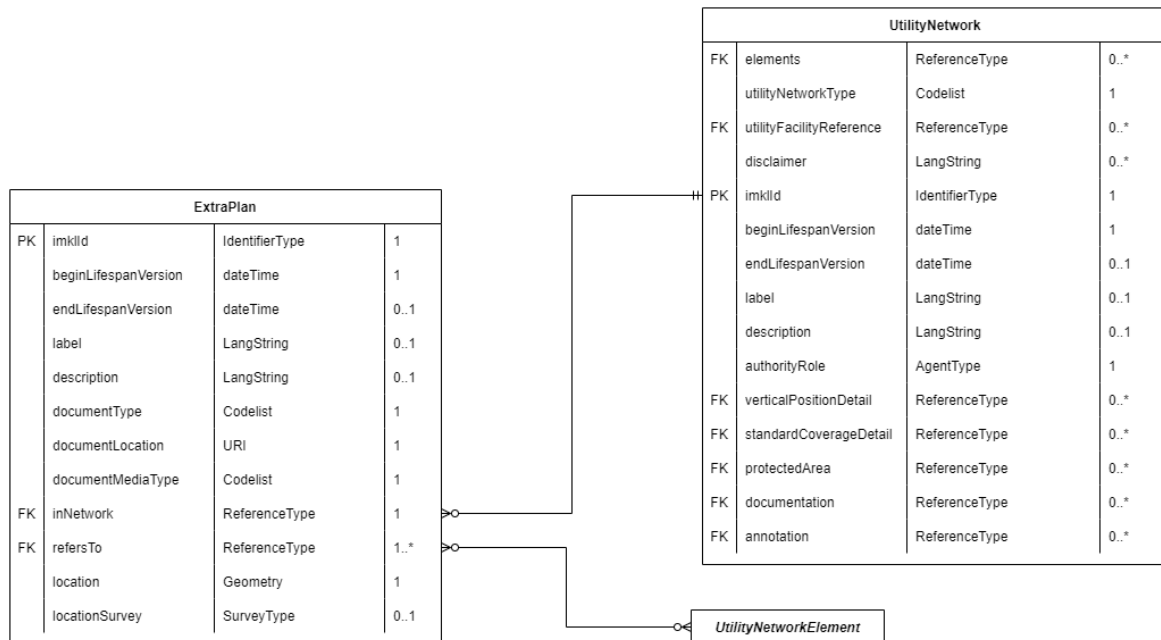
### 4.2.11.1 Overview

| Name          | ExtraPlan                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | Object that provides extra information on one or more <i>UtilityNetworkElements</i> via an attached file.                                                                                                                                                                                                                                                                                                                                                |
| Description   | <p>An <i>ExtraPlan</i> should always be associated to a <i>UtilityNetwork</i>. This is done via the <i>inNetwork</i> association of the <i>ExtraPlan</i>.</p> <p>Via the <i>refersTo</i> association it must be linked to one or more <i>UtilityNetworkElements</i>.</p> <p>An <i>ExtraPlan</i> has the same properties as a <i>Document</i> and in addition it also has a mandatory <i>location</i> and an optional <i>locationSurvey</i> property.</p> |
| Inherits from | IMKL 3.0 - Document                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### 4.2.11.2 Properties and associations

| Property name        | Namespace | Cardinality | Type                     |
|----------------------|-----------|-------------|--------------------------|
| imklId               | imkl      | 1           | IdentifierPropertyType   |
| beginLifespanVersion | imkl      | 1           | dateTime                 |
| endLifespanVersion   | imkl      | 0..1        | dateTime                 |
| label                | imkl      | 0..1        | PT_FreeText_PropertyType |
| description          | imkl      | 0..1        | PT_FreeText_PropertyType |
| documentType         | imkl      | 1           | ReferenceType            |
| documentLocation     | imkl      | 1           | anyURI                   |
| documentMediaType    | imkl      | 1           | ReferenceType            |
| inNetwork            | imkl      | 1           | ReferenceType            |
| refersTo             | imkl      | 1..*        | ReferenceType            |
| location             | imkl      | 1           | Geometry                 |
| locationSurvey       | imkl      | 0..1        | SurveyType               |

### 4.2.11.3 Entity Relationship Diagram



## 4.2.12 Manhole

### 4.2.12.1 Overview

| Name          | Manhole                                                                                                                                                                                                    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | Simple <i>UtilityNodeContainer</i> that takes the form of a covered opening in the road surface providing access to the subsurface.                                                                        |
| Description   | A <i>Manhole</i> typically contains smaller mountable <i>Appurtenances</i> . The <i>nodes</i> association can be used to track the association between the <i>Manhole</i> and these <i>Appurtenances</i> . |
| Inherits from | INSPIRE us-net-common 4.0 - Manhole                                                                                                                                                                        |

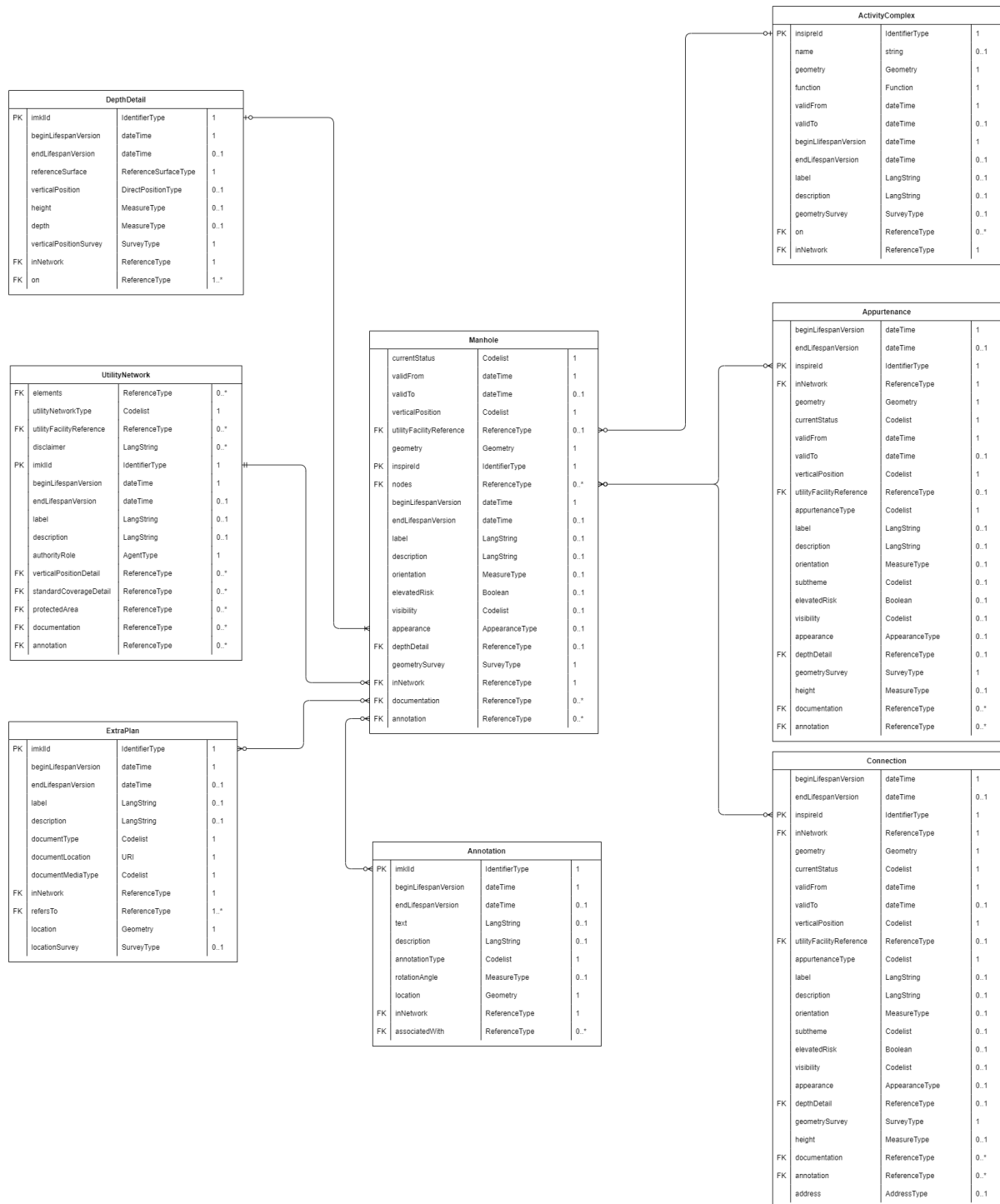
### 4.2.12.2 Properties and associations

| Property name            | Namespace     | Cardinality | Type          |
|--------------------------|---------------|-------------|---------------|
| currentStatus            | us-net-common | 1           | ReferenceType |
| validFrom                | us-net-common | 1           | dateTime      |
| validTo                  | us-net-common | 0..1        | dateTime      |
| verticalPosition         | us-net-common | 1           | ReferenceType |
| utilityFacilityReference | us-net-common | 0..1        | ReferenceType |



|                              |               |      |                          |
|------------------------------|---------------|------|--------------------------|
| governmentalServiceReference | us-net-common | 0..1 | ReferenceType            |
| geometry                     | us-net-common | 1    | Geometry                 |
| inspireId                    | us-net-common | 1    | IdentifierPropertyType   |
| nodes                        | us-net-common | 0..* | ReferenceType            |
| beginLifespanVersion         | imkl          | 1    | dateTime                 |
| endLifespanVersion           | imkl          | 0..1 | dateTime                 |
| label                        | imkl          | 0..1 | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1 | PT_FreeText_PropertyType |
| orientation                  | imkl          | 0..1 | MeasureType              |
| visibility                   | imkl          | 0..1 | ReferenceType            |
| appearance                   | imkl          | 0..1 | AppearanceType           |
| depthDetail                  | imkl          | 0..1 | ReferenceType            |
| geometrySurvey               | imkl          | 1    | SurveyType               |
| inNetwork                    | imkl          | 1    | ReferenceType            |
| documentation                | imkl          | 0..* | ReferenceType            |
| annotation                   | imkl          | 0..* | ReferenceType            |

### 4.2.12.3 Entity Relationship Diagram





## 4.2.13 OilGasChemicalsPipe

### 4.2.13.1 Overview

| Name          | OilGasChemicalsPipe                                                                                                                                                                                                                                                                                                                                            |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | A pipe used to transport oil, gas or chemicals from one location to another.                                                                                                                                                                                                                                                                                   |
| Description   | <p><i>OilGasChemicalsPipe</i> is a subtype of <i>Pipe</i>.</p> <p>The <i>oilGasChemicalsProductType</i> property describes the type of oil, gas or chemical product that is transported through the <i>OilGasChemicalsPipe</i>.</p> <p>In IMKL, the <i>cables</i> and <i>pipes</i> associations should not be used for <i>OilGasChemicalsPipe</i> objects.</p> |
| Inherits from | INSPIRE US 4.0 – OilGasChemicalsPipe<br>IMKL 3.0 - Pipe                                                                                                                                                                                                                                                                                                        |

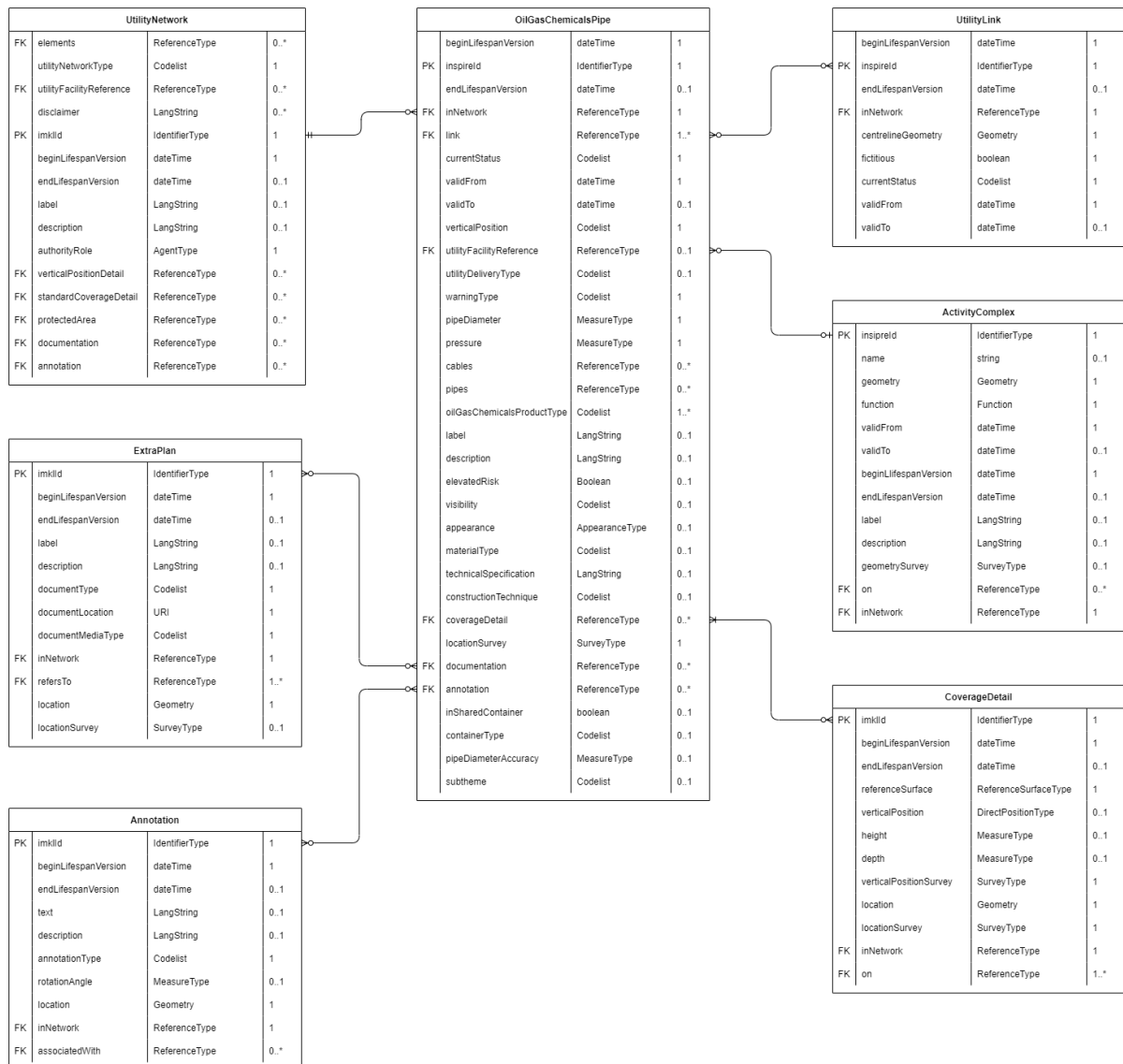
### 4.2.13.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                   |
|------------------------------|---------------|-------------|------------------------|
| beginLifespanVersion         | net           | 1           | dateTime               |
| inspireId                    | net           | 1           | IdentifierPropertyType |
| endLifespanVersion           | net           | 0..1        | dateTime               |
| inNetwork                    | net           | 1           | ReferenceType          |
| link                         | net           | 1..*        | ReferenceType          |
| currentStatus                | us-net-common | 1           | ReferenceType          |
| validFrom                    | us-net-common | 1           | dateTime               |
| validTo                      | us-net-common | 0..1        | dateTime               |
| verticalPosition             | us-net-common | 1           | ReferenceType          |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType          |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType          |
| utilityDeliveryType          | us-net-common | 0..1        | ReferenceType          |

|                            |               |      |                          |
|----------------------------|---------------|------|--------------------------|
| warningType                | us-net-common | 1    | ReferenceType            |
| pipeDiameter               | us-net-common | 1    | MeasureType              |
| pressure                   | us-net-common | 0..1 | MeasureType              |
| cables                     | us-net-common | 0..* | ReferenceType            |
| pipes                      | us-net-common | 0..* | ReferenceType            |
| oilGasChemicalsProductType | us-net-ogc    | 1..* | ReferenceType            |
| label                      | imkl          | 0..1 | PT_FreeText_PropertyType |
| description                | imkl          | 0..1 | PT_FreeText_PropertyType |
| visibility                 | imkl          | 0..1 | ReferenceType            |
| appearance                 | imkl          | 0..1 | AppearanceType           |
| materialType               | imkl          | 0..1 | ReferenceType            |
| technicalSpecification     | imkl          | 0..1 | PT_FreeText_PropertyType |
| constructionTechnique      | imkl          | 0..1 | ReferenceType            |
| coverageDetail             | imkl          | 0..* | ReferenceType            |
| locationSurvey             | imkl          | 1    | SurveyType               |
| documentation              | imkl          | 0..* | ReferenceType            |
| annotation                 | imkl          | 0..* | ReferenceType            |
| inSharedContainer          | Imkl          | 0..1 | boolean                  |
| containerType              | imkl          | 0..1 | ReferenceType            |
| pipeDiameterAccuracy       | imkl          | 0..1 | MeasureType              |
| subtheme                   | imkl          | 0..1 | ReferenceType            |



### 4.2.13.3 Entity Relationship Diagram



## 4.2.14 Pipe

### 4.2.14.1 Overview

| Name        | Pipe                                                                                                                                                                  |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | A <i>UtilityLinkSet</i> intended for the transportation of solids, liquids, chemicals or gases from one location to another or as a casing for Cables or other Pipes. |
| Description | <i>Pipe</i> is a subtype of <i>UtilityLinkSet</i> .                                                                                                                   |

|                      |                                                                                                                                                                                                                                                                                                                        |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | Through the associations <i>cables</i> and <i>pipes</i> , references can be made to the respective <i>ElectricityCable</i> , <i>TelecommunicationsCable</i> and <i>Pipe</i> objects contained within this <i>Pipe</i> object. These associations should only be used for <i>Pipe</i> objects and not for its subtypes. |
| <b>Inherits from</b> | INSPIRE US 4.0 - Pipe                                                                                                                                                                                                                                                                                                  |

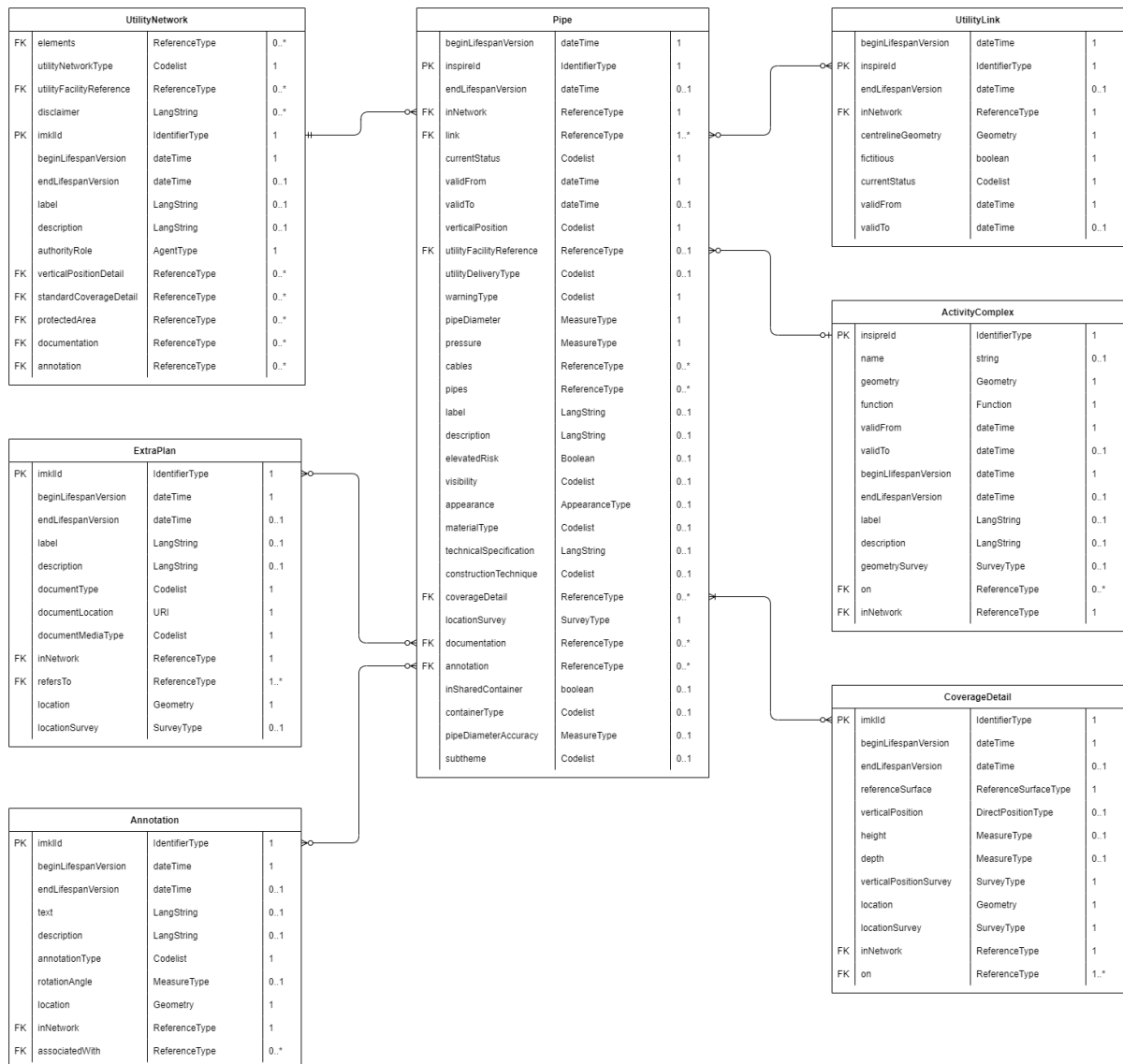
#### 4.2.14.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                   |
|------------------------------|---------------|-------------|------------------------|
| beginLifespanVersion         | net           | 1           | dateTime               |
| inspireId                    | net           | 1           | IdentifierPropertyType |
| endLifespanVersion           | net           | 0..1        | dateTime               |
| inNetwork                    | net           | 1           | ReferenceType          |
| link                         | net           | 1..*        | ReferenceType          |
| currentStatus                | us-net-common | 1           | ReferenceType          |
| validFrom                    | us-net-common | 1           | dateTime               |
| validTo                      | us-net-common | 0..1        | dateTime               |
| verticalPosition             | us-net-common | 1           | ReferenceType          |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType          |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType          |
| utilityDeliveryType          | us-net-common | 0..1        | ReferenceType          |
| warningType                  | us-net-common | 1           | ReferenceType          |
| pipeDiameter                 | us-net-common | 1           | MeasureType            |
| pressure                     | us-net-common | 0..1        | MeasureType            |
| cables                       | us-net-common | 0..*        | ReferenceType          |



|                        |               |      |                          |
|------------------------|---------------|------|--------------------------|
| pipes                  | us-net-common | 0..* | ReferenceType            |
| label                  | imkl          | 0..1 | PT_FreeText_PropertyType |
| description            | imkl          | 0..1 | PT_FreeText_PropertyType |
| visibility             | imkl          | 0..1 | ReferenceType            |
| appearance             | imkl          | 0..1 | AppearanceType           |
| materialType           | imkl          | 0..1 | ReferenceType            |
| technicalSpecification | imkl          | 0..1 | PT_FreeText_PropertyType |
| constructionTechnique  | imkl          | 0..1 | ReferenceType            |
| coverageDetail         | imkl          | 0..* | ReferenceType            |
| locationSurvey         | imkl          | 1    | SurveyType               |
| documentation          | imkl          | 0..* | ReferenceType            |
| annotation             | imkl          | 0..* | ReferenceType            |
| inSharedContainer      | imkl          | 0..1 | boolean                  |
| containerType          | imkl          | 0..1 | ReferenceType            |
| pipeDiameterAccuracy   | imkl          | 0..1 | MeasureType              |
| subtheme               | imkl          | 0..1 | ReferenceType            |

### 4.2.14.3 Entity Relationship Diagram



## 4.2.15 Pole

### 4.2.15.1 Overview

| Name               | Pole                                                                                                                                                                                                 |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | Simple <i>UtilityNodeContainer</i> that takes the shape of a pole.                                                                                                                                   |
| <b>Description</b> | A <i>Pole</i> typically contains smaller mountable <i>Appurtenances</i> . The <i>nodes</i> association can be used to track the association between the <i>Pole</i> and these <i>Appurtenances</i> . |

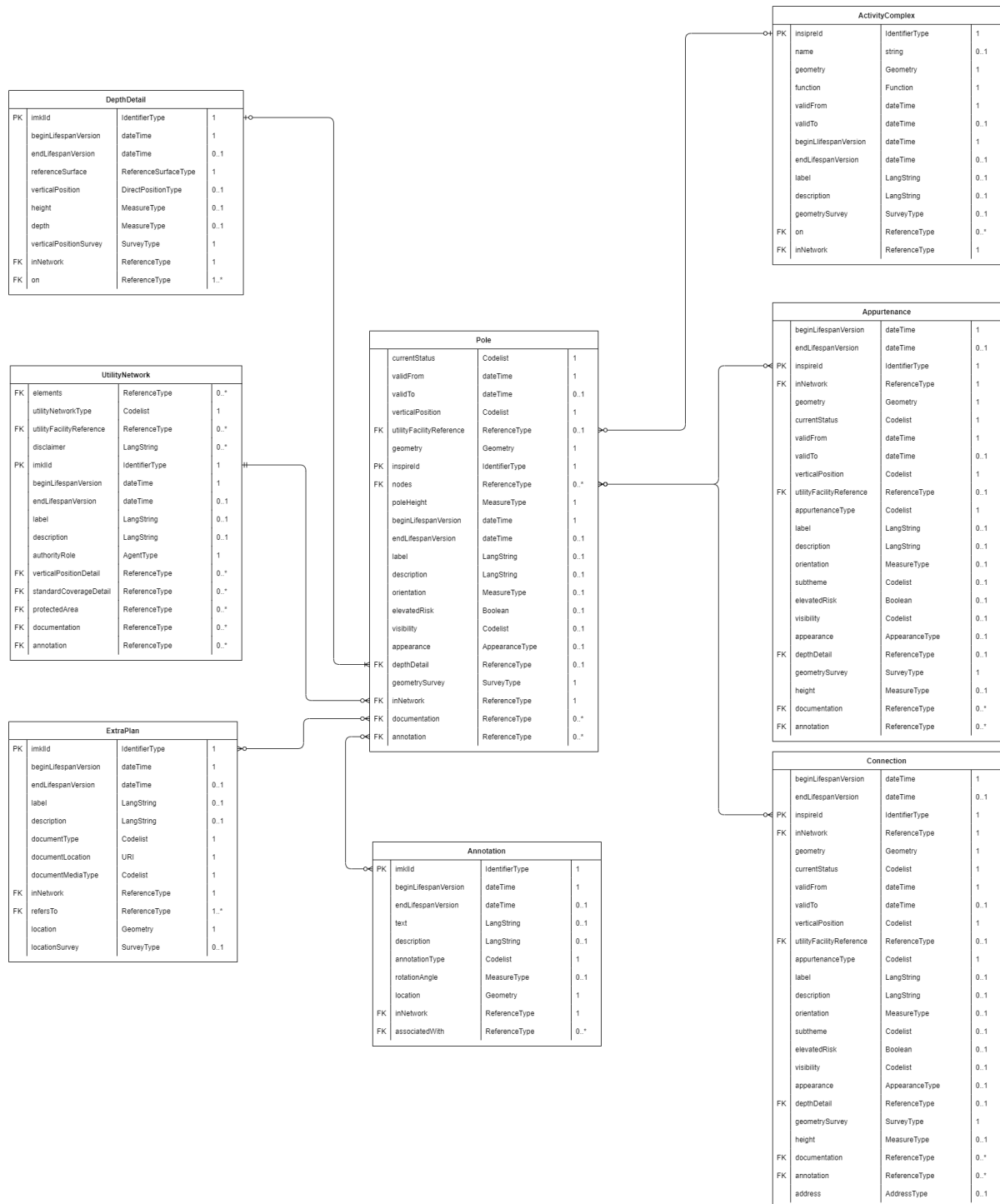


|                      |                                                                          |
|----------------------|--------------------------------------------------------------------------|
|                      | The <i>poleHeight</i> property describes the height of the <i>Pole</i> . |
| <b>Inherits from</b> | INSPIRE us-net-common 4.0 - Pole                                         |

#### 4.2.15.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                     |
|------------------------------|---------------|-------------|--------------------------|
| currentStatus                | us-net-common | 1           | ReferenceType            |
| validFrom                    | us-net-common | 1           | dateTime                 |
| validTo                      | us-net-common | 0..1        | dateTime                 |
| verticalPosition             | us-net-common | 1           | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType            |
| geometry                     | us-net-common | 1           | Geometry                 |
| inspireId                    | us-net-common | 1           | IdentifierPropertyType   |
| nodes                        | us-net-common | 0..*        | ReferenceType            |
| poleHeight                   | us-net-common | 1           | LengthType               |
| beginLifespanVersion         | imkl          | 1           | dateTime                 |
| endLifespanVersion           | imkl          | 0..1        | dateTime                 |
| label                        | imkl          | 0..1        | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1        | PT_FreeText_PropertyType |
| orientation                  | imkl          | 0..1        | MeasureType              |
| visibility                   | imkl          | 0..1        | ReferenceType            |
| appearance                   | imkl          | 0..1        | AppearanceType           |
| depthDetail                  | imkl          | 0..1        | ReferenceType            |
| geometrySurvey               | imkl          | 1           | SurveyType               |
| inNetwork                    | imkl          | 1           | ReferenceType            |
| documentation                | imkl          | 0..*        | ReferenceType            |
| annotation                   | imkl          | 0..*        | ReferenceType            |

### 4.2.15.3 Entity Relationship Diagram





## 4.2.16 ProtectedArea

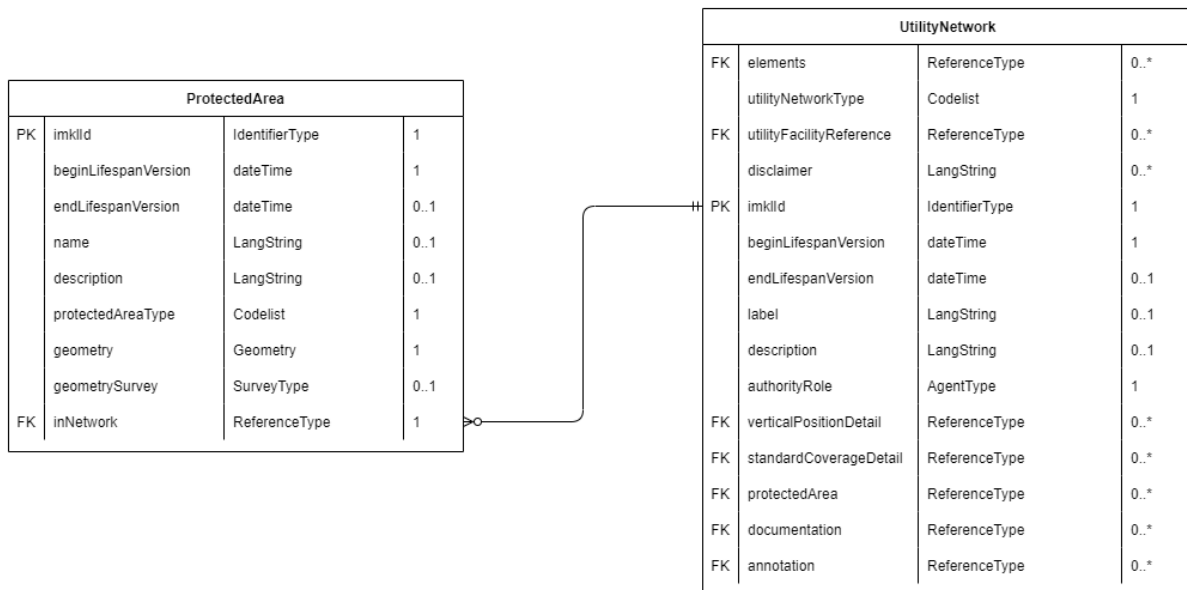
### 4.2.16.1 Overview

| Name          | ProtectedArea                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | Object to represent a protected area within which certain regulations apply when carrying out works.                                                                                                                                                                                                                                                                                                                    |
| Description   | <p>A <i>ProtectedArea</i> object can be provided to represent larger protected areas in which certain regulations apply.</p> <p>The geometry of the area must be specified via the <i>geometry</i> property. This geometry must be a valid polygon. Multipolygons are not allowed.</p> <p>The precautions that apply to this area must be included in the precautions linked with the <i>UtilityNetwork</i> itself.</p> |
| Inherits from | N/A                                                                                                                                                                                                                                                                                                                                                                                                                     |

### 4.2.16.2 Properties and associations

| Property name        | Namespace | Cardinality | Type                     |
|----------------------|-----------|-------------|--------------------------|
| imklId               | imkl      | 1           | IdentifierPropertyType   |
| beginLifespanVersion | imkl      | 1           | dateTime                 |
| endLifespanVersion   | imkl      | 0..1        | dateTime                 |
| name                 | imkl      | 0..1        | PT_FreeText_PropertyType |
| description          | imkl      | 0..1        | PT_FreeText_PropertyType |
| protectedAreaType    | imkl      | 1           | ReferenceType            |
| geometry             | imkl      | 1           | Geometry                 |
| geometrySurvey       | imkl      | 0..1        | SurveyType               |
| inNetwork            | imkl      | 1           | ReferenceType            |

### 4.2.16.3 Entity Relationship Diagram



## 4.2.17 SewerPipe

### 4.2.17.1 Overview

| Name          | SewerPipe                                                                                                                                                                                                                                                                                            |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | A sewer pipe used to convey wastewater (sewer) from one location to another.                                                                                                                                                                                                                         |
| Description   | <p><i>SewerPipe</i> is a subtype of <i>Pipe</i>.</p> <p>The <i>sewerWaterType</i> property describes the type of sewage water that is transported through the <i>SewerPipe</i>.</p> <p>In IMKL, the <i>cables</i> and <i>pipes</i> associations should not be used for <i>SewerPipe</i> objects.</p> |
| Inherits from | INSPIRE US 4.0 – SewerPipe<br>IMKL 3.0 - Pipe                                                                                                                                                                                                                                                        |

### 4.2.17.2 Properties and associations

| Property name        | Namespace | Cardinality | Type                   |
|----------------------|-----------|-------------|------------------------|
| beginLifespanVersion | net       | 1           | dateTime               |
| inspireId            | net       | 1           | IdentifierPropertyType |
| endLifespanVersion   | net       | 0..1        | dateTime               |
| inNetwork            | net       | 1           | ReferenceType          |

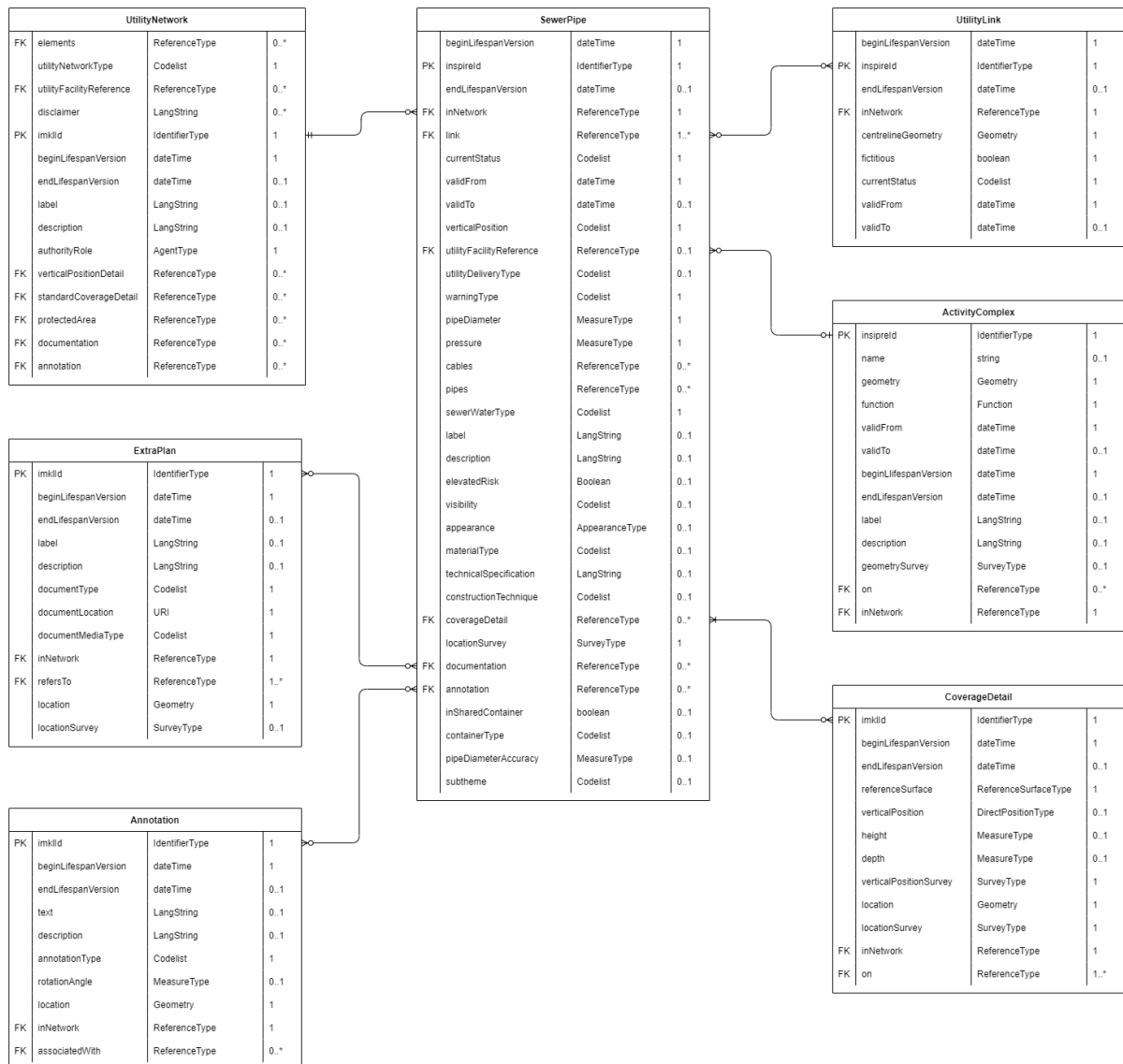


|                              |               |      |                          |
|------------------------------|---------------|------|--------------------------|
| link                         | net           | 1..* | ReferenceType            |
| currentStatus                | us-net-common | 1    | ReferenceType            |
| validFrom                    | us-net-common | 1    | dateTime                 |
| validTo                      | us-net-common | 0..1 | dateTime                 |
| verticalPosition             | us-net-common | 1    | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1 | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1 | ReferenceType            |
| utilityDeliveryType          | us-net-common | 0..1 | ReferenceType            |
| warningType                  | us-net-common | 1    | ReferenceType            |
| pipeDiameter                 | us-net-common | 1    | MeasureType              |
| pressure                     | us-net-common | 0..1 | MeasureType              |
| cables                       | us-net-common | 0..* | ReferenceType            |
| pipes                        | us-net-common | 0..* | ReferenceType            |
| sewerWaterType               | us-net-sw     | 1    | ReferenceType            |
| label                        | imkl          | 0..1 | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1 | PT_FreeText_PropertyType |
| visibility                   | imkl          | 0..1 | ReferenceType            |
| appearance                   | imkl          | 0..1 | AppearanceType           |
| materialType                 | imkl          | 0..1 | ReferenceType            |
| technicalSpecification       | imkl          | 0..1 | PT_FreeText_PropertyType |
| constructionTechnique        | imkl          | 0..1 | ReferenceType            |
| coverageDetail               | imkl          | 0..* | ReferenceType            |

|                      |      |      |               |
|----------------------|------|------|---------------|
| locationSurvey       | imkl | 1    | SurveyType    |
| documentation        | imkl | 0..* | ReferenceType |
| annotation           | imkl | 0..* | ReferenceType |
| inSharedContainer    | imkl | 0..1 | boolean       |
| containerType        | imkl | 0..1 | ReferenceType |
| pipeDiameterAccuracy | imkl | 0..1 | MeasureType   |
| subtheme             | imkl | 0..1 | ReferenceType |



### 4.2.17.3 Entity Relationship Diagram



### 4.2.18 StandardCoverageDetail

#### 4.2.18.1 Overview

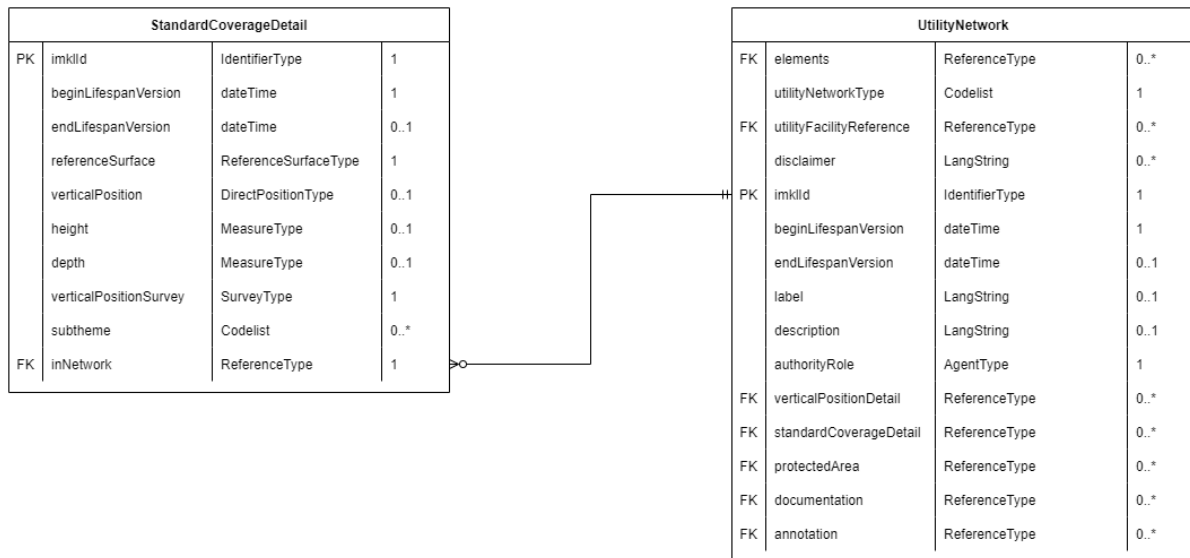
| Name        | StandardCoverageDetail                                                                                                         |
|-------------|--------------------------------------------------------------------------------------------------------------------------------|
| Definition  | Object used to represent the standard coverage of <i>UtilityNetworkElement</i> objects within a <i>UtilityNetwork</i> .        |
| Description | The <i>StandardCoverageDetail</i> object can be used to provide one or more standard coverages for the <i>UtilityNetwork</i> . |

|                      |                                                 |
|----------------------|-------------------------------------------------|
|                      | See section 6.11 for more detailed information. |
| <b>Inherits from</b> | N/A                                             |

#### 4.2.18.2 Properties and associations

| Property name          | Namespace | Cardinality | Type                   |
|------------------------|-----------|-------------|------------------------|
| imklId                 | imkl      | 1           | IdentifierPropertyType |
| beginLifespanVersion   | imkl      | 1           | dateTime               |
| endLifespanVersion     | imkl      | 0..1        | dateTime               |
| referenceSurface       | imkl      | 1           | ReferenceSurfaceType   |
| verticalPosition       | imkl      | 0..1        | DirectPositionType     |
| height                 | imkl      | 0..1        | MeasureType            |
| depth                  | imkl      | 0..1        | MeasureType            |
| verticalPositionSurvey | imkl      | 1           | SurveyType             |
| subtheme               | imkl      | 0..*        | ReferenceType          |
| inNetwork              | imkl      | 1           | ReferenceType          |

#### 4.2.18.3 Entity Relationship Diagram





## 4.2.19 TelecommunicationsCable

### 4.2.19.1 Overview

| Name          | TelecommunicationsCable                                                                                                                                                                                         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | A cable used to convey data signals (PSTN (Public switched telephone network), radio or computer) from one location to another.                                                                                 |
| Description   | <i>TelecommunicationsCable</i> is a subtype of <i>UtilityLinkSet</i> .<br>The <i>telecommunicationsCableMaterialType</i> property describes the type of material from which a telecommunications cable is made. |
| Inherits from | INSPIRE US 4.0 - TelecommunicationsCable                                                                                                                                                                        |

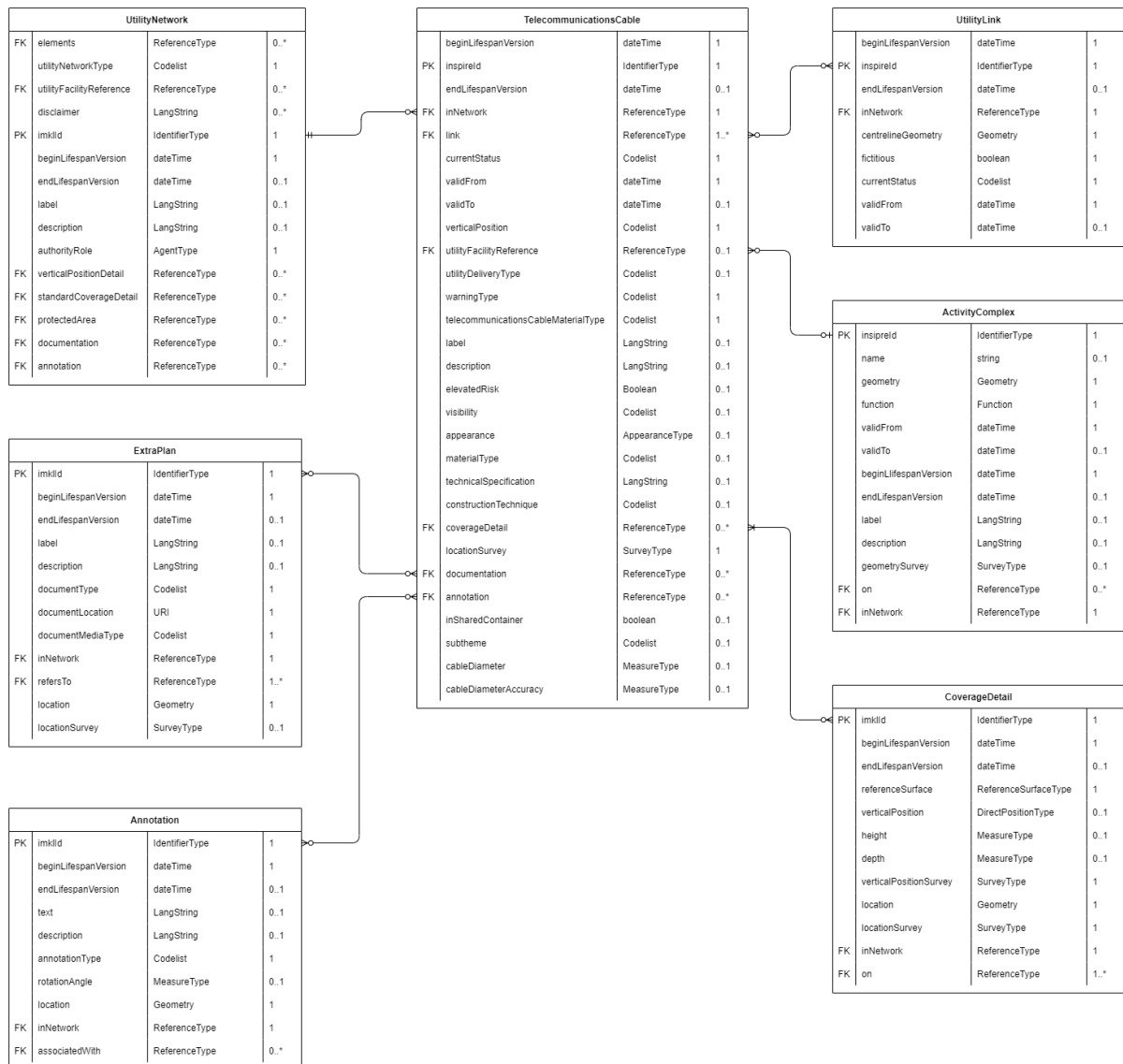
### 4.2.19.2 Properties and associations

| Property name                       | Namespace     | Cardinality | Type                   |
|-------------------------------------|---------------|-------------|------------------------|
| beginLifespanVersion                | net           | 1           | dateTime               |
| inspireId                           | net           | 1           | IdentifierPropertyType |
| endLifespanVersion                  | net           | 0..1        | dateTime               |
| inNetwork                           | net           | 1           | ReferenceType          |
| link                                | net           | 1..*        | ReferenceType          |
| currentStatus                       | us-net-common | 1           | ReferenceType          |
| validFrom                           | us-net-common | 1           | dateTime               |
| validTo                             | us-net-common | 0..1        | dateTime               |
| verticalPosition                    | us-net-common | 1           | ReferenceType          |
| utilityFacilityReference            | us-net-common | 0..1        | ReferenceType          |
| governmentalServiceReference        | us-net-common | 0..1        | ReferenceType          |
| utilityDeliveryType                 | us-net-common | 0..1        | ReferenceType          |
| warningType                         | us-net-common | 1           | ReferenceType          |
| telecommunicationsCableMaterialType | us-net-tc     | 1           | ReferenceType          |

|                        |      |      |                          |
|------------------------|------|------|--------------------------|
| label                  | imkl | 0..1 | PT_FreeText_PropertyType |
| description            | imkl | 0..1 | PT_FreeText_PropertyType |
| visibility             | imkl | 0..1 | ReferenceType            |
| appearance             | imkl | 0..1 | AppearanceType           |
| materialType           | imkl | 0..1 | ReferenceType            |
| technicalSpecification | imkl | 0..1 | PT_FreeText_PropertyType |
| constructionTechnique  | imkl | 0..1 | ReferenceType            |
| coverageDetail         | imkl | 0..* | ReferenceType            |
| locationSurvey         | imkl | 1    | SurveyType               |
| documentation          | imkl | 0..* | ReferenceType            |
| annotation             | imkl | 0..* | ReferenceType            |
| inSharedContainer      | imkl | 0..1 | boolean                  |
| subtheme               | imkl | 0..1 | ReferenceType            |
| cableDiameter          | imkl | 0..1 | MeasureType              |
| cableDiameterAccuracy  | imkl | 0..1 | MeasureType              |



### 4.2.19.3 Entity Relationship Diagram



### 4.2.20 ThermalPipe

#### 4.2.20.1 Overview

| Name        | ThermalPipe                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | A pipe used to disseminate heating or cooling from one location to another.                                                                                                                    |
| Description | <p><i>ThermalPipe</i> is a subtype of <i>Pipe</i>.</p> <p>The <i>thermalProductType</i> property describes the type of thermal product that is transported through the <i>ThermalPipe</i>.</p> |

|                      |                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------|
|                      | In IMKL, the <i>cables</i> and <i>pipes</i> associations should not be used for <i>ThermalPipe</i> objects. |
| <b>Inherits from</b> | INSPIRE US 4.0 – ThermalPipe<br>IMKL 3.0 - Pipe                                                             |

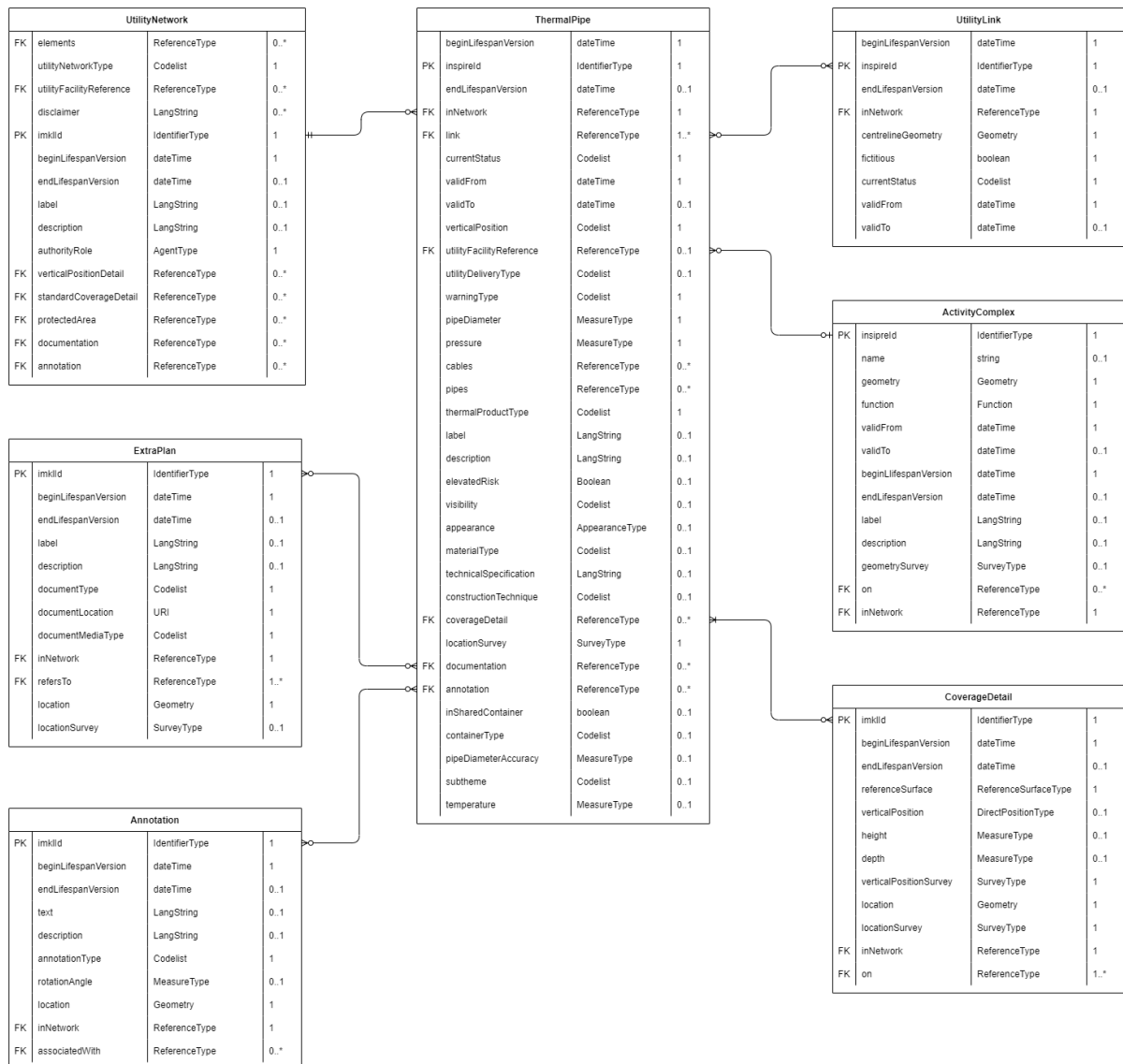
#### 4.2.20.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                   |
|------------------------------|---------------|-------------|------------------------|
| beginLifespanVersion         | net           | 1           | dateTime               |
| inspireId                    | net           | 1           | IdentifierPropertyType |
| endLifespanVersion           | net           | 0..1        | dateTime               |
| inNetwork                    | net           | 1           | ReferenceType          |
| link                         | net           | 1..*        | ReferenceType          |
| currentStatus                | us-net-common | 1           | ReferenceType          |
| validFrom                    | us-net-common | 1           | dateTime               |
| validTo                      | us-net-common | 0..1        | dateTime               |
| verticalPosition             | us-net-common | 1           | ReferenceType          |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType          |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType          |
| utilityDeliveryType          | us-net-common | 0..1        | ReferenceType          |
| warningType                  | us-net-common | 1           | ReferenceType          |
| pipeDiameter                 | us-net-common | 1           | MeasureType            |
| pressure                     | us-net-common | 0..1        | MeasureType            |
| cables                       | us-net-common | 0..*        | ReferenceType          |



|                        |               |      |                          |
|------------------------|---------------|------|--------------------------|
| pipes                  | us-net-common | 0..* | ReferenceType            |
| thermalProductType     | us-net-th     | 1    | ReferenceType            |
| label                  | imkl          | 0..1 | PT_FreeText_PropertyType |
| description            | imkl          | 0..1 | PT_FreeText_PropertyType |
| visibility             | imkl          | 0..1 | ReferenceType            |
| appearance             | imkl          | 0..1 | AppearanceType           |
| materialType           | imkl          | 0..1 | ReferenceType            |
| technicalSpecification | imkl          | 0..1 | PT_FreeText_PropertyType |
| constructionTechnique  | imkl          | 0..1 | ReferenceType            |
| coverageDetail         | imkl          | 0..* | ReferenceType            |
| locationSurvey         | imkl          | 1    | SurveyType               |
| documentation          | imkl          | 0..* | ReferenceType            |
| annotation             | imkl          | 0..* | ReferenceType            |
| inSharedContainer      | imkl          | 0..1 | boolean                  |
| containerType          | imkl          | 0..1 | ReferenceType            |
| pipeDiameterAccuracy   | imkl          | 0..1 | MeasureType              |
| subtheme               | imkl          | 0..1 | ReferenceType            |
| temperature            | imkl          | 0..1 | MeasureType              |

### 4.2.20.3 Entity Relationship Diagram



### 4.2.21 TopographicalElement

#### 4.2.21.1 Overview

| Name        | TopographicalElement                                                                                                                    |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | Object that can provide additional topographical information.                                                                           |
| Description | Topographical elements provide extra context of the area that can help with orientation on site: e.g. trees, fences or other landmarks. |



|               |                                                                                                                                                                                                                                       |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <i>TopographicalElements</i> are by definition not related to a <i>UtilityNetwork</i> . Hence, there is no association between <i>TopographicalElement</i> objects and <i>UtilityNetwork</i> or <i>UtilityNetworkElement</i> objects. |
| Inherits from | N/A                                                                                                                                                                                                                                   |

#### 4.2.21.2 Properties and associations

| Property name        | Namespace | Cardinality | Type                     |
|----------------------|-----------|-------------|--------------------------|
| imklId               | imkl      | 1           | IdentifierPropertyType   |
| beginLifespanVersion | imkl      | 1           | dateTime                 |
| endLifespanVersion   | imkl      | 0..1        | dateTime                 |
| label                | imkl      | 0..1        | PT_FreeText_PropertyType |
| description          | imkl      | 0..1        | PT_FreeText_PropertyType |
| location             | imkl      | 1           | Geometry                 |
| locationSurvey       | imkl      | 0..1        | SurveyType               |

#### 4.2.21.3 Entity Relationship Diagram

| TopographicalElement |                      |                |      |
|----------------------|----------------------|----------------|------|
| PK                   | imklId               | IdentifierType | 1    |
|                      | beginLifespanVersion | dateTime       | 1    |
|                      | endLifespanVersion   | dateTime       | 0..1 |
|                      | label                | LangString     | 0..1 |
|                      | description          | LangString     | 0..1 |
|                      | location             | Geometry       | 1    |
|                      | locationSurvey       | SurveyType     | 0..1 |

### 4.2.22 Tower

#### 4.2.22.1 Overview

|            |                                                                     |
|------------|---------------------------------------------------------------------|
| Name       | Tower                                                               |
| Definition | Simple <i>UtilityNodeContainer</i> that takes the shape of a tower. |

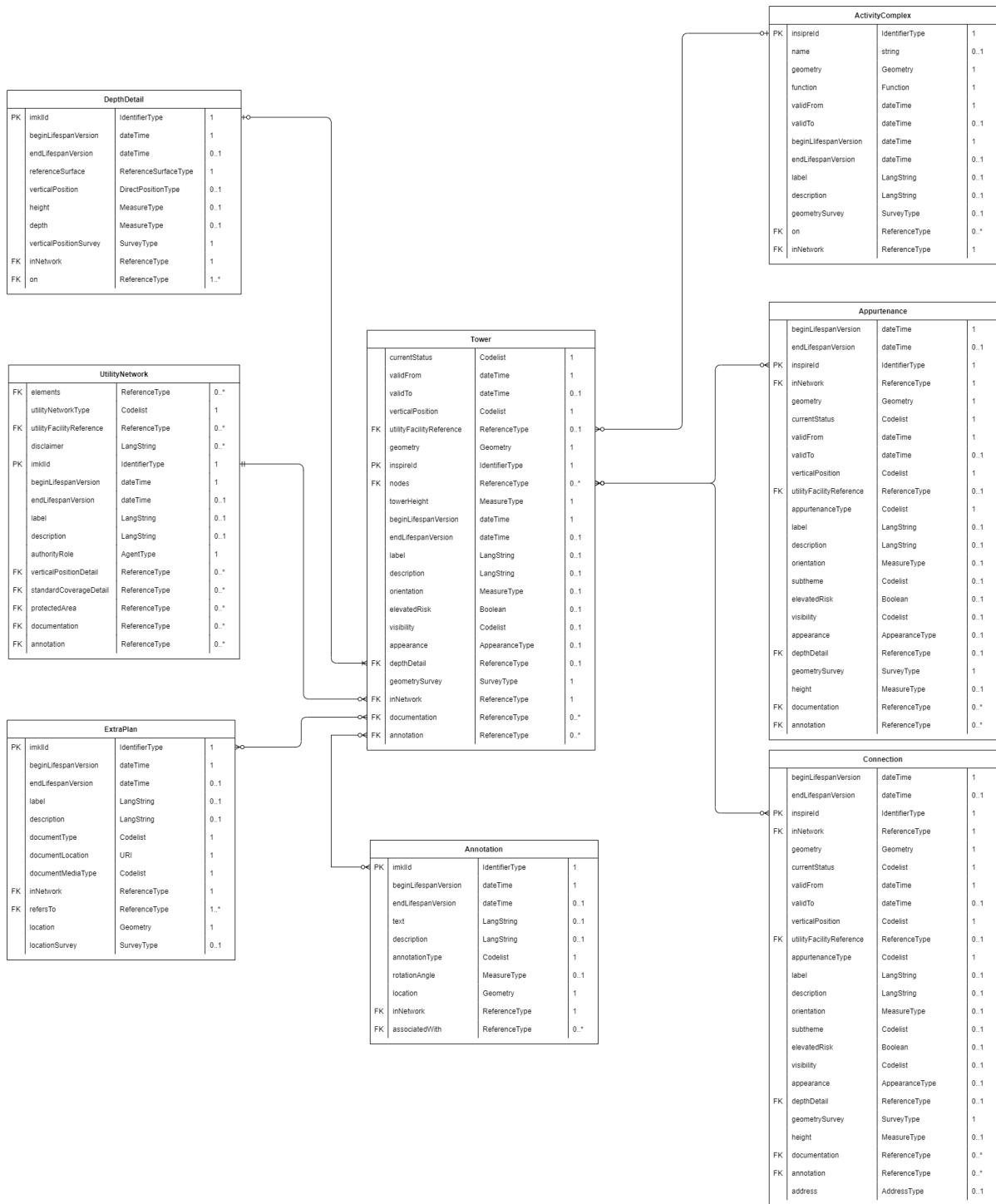
|                      |                                                                                                                                                                                                                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>   | <p>A <i>Tower</i> typically contains smaller mountable <i>Appurtenances</i>. The <i>nodes</i> association can be used to track the association between the <i>Tower</i> and these <i>Appurtenances</i>.</p> <p>The <i>towerHeight</i> property describes the height of the <i>Tower</i>.</p> |
| <b>Inherits from</b> | INSPIRE us-net-common 4.0 - Tower                                                                                                                                                                                                                                                            |

#### 4.2.22.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                     |
|------------------------------|---------------|-------------|--------------------------|
| currentStatus                | us-net-common | 1           | ReferenceType            |
| validFrom                    | us-net-common | 1           | dateTime                 |
| validTo                      | us-net-common | 0..1        | dateTime                 |
| verticalPosition             | us-net-common | 1           | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType            |
| geometry                     | us-net-common | 1           | Geometry                 |
| inspireId                    | us-net-common | 1           | IdentifierPropertyType   |
| nodes                        | us-net-common | 0..*        | ReferenceType            |
| towerHeight                  | us-net-common | 1           | LengthType               |
| beginLifespanVersion         | imkl          | 1           | dateTime                 |
| endLifespanVersion           | imkl          | 0..1        | dateTime                 |
| label                        | imkl          | 0..1        | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1        | PT_FreeText_PropertyType |
| orientation                  | imkl          | 0..1        | MeasureType              |
| visibility                   | imkl          | 0..1        | ReferenceType            |
| appearance                   | imkl          | 0..1        | AppearanceType           |
| depthDetail                  | imkl          | 0..1        | ReferenceType            |
| geometrySurvey               | imkl          | 1           | SurveyType               |
| inNetwork                    | imkl          | 1           | ReferenceType            |
| documentation                | imkl          | 0..*        | ReferenceType            |
| annotation                   | imkl          | 0..*        | ReferenceType            |



### 4.2.22.3 Entity Relationship Diagram



## 4.2.23 UtilityLink

### 4.2.23.1 Overview

| Name                 | UtilityLink                                                                                                                                                                                                                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>    | A linear spatial object that describes the geometry and connectivity of a utility network between two points in the network.                                                                                                                                                                                                          |
| <b>Description</b>   | Every <i>UtilityLinkSet</i> object ( <i>Cables</i> , <i>Pipes</i> and <i>Ducts</i> ) must be associated with at least one <i>UtilityLink</i> object via its <i>link</i> property. The <i>centrelineGeometry</i> property of the <i>UtilityLink</i> object represents (a section of) the geometry of the <i>UtilityLinkSet</i> object. |
| <b>Inherits from</b> | N/A                                                                                                                                                                                                                                                                                                                                   |

### 4.2.23.2 Properties and associations

| Property name                | Namespace     | Cardinality | Type                   |
|------------------------------|---------------|-------------|------------------------|
| beginLifespanVersion         | net           | 1           | dateTime               |
| inspireId                    | net           | 1           | IdentifierPropertyType |
| endLifespanVersion           | net           | 0..1        | dateTime               |
| inNetwork                    | net           | 1           | ReferenceType          |
| centrelineGeometry           | net           | 1           | Geometry               |
| fictitious                   | net           | 1           | boolean                |
| endNode                      | net           | 0..1        | ReferenceType          |
| startNode                    | net           | 0..1        | ReferenceType          |
| currentStatus                | us-net-common | 1           | ReferenceType          |
| validFrom                    | us-net-common | 1           | dateTime               |
| validTo                      | us-net-common | 0..1        | dateTime               |
| verticalPosition             | us-net-common | 1           | ReferenceType          |
| utilityFacilityReference     | us-net-common | 0..1        | ReferenceType          |
| governmentalServiceReference | us-net-common | 0..1        | ReferenceType          |

### 4.2.23.3 Entity Relationship Diagram

Please refer to the diagrams of the *Cable*, *Pipe* and *Duct* objects.



## 4.2.24 UtilityLinkSequence

### 4.2.24.1 Overview

| Name          | UtilityLinkSequence                                                                                                                                                                                                                                                                                 |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | A linear spatial object, composed of an ordered collection of utility links, which represents a continuous path in the utility network without any branches. The element has a defined beginning and end and every position on the utility link sequence is identifiable with one single parameter. |
| Description   | Since the flow direction is not important in the context of IMKL, <i>UtilityLinkSequence</i> objects are not used.                                                                                                                                                                                  |
| Inherits from | N/A                                                                                                                                                                                                                                                                                                 |

## 4.2.25 WaterPipe

### 4.2.25.1 Overview

| Name          | WaterPipe                                                                                                                                                                                                                                                                                |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition    | A water pipe used to convey water from one location to another.                                                                                                                                                                                                                          |
| Description   | <p><i>WaterPipe</i> is a subtype of <i>Pipe</i>.</p> <p>The <i>waterType</i> property describes the type of water that is transported through the <i>WaterPipe</i>.</p> <p>In IMKL, the <i>cables</i> and <i>pipes</i> associations should not be used for <i>WaterPipe</i> objects.</p> |
| Inherits from | INSPIRE US 4.0 – WaterPipe<br>IMKL 3.0 - Pipe                                                                                                                                                                                                                                            |

### 4.2.25.2 Properties and associations

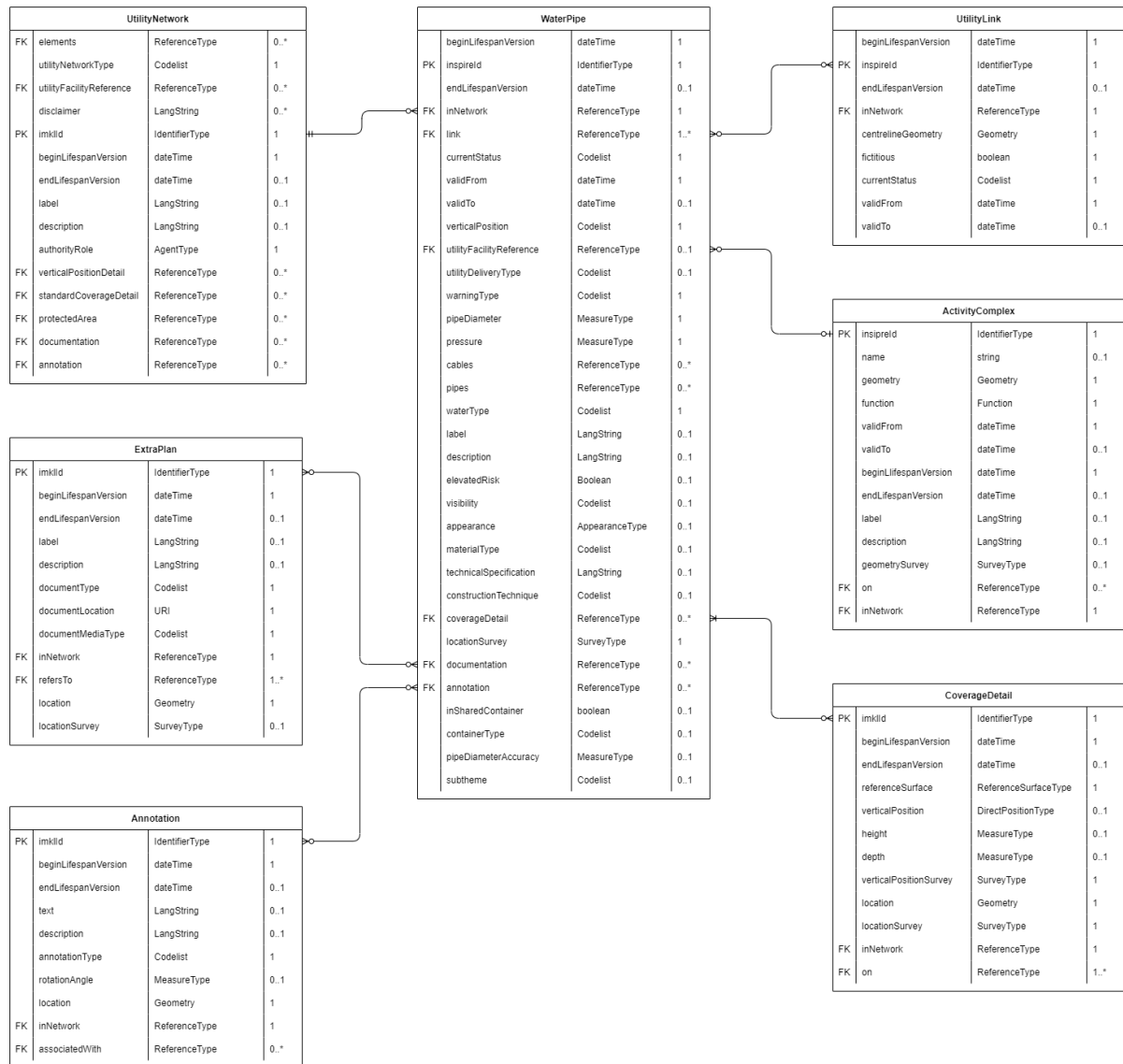
| Property name        | Namespace     | Cardinality | Type                   |
|----------------------|---------------|-------------|------------------------|
| beginLifespanVersion | net           | 1           | dateTime               |
| inspireId            | net           | 1           | IdentifierPropertyType |
| endLifespanVersion   | net           | 0..1        | dateTime               |
| inNetwork            | net           | 1           | ReferenceType          |
| link                 | net           | 1..*        | ReferenceType          |
| currentStatus        | us-net-common | 1           | ReferenceType          |

|                              |               |      |                          |
|------------------------------|---------------|------|--------------------------|
| validFrom                    | us-net-common | 1    | dateTime                 |
| validTo                      | us-net-common | 0..1 | dateTime                 |
| verticalPosition             | us-net-common | 1    | ReferenceType            |
| utilityFacilityReference     | us-net-common | 0..1 | ReferenceType            |
| governmentalServiceReference | us-net-common | 0..1 | ReferenceType            |
| utilityDeliveryType          | us-net-common | 0..1 | ReferenceType            |
| warningType                  | us-net-common | 1    | ReferenceType            |
| pipeDiameter                 | us-net-common | 1    | MeasureType              |
| pressure                     | us-net-common | 0..1 | MeasureType              |
| cables                       | us-net-common | 0..* | ReferenceType            |
| pipes                        | us-net-common | 0..* | ReferenceType            |
| waterType                    | us-net-wa     | 1    | ReferenceType            |
| label                        | imkl          | 0..1 | PT_FreeText_PropertyType |
| description                  | imkl          | 0..1 | PT_FreeText_PropertyType |
| visibility                   | imkl          | 0..1 | ReferenceType            |
| appearance                   | imkl          | 0..1 | AppearanceType           |
| materialType                 | imkl          | 0..1 | ReferenceType            |
| technicalSpecification       | imkl          | 0..1 | PT_FreeText_PropertyType |
| constructionTechnique        | imkl          | 0..1 | ReferenceType            |
| coverageDetail               | imkl          | 0..* | ReferenceType            |
| locationSurvey               | imkl          | 1    | SurveyType               |
| documentation                | imkl          | 0..* | ReferenceType            |
| annotation                   | imkl          | 0..* | ReferenceType            |



|                      |      |      |               |
|----------------------|------|------|---------------|
| inSharedContainer    | imkl | 0..1 | boolean       |
| containerType        | imkl | 0..1 | ReferenceType |
| pipeDiameterAccuracy | imkl | 0..1 | MeasureType   |
| subtheme             | imkl | 0..1 | ReferenceType |

#### 4.2.25.3 Entity Relationship Diagram



## 4.3 Other objects

### 4.3.1 UtilityNetwork

#### 4.3.1.1 Overview

| Name                 | UtilityNetwork                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>    | A collection of network elements of one type of utility service.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b>   | <p>This object is not strictly considered a feature nor a geographic object. It is used to collect or group network elements within a single utility theme. The utility theme is indicated by the <i>utilityNetworkType</i> property.</p> <p>Through the <i>networks</i> association, references can be made to other <i>UtilityNetworks</i>, such as subnetworks. Via <i>elements</i>, all network elements belonging to the <i>UtilityNetwork</i> must be referenced.</p> <p>A <i>UtilityNetwork</i> object must contain at least 1 element, ActivityComplex; ProtectedArea, Document, or Annotation.</p> |
| <b>Inherits from</b> | INSPIRE US 4.0 - UtilityNetwork                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

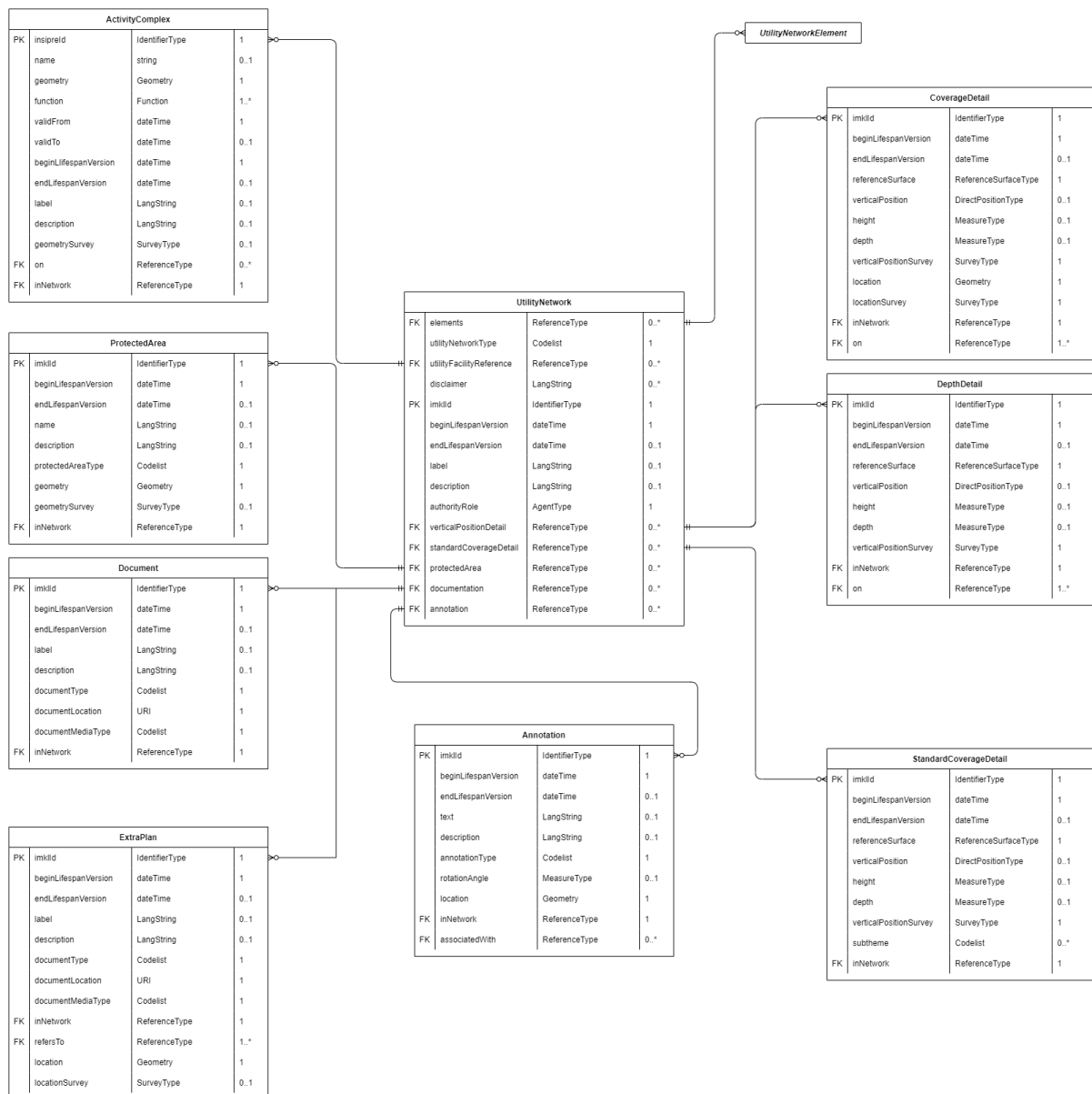
#### 4.3.1.2 Properties and associations

| Property name            | Namespace     | Cardinality | Type                     |
|--------------------------|---------------|-------------|--------------------------|
| geographicalName         | net           | 0..*        | GeographicalName         |
| elements                 | net           | 0..*        | ReferenceType            |
| utilityNetworkType       | us-net-common | 1           | ReferenceType            |
| authorityRole            | us-net-common | 1..*        | ReferenceType            |
| utilityFacilityReference | us-net-common | 0..*        | ReferenceType            |
| disclaimer               | us-net-common | 0..*        | PT_FreeText_PropertyType |
| networks                 | us-net-common | 0..*        | ReferenceType            |
| imklId                   | imkl          | 1           | IdentifierPropertyType   |
| beginLifespanVersion     | imkl          | 1           | dateTime                 |
| endLifespanVersion       | imkl          | 0..1        | dateTime                 |
| label                    | imkl          | 0..1        | PT_FreeText_PropertyType |
| description              | imkl          | 0..1        | PT_FreeText_PropertyType |
| authorityRole            | imkl          | 1           | AgentType                |
| verticalPositionDetail   | imkl          | 0..*        | ReferenceType            |



|                        |      |      |               |
|------------------------|------|------|---------------|
| standardCoverageDetail | imkl | 0..* | ReferenceType |
| protectedArea          | imkl | 0..* | ReferenceType |
| documentation          | imkl | 0..* | ReferenceType |
| annotation             | imkl | 0..* | ReferenceType |

#### 4.3.1.3 Entity Relationship Diagram



## 4.4 Data Types

### 4.4.1 AddressType

#### 4.4.1.1 Overview

| Name       | AddressType                   |
|------------|-------------------------------|
| Definition | Provides address information. |
| Origin     | IMKL 3.0                      |

#### 4.4.1.2 Properties and associations

| Property name    | Namespace | Cardinality | Type                     |
|------------------|-----------|-------------|--------------------------|
| municipalityName | imkl      | 1           | PT_FreeText_PropertyType |
| streetName       | imkl      | 1           | PT_FreeText_PropertyType |
| houseNumber      | imkl      | 0..1        | string                   |
| postalCode       | imkl      | 1           | string                   |

### 4.4.2 AgentType

#### 4.4.2.1 Overview

| Name       | AgentType                              |
|------------|----------------------------------------|
| Definition | Provides information on a stakeholder. |
| Origin     | IMKL 3.0                               |

#### 4.4.2.2 Properties and associations

| Property name | Namespace | Cardinality | Type   |
|---------------|-----------|-------------|--------|
| name          | imkl      | 1           | string |
| phone         | imkl      | 1           | string |
| email         | imkl      | 1           | string |



### 4.4.3 AppearanceType

#### 4.4.3.1 Overview

| Name       | AppearanceType                                 |
|------------|------------------------------------------------|
| Definition | Provides information on the way an item looks. |
| Origin     | IMKL 3.0                                       |

#### 4.4.3.2 Properties and associations

| Property name | Namespace | Cardinality | Type                     |
|---------------|-----------|-------------|--------------------------|
| colour        | imkl      | 1           | PT_FreeText_PropertyType |

### 4.4.4 Function

#### 4.4.4.1 Overview

| Name       | Function                                                                                                                                                                    |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition | Activities performed by the activity complex. Function is described by the activity and potentially complemented with information about inputs and outputs as result of it. |
| Origin     | INSPIRE act-core 4.0                                                                                                                                                        |

#### 4.4.4.2 Properties and associations

| Property name | Namespace | Cardinality | Type                     |
|---------------|-----------|-------------|--------------------------|
| activity      | act-core  | 1..*        | ReferenceType            |
| input         | act-core  | 0..*        | ReferenceType            |
| output        | act-core  | 0..*        | ReferenceType            |
| description   | act-core  | 0..1        | PT_FreeText_PropertyType |

### 4.4.5 IdentifierPropertyType

#### 4.4.5.1 Overview

| Name       | IdentifierPropertyType                                                                                                                           |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition | External unique object identifier published by the responsible body, which may be used by external applications to reference the spatial object. |
| Origin     | INSPIRE base 3.3                                                                                                                                 |

#### 4.4.5.2 Properties and associations

| Property name | Namespace | Cardinality | Type   |
|---------------|-----------|-------------|--------|
| localId       | base      | 1           | string |
| namespace     | base      | 1           | string |
| versionId     | base      | 0..1        | string |

### 4.4.6 ReferenceSurfaceType

#### 4.4.6.1 Overview

| Name              | ReferenceSurfaceType                                                                                  |
|-------------------|-------------------------------------------------------------------------------------------------------|
| <b>Definition</b> | Provides information on the reference surface used to determine a depth, height or vertical position. |
| <b>Origin</b>     | IMKL 3.0                                                                                              |

#### 4.4.6.2 Properties and associations

| Property name          | Namespace | Cardinality | Type                 |
|------------------------|-----------|-------------|----------------------|
| referenceSurfaceType   | imkl      | 1           | ReferenceType        |
| verticalPosition       | imkl      | 0..1        | DirectPositionType   |
| verticalPositionSurvey | imkl      | 0..1        | SurveyType           |
| location               | imkl      | 0..1        | GeometryPropertyType |
| locationSurvey         | imkl      | 0..1        | SurveyType           |

### 4.4.7 SurveyType

#### 4.4.7.1 Overview

| Name              | SurveyType                                                              |
|-------------------|-------------------------------------------------------------------------|
| <b>Definition</b> | Describes the method and accuracy with which a geometry was determined. |
| <b>Origin</b>     | IMKL 3.0                                                                |

#### 4.4.7.2 Properties and associations

| Property name | Namespace | Cardinality | Type          |
|---------------|-----------|-------------|---------------|
| method        | imkl      | 1           | ReferenceType |
| recordedBy    | imkl      | 0..1        | AgentType     |



|          |      |      |             |
|----------|------|------|-------------|
| date     | imkl | 0..1 | dateTime    |
| accuracy | imkl | 1    | MeasureType |

## 4.5 Data Properties

### 4.5.1 accuracy

| Name        | accuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Definition  | The positional accuracy of the <i>Survey</i> expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Type        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Description | <p>This property gives information on the accuracy of a survey and thus of the accuracy of the location, depth, height or vertical position of the property the survey is associated with.</p> <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"><li>• urn:ogc:def:uom:OGC::mm</li><li>• urn:ogc:def:uom:OGC::cm</li><li>• urn:ogc:def:uom:OGC::m</li></ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| Occurrence  | SurveyType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NilReason   | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

### 4.5.2 activity

| Name        | activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE act-core                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Definition  | Classification of the economic activity of a function.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description | <p>In the context of an <i>ActivityComplex</i> that contains a <i>Function</i> object, the <i>activity</i> refers to the economic activity of the <i>ActivityComplex</i>.</p> <p>The classification of activities is based on the NACEBEL 2008 codes. The NACEBEL codes are available for download via the following URL:<br/><a href="https://economie.fgov.be/sites/default/files/Files/Entreprises/KBO/Nacebel-2008-FR-NL-DE.xls">https://economie.fgov.be/sites/default/files/Files/Entreprises/KBO/Nacebel-2008-FR-NL-DE.xls</a></p> |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>The <i>activity</i> property should reference any of the NACEBEL codes via the <i>xlink:href</i> attribute using the following URI, where [code] is replaced with the actual NACEBEL code:</p> <p><a href="https://vocab.belgif.be/auth/IMKL-ActivityValue/[code]">https://vocab.belgif.be/auth/IMKL-ActivityValue/[code]</a></p> <p>For example:<br/> <a href="https://vocab.belgif.be/auth/IMKL-ActivityValue/42">https://vocab.belgif.be/auth/IMKL-ActivityValue/42</a><br/> <a href="https://vocab.belgif.be/auth/IMKL-ActivityValue/42212">https://vocab.belgif.be/auth/IMKL-ActivityValue/42212</a></p> |
| <b>Occurrence</b> | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>NilReason</b>  | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### 4.5.3 address

|                    |                                                                                                                                                                                                                                                                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>address</b>                                                                                                                                                                                                                                                     |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                               |
| <b>Definition</b>  | The address information of a <i>Connection</i> object.                                                                                                                                                                                                             |
| <b>Type</b>        | imkl:AddressType                                                                                                                                                                                                                                                   |
| <b>Description</b> | The <i>address</i> property is used to provide address information of a <i>Connection</i> object. The <i>address</i> is of type <i>AddressType</i> and provides information on the municipality name, street name, house number and postal code of the connection. |
| <b>Occurrence</b>  | Connection                                                                                                                                                                                                                                                         |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                 |

### 4.5.4 annotation

|                    |                                                                                                                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>annotation</b>                                                                                                                                                                                                                                |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                             |
| <b>Definition</b>  | Reference to an <i>Annotation</i> object that is associated with the source object.                                                                                                                                                              |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                                                |
| <b>Description</b> | <p>The <i>annotation</i> property is used to keep track of the <i>Annotation</i> objects that are associated with the source object.</p> <p>This property is the inverse of the <i>associatedWith</i> property of <i>Annotation</i> objects.</p> |
| <b>Occurrence</b>  | UtilityNetwork, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole                                                           |



|           |    |
|-----------|----|
| NilReason | No |
|-----------|----|

#### 4.5.5 annotationType

|             |                                                                                    |
|-------------|------------------------------------------------------------------------------------|
| Name        | annotationType                                                                     |
| Namespace   | imkl                                                                               |
| Definition  | Classification of <i>Annotations</i> .                                             |
| Type        | <code>gml:ReferenceType</code>                                                     |
| Description | This property should reference a value in the <i>AnnotationTypeValue</i> codelist. |
| Occurrence  | Annotation                                                                         |
| NilReason   | No                                                                                 |

#### 4.5.6 appearance

|             |                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name        | appearance                                                                                                                                                             |
| Namespace   | imkl                                                                                                                                                                   |
| Definition  | Provides information on the way an item looks.                                                                                                                         |
| Type        | <code>imkl:ApperanceType</code>                                                                                                                                        |
| Description | This property can be used to provide information on the appearance of a <i>UtilityNetworkElement</i> .                                                                 |
| Occurrence  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole |
| NilReason   | No                                                                                                                                                                     |

#### 4.5.7 appurtenanceType

|             |                                                                                                                                                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name        | appurtenanceType                                                                                                                                                                                                                                     |
| Namespace   | INSPIRE us-net-common                                                                                                                                                                                                                                |
| Definition  | Classification of appurtenances.                                                                                                                                                                                                                     |
| Type        | <code>gml:ReferenceType</code>                                                                                                                                                                                                                       |
| Description | This property should reference a value in one of the following codelists: <ul style="list-style-type: none"><li>ElectricityAppurtenanceTypeValue</li><li>ElectricityAppurtenanceTypeIMKLValue</li><li>OilGasChemicalsAppurtenanceTypeValue</li></ul> |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <ul style="list-style-type: none"> <li>OilGasChemicalsAppurtenanceTypeIMKLValue</li> <li>SewerAppurtenanceTypeValue</li> <li>SewerAppurtenanceTypeIMKLValue</li> <li>TelecommunicationsAppurtenanceTypeIMKLValue</li> <li>ThermalAppurtenanceTypeIMKLValue</li> <li>WaterAppurtenanceTypeValue</li> <li>WaterAppurtenanceTypeIMKLValue</li> </ul> <p>There are different codelists depending on the type of utility network. The codelist that is used should correspond to the type of the <i>UtilityNetwork</i> the <i>Appurtenance</i> or <i>Connection</i> belongs to.</p> |
| <b>Occurrence</b> | Appurtenance, Connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>NilReason</b>  | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

#### 4.5.8 associatedWith

|                    |                                                                                                                                                                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>associatedWith</b>                                                                                                                                                                                                                                                         |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                          |
| <b>Definition</b>  | Reference to a <i>UtilityNetworkElement</i> object that is associated with the source object.                                                                                                                                                                                 |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                                                                             |
| <b>Description</b> | <p>The <i>associatedWith</i> property is used to keep track of the <i>UtilityNetworkElements</i> objects that are associated with the source (<i>Annotation</i>) object.</p> <p>This property is the inverse of the <i>annotation</i> property of the associated objects.</p> |
| <b>Occurrence</b>  | Annotation                                                                                                                                                                                                                                                                    |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                            |

#### 4.5.9 authorityRole (imkl)

|                   |                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------|
| <b>Name</b>       | <b>authorityRole</b>                                                                      |
| <b>Namespace</b>  | imkl                                                                                      |
| <b>Definition</b> | The person or organisation acting as the point of contact for the <i>UtilityNetwork</i> . |
| <b>Type</b>       | AgentType                                                                                 |



|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | The <i>imkl:authorityRole</i> element is of type <i>AgentType</i> . The element should contain the contact information for the person or organisation acting as the point of contact for the utility network. It must include the following elements: <ul style="list-style-type: none"><li>• <b>name:</b> The name of the person or organisation</li><li>• <b>phone:</b> The telephone number. The phone number should include the country code (e.g. +32 for Belgium)</li><li>• <b>email:</b> The email address</li></ul> |
| <b>Occurrence</b>  | UtilityNetwork                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

#### 4.5.10 authorityRole (us-net-common)

|                    |                                                                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>authorityRole</b>                                                                                                                                                                                                                     |
| <b>Namespace</b>   | INSPIRE us-net-common                                                                                                                                                                                                                    |
| <b>Definition</b>  | Parties authorized to manage a utility network, such as maintainers, operators or owners.                                                                                                                                                |
| <b>Type</b>        | base2:RelatedParty                                                                                                                                                                                                                       |
| <b>Description</b> | The element <i>us-net-common:authorityRole</i> must be present and must contain an empty <i>RelatedParty</i> element. This <i>authorityRole</i> element is ignored in IMKL 3, but it needs to be present to comply with the INSPIRE XSD. |
| <b>Occurrence</b>  | UtilityNetwork                                                                                                                                                                                                                           |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                       |

#### 4.5.11 beginLifespanVersion

|                    |                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>beginLifespanVersion</b>                                                                                                    |
| <b>Namespace</b>   | imkl, INSPIRE net                                                                                                              |
| <b>Definition</b>  | The start date on which a data object was created, marking the beginning of the data object's lifecycle.                       |
| <b>Type</b>        | dateTime                                                                                                                       |
| <b>Description</b> | This attribute originates from INSPIRE but is also used in the IMKL-specific objects to ensure consistency across all objects. |
| <b>Occurrence</b>  | All objects                                                                                                                    |
| <b>NilReason</b>   | No                                                                                                                             |

#### 4.5.12 cableDiameter

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>cableDiameter</b>                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Definition</b>  | The diameter of a cable expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Type</b>        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b> | <p>For the use case of IMKL, the <i>cableDiameter</i> should represent the outer diameter.</p> <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"> <li>• urn:ogc:def:uom:OGC::mm</li> <li>• urn:ogc:def:uom:OGC::cm</li> <li>• urn:ogc:def:uom:OGC::m</li> </ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| <b>Occurrence</b>  | ElectricityCable, TelecommunicationsCable                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                                                            |



#### 4.5.13 cableDiameterAccuracy

| Name        | cableDiameterAccuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Definition  | The accuracy of the <i>cableDiameter</i> expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                                                                                                                         |
| Type        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description | <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"><li>• urn:ogc:def:uom:OGC::mm</li><li>• urn:ogc:def:uom:OGC::cm</li><li>• urn:ogc:def:uom:OGC::m</li></ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> <p>For example: A <i>cableDiameter</i> of 70cm and a <i>cableDiameterAccuracy</i> of 10cm indicates that the diameter is somewhere between 60 and 80cm.</p> |
| Occurrence  | ElectricityCable, TelecommunicationsCable                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| NilReason   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

#### 4.5.14 cables

| Name        | cables                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE us-net-common                                                                                                                                                                                                                                                                                                                                                                                                         |
| Definition  | Reference to a <i>Cable</i> object that is contained within the source <i>Pipe</i> or <i>Duct</i> object.                                                                                                                                                                                                                                                                                                                     |
| Type        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                                                                                             |
| Description | <p>The <i>cables</i> property is used to keep track of the <i>Cable</i> objects that are contained within the source <i>Pipe</i> or <i>Duct</i> object.</p> <p>This property can only be used for <i>Pipe</i> and <i>Duct</i> objects. It is not allowed for <i>OilGasChemicalsPipe</i>, <i>SewerPipe</i>, <i>WaterPipe</i> and <i>ThermalPipe</i> objects.</p> <p>The data model does not include a reverse association.</p> |
| Occurrence  | Pipe, Duct                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NilReason   | No                                                                                                                                                                                                                                                                                                                                                                                                                            |

#### 4.5.15 centrelineGeometry

| Name      | centrelineGeometry |
|-----------|--------------------|
| Namespace | INSPIRE net        |

|                   |                                                                          |
|-------------------|--------------------------------------------------------------------------|
| <b>Definition</b> | The geometry representing the centreline of a <i>UtilityLink</i> object. |
| <b>Type</b>       | gml:CurvePropertyType                                                    |
| <b>Occurrence</b> | UtilityLink                                                              |
| <b>NilReason</b>  | No                                                                       |

#### 4.5.16 colour

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>colour</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Definition</b>  | The colour of the coating of a <i>UtilityLinkElement</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Type</b>        | gmd:PT_FreeText_PropertyType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b> | <p>If there is a coating around the <i>UtilityLinkElement</i>, then the <i>colour</i> property represents the colour of this coating. If there is no coating, <i>colour</i> can be used to represent the colour of the <i>UtilityLinkElement</i> itself.</p> <p><i>Colour</i> supports visual inspection but is only relevant for coatings that are colourfast (i.e., where no discoloration occurs due to exposure to soil). If this is not the case, it is best not to use the <i>colour</i> property.</p> <p>Since there are so many colours and colour combinations, the <i>colour</i> property is not referencing a codelist. Instead, the value is a language specific free text.</p> |
| <b>Occurrence</b>  | AppearanceType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

#### 4.5.17 constructionTechnique

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>constructionTechnique</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Definition</b>  | The technique used for the installation of a <i>Cable</i> , <i>Pipe</i> or <i>Duct</i> .                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b> | <p>This property allows providing additional information regarding the construction technique used during the construction or installation of a cable, pipe or duct. It is recommended to include this property if information about the construction technique is available. If no information is available this can be clarified by adding the element with a <i>nilReason</i>.</p> <p>This property should reference a value in the <i>ConstructionTechniqueValue</i> codelist.</p> |
| <b>Occurrence</b>  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct                                                                                                                                                                                                                                                                                                                                                                          |



|           |     |
|-----------|-----|
| NilReason | Yes |
|-----------|-----|

#### 4.5.18 containerType

|             |                                                                                   |
|-------------|-----------------------------------------------------------------------------------|
| Name        | containerType                                                                     |
| Namespace   | imkl                                                                              |
| Definition  | Classification of the type of container.                                          |
| Type        | gml:ReferenceType                                                                 |
| Description | This property should reference a value in the <i>ContainerTypeValue</i> codelist. |
| Occurrence  | Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct                |
| NilReason   | No                                                                                |

#### 4.5.19 coverageDetail

|             |                                                                                                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name        | coverageDetail                                                                                                                                                                                                                      |
| Namespace   | imkl                                                                                                                                                                                                                                |
| Definition  | Reference to a <i>CoverageDetail</i> object that is associated with the source object.                                                                                                                                              |
| Type        | gml:ReferenceType                                                                                                                                                                                                                   |
| Description | <p>The <i>coverageDetail</i> property is used to reference the <i>CoverageDetail</i> object that is associated with the source object.</p> <p>This property is the inverse of the <i>on</i> property of the associated objects.</p> |
| Occurrence  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct                                                                                                                       |
| NilReason   | No                                                                                                                                                                                                                                  |

#### 4.5.20 currentStatus

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| Name        | currentStatus                                                                           |
| Namespace   | INSPIRE us-net-common                                                                   |
| Definition  | The current status of the <i>UtilityNetworkElement</i> object.                          |
| Type        | gml:ReferenceType                                                                       |
| Description | This property should reference a value in the <i>ConditionOfFacilityValue</i> codelist. |

|                   |                                                                                                                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Occurrence</b> | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, UtilityLink |
| <b>NilReason</b>  | No                                                                                                                                                                                  |

#### 4.5.21 date

|                   |                                 |
|-------------------|---------------------------------|
| <b>Name</b>       | <b>date</b>                     |
| <b>Namespace</b>  | imkl                            |
| <b>Definition</b> | The date the survey took place. |
| <b>Type</b>       | dateTime                        |
| <b>Occurrence</b> | SurveyType                      |
| <b>NilReason</b>  | No                              |

#### 4.5.22 depth

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>depth</b>                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Definition</b>  | The distance to an object below a reference surface measured from that same reference surface expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                         |
| <b>Type</b>        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b> | <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"> <li>• urn:ogc:def:uom:OGC::mm</li> <li>• urn:ogc:def:uom:OGC::cm</li> <li>• urn:ogc:def:uom:OGC::m</li> </ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> <p>The interpretation of the depth depends on the type of object. See section 6.10 for more information.</p> |
| <b>Occurrence</b>  | CoverageDetail, DepthDetail, StandardCoverageDetail                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                                                                          |

#### 4.5.23 depthDetail

|             |                    |
|-------------|--------------------|
| <b>Name</b> | <b>depthDetail</b> |
|-------------|--------------------|



|                    |                                                                                                                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                          |
| <b>Definition</b>  | Reference to a <i>DepthDetail</i> object that is associated with the source object.                                                                                                                                           |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                             |
| <b>Description</b> | <p>The <i>depthDetail</i> property is used to reference the <i>DepthDetail</i> object that is associated with the source object.</p> <p>This property is the inverse of the <i>on</i> property of the associated objects.</p> |
| <b>Occurrence</b>  | Cabinet, Manhole, Pole, Tower, Appurtenance, Connection                                                                                                                                                                       |
| <b>NilReason</b>   | No                                                                                                                                                                                                                            |

#### 4.5.24 description

| Name               | description                                                                                                                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                                           |
| <b>Definition</b>  | Detailed description of an object.                                                                                                                                                                                                                                                             |
| <b>Type</b>        | gmd:PT_FreeText_PropertyType                                                                                                                                                                                                                                                                   |
| <b>Description</b> | This property can be included to provide additional information on an object.                                                                                                                                                                                                                  |
| <b>Occurrence</b>  | ActivityComplex, UtilityNetwork, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, Document, ExtraPlan, Annotation, ProtectedArea, TopographicalElement, ActivityComplex |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                             |

#### 4.5.25 disclaimer

| Name               | disclaimer                                                                                 |
|--------------------|--------------------------------------------------------------------------------------------|
| <b>Namespace</b>   | INSPIRE us-net-common                                                                      |
| <b>Definition</b>  | Legal text describing confidentiality clauses applying to the utility network information. |
| <b>Type</b>        | gmd:PT_FreeText_PropertyType                                                               |
| <b>Description</b> | The <i>disclaimer</i> is an example of language-specific free text.                        |
| <b>Occurrence</b>  | UtilityNetwork                                                                             |
| <b>NilReason</b>   | No                                                                                         |

#### 4.5.26 documentation

| Name        | documentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Definition  | Reference to a <i>Documentation</i> or <i>ExtraPlan</i> object that is associated with the source object.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Type        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Description | <p>The <i>documentation</i> property is used to keep track of the <i>Document</i> and <i>ExtraPlan</i> objects that are associated with the source object.</p> <p>For a <i>UtilityNetwork</i> object, this property is the inverse of the <i>inNetwork</i> property of the associated objects. For other objects, this property is the inverse of the <i>refersTo</i> property of the associated objects.</p> <p>All <i>Documents</i> or <i>ExtraPlans</i> that are relevant to the <i>UtilityNetwork</i> (i.e. applicable to the entire <i>UtilityNetwork</i> or to any of the elements within the network) should be linked to from the <i>UtilityNetwork</i> object. This must be done via the <i>documentation</i> association. A <i>UtilityNetwork</i> can have as many <i>documentation</i> associations as needed.</p> <p>When a <i>Document</i> is linked to the <i>UtilityNetwork</i>, but not to a specific element within the network, this means the <i>Document</i> is applicable to the <i>UtilityNetwork</i> itself.</p> |
| Occurrence  | UtilityNetwork, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| NilReason   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### 4.5.27 documentLocation

| Name        | documentLocation                                                                                                                                                           |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                       |
| Definition  | File name of the corresponding document.                                                                                                                                   |
| Type        | anyURI                                                                                                                                                                     |
| Description | Corresponds to the name of the file included within the IMKL package. If the file is located within a subfolder of the IMKL package, then the relative path must be given. |
| Occurrence  | Document, ExtraPlan                                                                                                                                                        |
| NilReason   | No                                                                                                                                                                         |



#### 4.5.28 documentMediaType

| Name        | documentMediaType                                                                     |
|-------------|---------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                  |
| Definition  | File type of the corresponding document.                                              |
| Type        | <code>gml:ReferenceType</code>                                                        |
| Description | This property should reference a value in the <i>DocumentMediaTypeValue</i> codelist. |
| Occurrence  | Document, ExtraPlan                                                                   |
| NilReason   | No                                                                                    |

#### 4.5.29 documentType

| Name        | documentType                                                                     |
|-------------|----------------------------------------------------------------------------------|
| Namespace   | imkl                                                                             |
| Definition  | Classification of the type of <i>Documents</i> and <i>ExtraPlans</i> .           |
| Type        | <code>gml:ReferenceType</code>                                                   |
| Description | This property should reference a value in the <i>DocumentTypeValue</i> codelist. |
| Occurrence  | Document, ExtraPlan                                                              |
| NilReason   | No                                                                               |

#### 4.5.30 ducts

| Name        | ducts                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE us-net-common                                                                                                                                                                         |
| Definition  | Reference to a <i>Duct</i> object that is contained within the source <i>Duct</i> object.                                                                                                     |
| Type        | <code>gml:ReferenceType</code>                                                                                                                                                                |
| Description | The <i>ducts</i> property is used to keep track of the <i>Duct</i> objects that are contained within the source <i>Duct</i> object.<br>The data model does not include a reverse association. |
| Occurrence  | Duct                                                                                                                                                                                          |
| NilReason   | No                                                                                                                                                                                            |

#### 4.5.31 ductWidth

| Name        | ductWidth                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE us-net-common                                                                                                                                                                                                                                                                                                                                                                                                  |
| Definition  | The width of a duct expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                                                                              |
| Type        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description | <p>For the use case of IMKL, the <i>ductWidth</i> should represent the outer width.</p> <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"> <li>• urn:ogc:def:uom:OGC::mm</li> <li>• urn:ogc:def:uom:OGC::cm</li> <li>• urn:ogc:def:uom:OGC::m</li> </ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| Occurrence  | Duct                                                                                                                                                                                                                                                                                                                                                                                                                   |
| NilReason   | Yes                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### 4.5.32 ductWidthAccuracy

| Name        | ductWidthAccuracy                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Definition  | The accuracy of the <i>ductWidth</i> expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                                                                                                                      |
| Type        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Description | <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"> <li>• urn:ogc:def:uom:OGC::mm</li> <li>• urn:ogc:def:uom:OGC::cm</li> <li>• urn:ogc:def:uom:OGC::m</li> </ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> <p>For example: A <i>ductWidth</i> of 70cm and a <i>ductWidthAccuracy</i> of 10cm indicates that the width is somewhere between 60 and 80cm.</p> |
| Occurrence  | Duct                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| NilReason   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



#### 4.5.33 elements

| Name        | elements                                                                                                             |
|-------------|----------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE net                                                                                                          |
| Definition  | Reference to a <i>UtilityNetworkElement</i> object that is contained within the source <i>UtilityNetwork</i> object. |
| Type        | gml:ReferenceType                                                                                                    |
| Description | This property is the inverse of the <i>inNetwork</i> property of the associated objects.                             |
| Occurrence  | UtilityNetwork                                                                                                       |
| NilReason   | No                                                                                                                   |

#### 4.5.34 email

| Name        | email                                                                              |
|-------------|------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                               |
| Definition  | The email address of the <i>Agent</i> .                                            |
| Type        | string                                                                             |
| Description | The email address of the <i>Agent</i> . The value should be a valid email address. |
| Occurrence  | AgentType                                                                          |
| NilReason   | No                                                                                 |

#### 4.5.35 endLifespanVersion

| Name        | endLifespanVersion                                                                               |
|-------------|--------------------------------------------------------------------------------------------------|
| Namespace   | imkl, INSPIRE net                                                                                |
| Definition  | The end date on which a data object was created, marking the end of the data object's lifecycle. |
| Type        | dateTime                                                                                         |
| Description | This attribute originates from INSPIRE but is also used in the IMKL-specific objects.            |
| Occurrence  | All objects                                                                                      |
| NilReason   | No                                                                                               |

#### 4.5.36 endNode

| Name        | endNode                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE net                                                                                                |
| Definition  | The optional end node for this link.                                                                       |
| Type        | gml:ReferenceType                                                                                          |
| Description | The <i>endNode</i> property is not used in the context of IMKL. This property will be ignored if provided. |
| Occurrence  | UtilityLink                                                                                                |
| NilReason   | No                                                                                                         |

#### 4.5.37 fictitious

| Name        | fictitious                                                                                                                                                                                                   |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE net                                                                                                                                                                                                  |
| Definition  | Indicator that the centreline geometry of the link is a straight line with no intermediate control points unless the straight line represents the geography in the resolution of the data set appropriately. |
| Type        | boolean                                                                                                                                                                                                      |
| Description | For a UtilityLink the value must be <i>false</i> .                                                                                                                                                           |
| Occurrence  | UtilityLink                                                                                                                                                                                                  |
| NilReason   | No                                                                                                                                                                                                           |

#### 4.5.38 function

| Name        | function                                                                                                                                                                                  |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE act-core                                                                                                                                                                          |
| Definition  | Activities performed by the <i>ActivityComplex</i> . <i>Function</i> is described by the activity and potentially complemented with information about inputs and outputs as result of it. |
| Type        | Function                                                                                                                                                                                  |
| Description | This property is used to describe the function of the <i>ActivityComplex</i> .                                                                                                            |
| Occurrence  | ActivityComplex                                                                                                                                                                           |
| NilReason   | No                                                                                                                                                                                        |



#### 4.5.39 geographicalName

| Name        | geographicalName                                  |
|-------------|---------------------------------------------------|
| Namespace   | INSPIRE net                                       |
| Definition  | Geographical name for the <i>UtilityNetwork</i> . |
| Type        | gn:GeographicalName                               |
| Description | This property is not used in the context of IMKL. |
| Occurrence  | UtilityNetwork                                    |
| NilReason   | No                                                |

#### 4.5.40 geometry

| Name        | geometry                                                                                |
|-------------|-----------------------------------------------------------------------------------------|
| Namespace   | INSPIRE us, INSPIRE act-core                                                            |
| Definition  | Represents the geometric properties of the object.                                      |
| Type        | Geometry                                                                                |
| Description | The type of geometry that can be represented depends on the object type.                |
| Occurrence  | ActivityComplex, ProtectedArea, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole |
| NilReason   | No                                                                                      |

#### 4.5.41 geometrySurvey

| Name        | geometrySurvey                                                                                    |
|-------------|---------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                              |
| Definition  | Additional information on how the geometry was determined.                                        |
| Type        | SurveyType                                                                                        |
| Description | The <i>geometrySurvey</i> property is associated with the <i>geometry</i> property of its object. |
| Occurrence  | ActivityComplex, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, ProtectedArea           |
| NilReason   | No                                                                                                |

#### 4.5.42 governmentalServiceReference

| Name        | governmentalServiceReference                                                                                                                                                        |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE us-net-common                                                                                                                                                               |
| Definition  | Reference to a governmental service object that is related to the UtilityNetworkElement object.                                                                                     |
| Type        | gml:ReferenceType                                                                                                                                                                   |
| Description | This property is not used in the context of IMKL.                                                                                                                                   |
| Occurrence  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, UtilityLink |
| NilReason   | No                                                                                                                                                                                  |

#### 4.5.43 height (Appurtenance, Connection)

| Name        | height                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Definition  | The height of the Appurtenance or Connection expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                                                                                     |
| Type        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description | <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"> <li>urn:ogc:def:uom:OGC::mm</li> <li>urn:ogc:def:uom:OGC::cm</li> <li>urn:ogc:def:uom:OGC::m</li> </ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> <p>The <i>height</i> refers to the height of the object itself and does not indicate the vertical position of the object.</p> |
| Occurrence  | Appurtenance, Connection                                                                                                                                                                                                                                                                                                                                                                                                                               |
| NilReason   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

#### 4.5.44 height (CoverageDetail, DepthDetail, StandardCoverageDetail)

| Name      | height |
|-----------|--------|
| Namespace | imkl   |



|                    |                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | The distance to an object above a reference surface measured from that same reference surface expressed in a unit of measure (uom).                                                                                                                                                                                                                                            |
| <b>Type</b>        | <code>gml:MeasureType</code>                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b> | <p>This property is of type <code>gml:MeasureType</code> and can have any of the following units of measure:</p> <ul style="list-style-type: none"><li>• <code>urn:ogc:def:uom:OGC::mm</code></li><li>• <code>urn:ogc:def:uom:OGC::cm</code></li><li>• <code>urn:ogc:def:uom:OGC::m</code></li></ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| <b>Occurrence</b>  | CoverageDetail, DepthDetail, StandardCoverageDetail                                                                                                                                                                                                                                                                                                                            |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                             |

#### 4.5.45 houseNumber

|                   |                                                                                        |
|-------------------|----------------------------------------------------------------------------------------|
| <b>Name</b>       | <b>houseNumber</b>                                                                     |
| <b>Namespace</b>  | imkl                                                                                   |
| <b>Definition</b> | The house number on the street where the building or other physical object is located. |
| <b>Type</b>       | string                                                                                 |
| <b>Occurrence</b> | AddressType                                                                            |
| <b>NilReason</b>  | No                                                                                     |

#### 4.5.46 imkIId

|                    |                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>imkIId</b>                                                                                                                                                                            |
| <b>Namespace</b>   | imkl                                                                                                                                                                                     |
| <b>Definition</b>  | Unique identifier of an IMKL object.                                                                                                                                                     |
| <b>Type</b>        | <code>base:IdentifierPropertyType</code>                                                                                                                                                 |
| <b>Description</b> | The <i>imkIId</i> property is similar to the <i>inspireId</i> present in INSPIRE objects. This property is included as unique identifier for objects that do not originate from INSPIRE. |
| <b>Occurrence</b>  | CoverageDetail, DepthDetail, UtilityNetwork, StandardCoverageDetail, Document, ExtraPlan, Annotation, ProtectedArea, TopographicalElement                                                |
| <b>NilReason</b>   | No                                                                                                                                                                                       |

#### 4.5.47 inNetwork

| Name        | inNetwork                                                                                                                                                                                                                                                                                                 |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE net, imkl                                                                                                                                                                                                                                                                                         |
| Definition  | Reference to the <i>UtilityNetwork</i> object that contains the source object.                                                                                                                                                                                                                            |
| Type        | gml:ReferenceType                                                                                                                                                                                                                                                                                         |
| Description | The reverse property of the <i>inNetwork</i> property varies and depends on the object type.                                                                                                                                                                                                              |
| Occurrence  | ActivityComplex, CoverageDetail, DepthDetail, StandardCoverageDetail, Cabinet, Manhole, Tower, Pole, Document, ExtraPlan, Annotation, ProtectedArea, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, UtilityLink |
| NilReason   | No                                                                                                                                                                                                                                                                                                        |

#### 4.5.48 input

| Name        | input                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE act-core                                                                                                                      |
| Definition  | Measurable information about parameters related with the inputs related with the activity carried out by the <i>ActivityComplex</i> . |
| Type        | act-core:InputOutputAmountPropertyType                                                                                                |
| Description | This property is not used in the context of IMKL.                                                                                     |
| Occurrence  | Function                                                                                                                              |
| NilReason   | No                                                                                                                                    |

#### 4.5.49 inSharedContainer

| Name        | inSharedContainer                                                                                                                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                                                                                                                            |
| Definition  | Indicates whether the object is located in a container (Pipe or Duct) of another utility operator.                                                                                                                                                                              |
| Type        | boolean                                                                                                                                                                                                                                                                         |
| Description | This property can be used to indicate that an object is located in a container (Pipe or Duct) of another utility operator. A value of <i>true</i> indicates that the object is inside a container. A value of <i>false</i> indicates that the object is not inside a container. |



|                   |                                                                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | Since the container belongs to another utility operator and will therefore be provided through a different IMKL file, it is not possible to link to this container in another way. |
| <b>Occurrence</b> | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct                                                                      |
| <b>NilReason</b>  | No                                                                                                                                                                                 |

#### 4.5.50 inspireId

|                    |                                                                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>inspireId</b>                                                                                                                                                                                     |
| <b>Namespace</b>   | INSPIRE net                                                                                                                                                                                          |
| <b>Definition</b>  | External object identifier of the spatial object.                                                                                                                                                    |
| <b>Type</b>        | base:IdentifierPropertyType                                                                                                                                                                          |
| <b>Description</b> | Unique identifier for objects originating from INSPIRE.                                                                                                                                              |
| <b>Occurrence</b>  | ActivityComplex, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, UtilityLink, Cabinet, Manhole, Tower, Pole |
| <b>NilReason</b>   | No                                                                                                                                                                                                   |

#### 4.5.51 label

|                    |                                                                                                                                                                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>label</b>                                                                                                                                                                                                                                       |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                               |
| <b>Definition</b>  | Short description of the object.                                                                                                                                                                                                                   |
| <b>Type</b>        | gmd:PT_FreeText_PropertyType                                                                                                                                                                                                                       |
| <b>Description</b> | The label can be used to provide a description for an element (e.g. the code on an air beacon Appurtenance).                                                                                                                                       |
| <b>Occurrence</b>  | ActivityComplex, UtilityNetwork, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, Document, ExtraPlan, TopographicalElement |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                 |

#### 4.5.52 link

|                  |             |
|------------------|-------------|
| <b>Name</b>      | <b>link</b> |
| <b>Namespace</b> | INSPIRE net |

|                   |                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Definition</b> | Reference to the <i>UtilityLink</i> object that represents the geometry of the source object.                 |
| <b>Type</b>       | gml:ReferenceType                                                                                             |
| <b>Occurrence</b> | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct |
| <b>NilReason</b>  | No                                                                                                            |

#### 4.5.53 location

|                    |                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>location</b>                                                                                                        |
| <b>Namespace</b>   | imkl                                                                                                                   |
| <b>Definition</b>  | Represents the geometric properties of the object.                                                                     |
| <b>Type</b>        | Geometry                                                                                                               |
| <b>Description</b> | The type of geometry that can be represented depends on the object type.                                               |
| <b>Occurrence</b>  | DepthDetail, CoverageDetail, StandardCoverageDetail, ExtraPlan, Annotation, TopographicalElement, ReferenceSurfaceType |
| <b>NilReason</b>   | No                                                                                                                     |

#### 4.5.54 locationSurvey

|                    |                                                                                                                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>locationSurvey</b>                                                                                                                                                                                        |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                         |
| <b>Definition</b>  | Additional information on how the geometry was determined.                                                                                                                                                   |
| <b>Type</b>        | SurveyType                                                                                                                                                                                                   |
| <b>Description</b> | The <i>locationSurvey</i> property is associated with the <i>location</i> property of its object or - in case of <i>Cables</i> , <i>Pipes</i> or <i>Ducts</i> - with the geometry of its <i>link</i> object. |
| <b>Occurrence</b>  | CoverageDetail, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, ExtraPlan, TopographicalElement, ReferenceSurfaceType                         |
| <b>NilReason</b>   | No                                                                                                                                                                                                           |

#### 4.5.55 materialType

|                  |                     |
|------------------|---------------------|
| <b>Name</b>      | <b>materialType</b> |
| <b>Namespace</b> | imkl                |



|                    |                                                                                                               |
|--------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | Classification of the material of an object.                                                                  |
| <b>Type</b>        | gml:ReferenceType                                                                                             |
| <b>Description</b> | This property should reference a value in the <i>MaterialTypeValue</i> codelist.                              |
| <b>Occurrence</b>  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct |
| <b>NilReason</b>   | No                                                                                                            |

#### 4.5.56 method

|                    |                                                                                  |
|--------------------|----------------------------------------------------------------------------------|
| <b>Name</b>        | <b>method</b>                                                                    |
| <b>Namespace</b>   | imkl                                                                             |
| <b>Definition</b>  | Classification of the survey methods.                                            |
| <b>Type</b>        | gml:ReferenceType                                                                |
| <b>Description</b> | This property should reference a value in the <i>SurveyMethodValue</i> codelist. |
| <b>Occurrence</b>  | SurveyType                                                                       |
| <b>NilReason</b>   | Yes                                                                              |

#### 4.5.57 municipalityName

|                   |                                                                                      |
|-------------------|--------------------------------------------------------------------------------------|
| <b>Name</b>       | <b>municipalityName</b>                                                              |
| <b>Namespace</b>  | imkl                                                                                 |
| <b>Definition</b> | The name of the municipality where the building or other physical object is located. |
| <b>Type</b>       | gmd:PT_FreeText_PropertyType                                                         |
| <b>Occurrence</b> | AddressType                                                                          |
| <b>NilReason</b>  | No                                                                                   |

#### 4.5.58 name (ActivityComplex)

|                   |                                                |
|-------------------|------------------------------------------------|
| <b>Name</b>       | <b>name (ActivityComplex)</b>                  |
| <b>Namespace</b>  | INSPIRE act-core                               |
| <b>Definition</b> | The name of the <i>ActivityComplex</i> object. |
| <b>Type</b>       | string                                         |
| <b>Occurrence</b> | ActivityComplex                                |

|                  |    |
|------------------|----|
| <b>NilReason</b> | No |
|------------------|----|

#### 4.5.59 name (AgentType)

|                    |                                |
|--------------------|--------------------------------|
| <b>Name</b>        | <b>name (AgentType)</b>        |
| <b>Namespace</b>   | imkl                           |
| <b>Definition</b>  | The name of the <i>Agent</i> . |
| <b>Type</b>        | string                         |
| <b>Description</b> | The name of the <i>Agent</i> . |
| <b>Occurrence</b>  | AgentType                      |
| <b>NilReason</b>   | No                             |

#### 4.5.60 name (ProtectedArea)

|                   |                                              |
|-------------------|----------------------------------------------|
| <b>Name</b>       | <b>name (ProtectedArea)</b>                  |
| <b>Namespace</b>  | imkl                                         |
| <b>Definition</b> | The name of the <i>ProtectedArea</i> object. |
| <b>Type</b>       | string                                       |
| <b>Occurrence</b> | ProtectedArea                                |
| <b>NilReason</b>  | No                                           |

#### 4.5.61 networks

|                   |                                                                                        |
|-------------------|----------------------------------------------------------------------------------------|
| <b>Name</b>       | <b>networks</b>                                                                        |
| <b>Namespace</b>  | INSPIRE us-net-common                                                                  |
| <b>Definition</b> | A single sub-network that can be considered as part of a higher-order utility network. |
| <b>Type</b>       | gml:ReferenceType                                                                      |
| <b>Occurrence</b> | UtilityNetwork                                                                         |
| <b>NilReason</b>  | No                                                                                     |

#### 4.5.62 nodes

|                  |                       |
|------------------|-----------------------|
| <b>Name</b>      | <b>nodes</b>          |
| <b>Namespace</b> | INSPIRE us-net-common |



|                    |                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | Contained utility nodes.                                                                                                                             |
| <b>Type</b>        | <code>gml:ReferenceType</code>                                                                                                                       |
| <b>Description</b> | The <i>nodes</i> property is used to keep track of the <i>Appurtenance</i> and <i>Connection</i> objects that are associated with the source object. |
| <b>Occurrence</b>  | Cabinet, Manhole, Tower, Pole                                                                                                                        |
| <b>NilReason</b>   | No                                                                                                                                                   |

#### 4.5.63 nominalVoltage

|                    |                                                                                                                                                                                                                  |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>nominalVoltage</b>                                                                                                                                                                                            |
| <b>Namespace</b>   | INSPIRE us-net-el                                                                                                                                                                                                |
| <b>Definition</b>  | The nominal system voltage at the point of supply.                                                                                                                                                               |
| <b>Type</b>        | <code>gml:MeasureType</code>                                                                                                                                                                                     |
| <b>Description</b> | This property is of type <code>gml:MeasureType</code> and should have the following unit of measure: <code>urn:ogc:def:uom:OGC::V</code> .<br>The unit of measure must be provided via the <i>uom</i> attribute. |
| <b>Occurrence</b>  | ElectricityCable                                                                                                                                                                                                 |
| <b>NilReason</b>   | Yes                                                                                                                                                                                                              |

#### 4.5.64 oilGasChemicalsProductType

|                    |                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>oilGasChemicalsProductType</b>                                                                  |
| <b>Namespace</b>   | INSPIRE us-net-ogc                                                                                 |
| <b>Definition</b>  | Classification of the product transported by an <i>OilGasChemicalsPipe</i> .                       |
| <b>Type</b>        | <code>gml:ReferenceType</code>                                                                     |
| <b>Description</b> | This property should reference a value in the <i>OilGasChemicalsProductTypeIMKLValue</i> codelist. |
| <b>Occurrence</b>  | OilGasChemicalsPipe                                                                                |
| <b>NilReason</b>   | No                                                                                                 |

#### 4.5.65 on

|                   |                                                                        |
|-------------------|------------------------------------------------------------------------|
| <b>Name</b>       | <b>on</b>                                                              |
| <b>Namespace</b>  | imkl                                                                   |
| <b>Definition</b> | Reference to another object that is associated with the source object. |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b> | <p>The types of objects that can be referenced varies and depends on the type of the source object.</p> <p>For <i>ActivityComplex</i> objects, this property is the inverse of the <i>utilityFacilityReference</i> property of the associated objects.</p> <p>For <i>DepthDetail</i> objects, this property is the inverse of the <i>depthDetail</i> property of the associated objects.</p> <p>For <i>CoverageDetail</i> objects, this property is the inverse of the <i>coverageDetail</i> property of the associated objects.</p> |
| <b>Occurrence</b>  | ActivityComplex, CoverageDetail, DepthDetail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

#### 4.5.66 operatingVoltage

|                    |                                                                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>operatingVoltage</b>                                                                                                                                                                          |
| <b>Namespace</b>   | INSPIRE us-net-el                                                                                                                                                                                |
| <b>Definition</b>  | The utilization or operating voltage by the equipment using the electricity.                                                                                                                     |
| <b>Type</b>        | gml:MeasureType                                                                                                                                                                                  |
| <b>Description</b> | <p>This property is of type gml:MeasureType and should have the following unit of measure: urn:ogc:def:uom:OGC::V.</p> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| <b>Occurrence</b>  | ElectricityCable                                                                                                                                                                                 |
| <b>NilReason</b>   | Yes                                                                                                                                                                                              |

#### 4.5.67 orientation

|                    |                                                                                                                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>orientation</b>                                                                                                                                                                                 |
| <b>Namespace</b>   | imkl                                                                                                                                                                                               |
| <b>Definition</b>  | The orientation of the (symbol of the) object expressed in a unit of measure (uom).                                                                                                                |
| <b>Type</b>        | gml:MeasureType                                                                                                                                                                                    |
| <b>Description</b> | <p>This property is of type gml:MeasureType and should have the following unit of measure: urn:ogc:def:uom:OGC::deg.</p> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |



|                   |                                                                                                                                                                               |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | The orientation represents the angle (in degrees) by which the symbol should be rotated. The rotation occurs counterclockwise. An orientation of 0 degrees means no rotation. |
| <b>Occurrence</b> | Appurtenance, Connection, Cabinet, Manhole, Tower, Pole                                                                                                                       |
| <b>NilReason</b>  | No                                                                                                                                                                            |

#### 4.5.68 output

|                    |                                                                                                                                        |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>output</b>                                                                                                                          |
| <b>Namespace</b>   | INSPIRE act-core                                                                                                                       |
| <b>Definition</b>  | Measurable information about parameters related with the outputs related with the activity carried out by the <i>ActivityComplex</i> . |
| <b>Type</b>        | act-core:InputOutputAmountPropertyType                                                                                                 |
| <b>Description</b> | This property is not used in the context of IMKL.                                                                                      |
| <b>Occurrence</b>  | Function                                                                                                                               |
| <b>NilReason</b>   | No                                                                                                                                     |

#### 4.5.69 phone

|                    |                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>phone</b>                                                                                                                                            |
| <b>Namespace</b>   | imkl                                                                                                                                                    |
| <b>Definition</b>  | The phone number of the <i>Agent</i> .                                                                                                                  |
| <b>Type</b>        | string                                                                                                                                                  |
| <b>Description</b> | The phone number of the <i>Agent</i> . The value should be a valid phone number. The phone number must include the country code (e.g. +32 for Belgium). |
| <b>Occurrence</b>  | AgentType                                                                                                                                               |
| <b>NilReason</b>   | No                                                                                                                                                      |

#### 4.5.70 pipeDiameter

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| <b>Name</b>       | <b>pipeDiameter</b>                                          |
| <b>Namespace</b>  | INSPIRE us-net-common                                        |
| <b>Definition</b> | The diameter of a pipe expressed in a unit of measure (uom). |
| <b>Type</b>       | gml:MeasureType                                              |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | <p>For the use case of IMKL, the <i>pipeDiameter</i> should represent the outer diameter.</p> <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"> <li>urn:ogc:def:uom:OGC::mm</li> <li>urn:ogc:def:uom:OGC::cm</li> <li>urn:ogc:def:uom:OGC::m</li> </ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| <b>Occurrence</b>  | Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe                                                                                                                                                                                                                                                                                                                                                           |
| <b>NilReason</b>   | Yes                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### 4.5.71 pipeDiameterAccuracy

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>pipeDiameterAccuracy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Definition</b>  | The accuracy of the <i>pipeDiameter</i> expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Type</b>        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b> | <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"> <li>urn:ogc:def:uom:OGC::mm</li> <li>urn:ogc:def:uom:OGC::cm</li> <li>urn:ogc:def:uom:OGC::m</li> </ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> <p>For example: A <i>pipeDiameter</i> of 70cm and a <i>pipeDiameterAccuracy</i> of 10cm indicates that the diameter is somewhere between 60 and 80cm.</p> |
| <b>Occurrence</b>  | Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

#### 4.5.72 pipes

|                   |                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------|
| <b>Name</b>       | <b>pipes</b>                                                                                             |
| <b>Namespace</b>  | INSPIRE us-net-common                                                                                    |
| <b>Definition</b> | Reference to a <i>Pipe</i> object that is contained within the source <i>Pipe</i> or <i>Duct</i> object. |
| <b>Type</b>       | gml:ReferenceType                                                                                        |



|                    |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | <p>The <i>pipes</i> property is used to keep track of the <i>Pipe</i> objects that are contained within the source <i>Pipe</i> or <i>Duct</i> object.</p> <p>This property can only be used for <i>Pipe</i> and <i>Duct</i> objects. It is not allowed for <i>OilGasChemicalsPipe</i>, <i>SewerPipe</i>, <i>WaterPipe</i> and <i>ThermalPipe</i> objects.</p> <p>The data model does not include a reverse association.</p> |
| <b>Occurrence</b>  | Pipe, Duct                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                                                          |

#### 4.5.73 poleHeight

|                    |                                                                                                                                                                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>poleHeight</b>                                                                                                                                                                                                                                                                                                          |
| <b>Namespace</b>   | INSPIRE us-net-common                                                                                                                                                                                                                                                                                                      |
| <b>Definition</b>  | The height of the pole.                                                                                                                                                                                                                                                                                                    |
| <b>Type</b>        | gml:LengthType                                                                                                                                                                                                                                                                                                             |
| <b>Description</b> | <p>This property is of type gml:MeasureType and can have any of the following units of measure:</p> <ul style="list-style-type: none"><li>• urn:ogc:def:uom:OGC::mm</li><li>• urn:ogc:def:uom:OGC::cm</li><li>• urn:ogc:def:uom:OGC::m</li></ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| <b>Occurrence</b>  | Pole                                                                                                                                                                                                                                                                                                                       |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                         |

#### 4.5.74 postalCode

|                   |                                                                                         |
|-------------------|-----------------------------------------------------------------------------------------|
| <b>Name</b>       | <b>postalCode</b>                                                                       |
| <b>Namespace</b>  | imkl                                                                                    |
| <b>Definition</b> | The postal code of the location where the building or other physical object is located. |
| <b>Type</b>       | string                                                                                  |
| <b>Occurrence</b> | AddressType                                                                             |
| <b>NilReason</b>  | No                                                                                      |

#### 4.5.75 pressure

|             |                 |
|-------------|-----------------|
| <b>Name</b> | <b>pressure</b> |
|-------------|-----------------|

|                    |                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Namespace</b>   | INSPIRE us-net-common                                                                                                                                                                                                                                                                                                                                                      |
| <b>Definition</b>  | The maximum allowable operating pressure at which a product is conveyed through a pipe.                                                                                                                                                                                                                                                                                    |
| <b>Type</b>        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                            |
| <b>Description</b> | <p>This property cannot be present in IMKL for Pipe objects. Is only allowed for subtypes of Pipe (i.e. OilGasChemicalsPipe, SewerPipe, WaterPipe and ThermalPipe).</p> <p>This property is of type gml:MeasureType and should have the following unit of measure: urn:ogc:def:uom:OGC::bar.</p> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| <b>Occurrence</b>  | Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe                                                                                                                                                                                                                                                                                                               |
| <b>NilReason</b>   | Yes                                                                                                                                                                                                                                                                                                                                                                        |

#### 4.5.76 protectedArea

|                    |                                                                                                                                                                                                                                                          |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>protectedArea</b>                                                                                                                                                                                                                                     |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                     |
| <b>Definition</b>  | Reference to a <i>ProtectedArea</i> object that is associated with the source object.                                                                                                                                                                    |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                                                        |
| <b>Description</b> | <p>The <i>protectedArea</i> property is used to keep track of the <i>ProtectedArea</i> objects that are associated with the source object.</p> <p>This property is the inverse of the <i>inNetwork</i> property of the <i>ProtectedArea</i> objects.</p> |
| <b>Occurrence</b>  | UtilityNetwork                                                                                                                                                                                                                                           |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                       |

#### 4.5.77 protectedAreaType

|                    |                                                                                       |
|--------------------|---------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>protectedAreaType</b>                                                              |
| <b>Namespace</b>   | imkl                                                                                  |
| <b>Definition</b>  | Classification of the type of <i>ProtectedAreas</i> .                                 |
| <b>Type</b>        | gml:ReferenceType                                                                     |
| <b>Description</b> | This property should reference a value in the <i>ProtectedAreaTypeValue</i> codelist. |
| <b>Occurrence</b>  | ProtectedArea                                                                         |



|           |    |
|-----------|----|
| NilReason | No |
|-----------|----|

#### 4.5.78 recordedBy

|            |                                            |
|------------|--------------------------------------------|
| Name       | recordedBy                                 |
| Namespace  | imkl                                       |
| Definition | The <i>Agent</i> who conducted the survey. |
| Type       | AgentType                                  |
| Occurrence | SurveyType                                 |
| NilReason  | No                                         |

#### 4.5.79 referenceSurface

|             |                                                                             |
|-------------|-----------------------------------------------------------------------------|
| Name        | referenceSurface                                                            |
| Namespace   | imkl                                                                        |
| Definition  | The reference surface used to determine the vertical position of an object. |
| Type        | ReferenceSurfaceType                                                        |
| Description | The type of the reference surface should always be <i>surfaceLevel</i> .    |
| Occurrence  | CoverageDetail, DepthDetail, StandardCoverageDetail                         |
| NilReason   | No                                                                          |

#### 4.5.80 referenceSurfaceType

|             |                                                                                          |
|-------------|------------------------------------------------------------------------------------------|
| Name        | referenceSurfaceType                                                                     |
| Namespace   | imkl                                                                                     |
| Definition  | Classification of the type of a <i>ReferenceSurface</i> .                                |
| Type        | gml:ReferenceType                                                                        |
| Description | This property should reference a value in the <i>ReferenceSurfaceTypeValue</i> codelist. |
| Occurrence  | ReferenceSurfaceType                                                                     |
| NilReason   | No                                                                                       |

#### 4.5.81 refersTo

|      |          |
|------|----------|
| Name | refersTo |
|------|----------|

|                    |                                                                                                                                                                                                                                                                  |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                             |
| <b>Definition</b>  | Reference to the object that is associated with the source <i>ExtraPlan</i> object.                                                                                                                                                                              |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                                                                |
| <b>Description</b> | <p>The <i>refersTo</i> property is used to keep track of the <i>UtilityNetworkElement</i> objects the <i>ExtraPlan</i> is associated with.</p> <p>This property is the inverse of the <i>documentation</i> property of <i>UtilityNetworkElement</i> objects.</p> |
| <b>Occurrence</b>  | ExtraPlan                                                                                                                                                                                                                                                        |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                               |

#### 4.5.82 rotationAngle

|                    |                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>rotationAngle</b>                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Definition</b>  | The rotation angle for the text label of the object expressed in a unit of measure (uom).                                                                                                                                                                                                                                                                                                      |
| <b>Type</b>        | gml:MeasureType                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b> | <p>This property is of type gml:MeasureType and should have the following unit of measure: urn:ogc:def:uom:OGC::deg.</p> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> <p>The rotationAngle represents the angle (in degrees) by which the text label should be rotated. The rotation occurs counterclockwise. A rotationAngle of 0 degrees means no rotation.</p> |
| <b>Occurrence</b>  | Annotation                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                             |

#### 4.5.83 sewerWaterType

|                    |                                                                                   |
|--------------------|-----------------------------------------------------------------------------------|
| <b>Name</b>        | <b>sewerWaterType</b>                                                             |
| <b>Namespace</b>   | INSPIRE us-net-sw                                                                 |
| <b>Definition</b>  | Classification of the product transported by a <i>SewerPipe</i> .                 |
| <b>Type</b>        | gml:ReferenceType                                                                 |
| <b>Description</b> | This property should reference a value in the <i>SewerWaterTypeValue</i> odelist. |
| <b>Occurrence</b>  | SewerPipe                                                                         |
| <b>NilReason</b>   | No                                                                                |



#### 4.5.84 specificAppurtenanceType

| Name        | specificAppurtenanceType                                            |
|-------------|---------------------------------------------------------------------|
| Namespace   | INSPIRE us-net-common                                               |
| Definition  | Type of appurtenance according to a domain-specific classification. |
| Type        | gml:ReferenceType                                                   |
| Description | This property cannot be present in IMKL.                            |
| Occurrence  | Appurtenance, Connection                                            |
| NilReason   | No                                                                  |

#### 4.5.85 spokeEnd

| Name        | spokeEnd                                                                                                                                                                                                                                                                                                                                                |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE net                                                                                                                                                                                                                                                                                                                                             |
| Definition  | The links that enter the node.                                                                                                                                                                                                                                                                                                                          |
| Type        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                       |
| Description | <p>The <i>spokeEnd</i> property is used to keep track of the <i>UtilityLink</i> objects the <i>Appurtenance</i> or <i>Connection</i> is associated with.</p> <p>This property is the inverse of the <i>endNode</i> property of <i>UtilityLink</i> objects.</p> <p>This property is not used in the context of IMKL and will be ignored if provided.</p> |
| Occurrence  | Appurtenance, Connection                                                                                                                                                                                                                                                                                                                                |
| NilReason   | No                                                                                                                                                                                                                                                                                                                                                      |

#### 4.5.86 spokeStart

| Name        | spokeStart                                                                                                                                                                                                                                                                                                                                                  |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE net                                                                                                                                                                                                                                                                                                                                                 |
| Definition  | The links that leave the node.                                                                                                                                                                                                                                                                                                                              |
| Type        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                           |
| Description | <p>The <i>spokeStart</i> property is used to keep track of the <i>UtilityLink</i> objects the <i>Appurtenance</i> or <i>Connection</i> is associated with.</p> <p>This property is the inverse of the <i>startNode</i> property of <i>UtilityLink</i> objects.</p> <p>This property is not used in the context of IMKL and will be ignored if provided.</p> |
| Occurrence  | Appurtenance, Connection                                                                                                                                                                                                                                                                                                                                    |

|           |    |
|-----------|----|
| NilReason | No |
|-----------|----|

#### 4.5.87 standardCoverageDetail

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name        | standardCoverageDetail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Namespace   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Definition  | Reference to a <i>StandardCoverageDetail</i> object that is associated with the source object.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Type        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Description | <p>The <i>standardCoverageDetail</i> property is used to reference the <i>StandardCoverageDetail</i> objects that are associated with the source object.</p> <p>This property is the inverse of the <i>inNetwork</i> property of <i>StandardCoverageDetail</i> objects.</p> <p>A <i>UtilityNetwork</i> can have:</p> <ul style="list-style-type: none"> <li>at most 1 standard coverage per subtheme.</li> <li>at most 1 standard coverage without subtheme. If this is present, this will be used as the coverage for an <i>UtilityNetworkElement</i> unless it is overruled by either a <i>coverageDetail</i> on the element itself or by a <i>standardCoverageDetail</i> with the same subtheme.</li> </ul> |
| Occurrence  | UtilityNetwork                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| NilReason   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

#### 4.5.88 startNode

|             |                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------|
| Name        | startNode                                                                                                    |
| Namespace   | INSPIRE net                                                                                                  |
| Definition  | The optional start node for this link.                                                                       |
| Type        | gml:ReferenceType                                                                                            |
| Description | The <i>startNode</i> property is not used in the context of IMKL. This property will be ignored if provided. |
| Occurrence  | UtilityLink                                                                                                  |
| NilReason   | No                                                                                                           |

#### 4.5.89 streetName

|           |            |
|-----------|------------|
| Name      | streetName |
| Namespace | imkl       |



|                   |                                                                                |
|-------------------|--------------------------------------------------------------------------------|
| <b>Definition</b> | The name of the street where the building or other physical object is located. |
| <b>Type</b>       | gmd:PT_FreeText_PropertyType                                                   |
| <b>Occurrence</b> | AddressType                                                                    |
| <b>NilReason</b>  | No                                                                             |

#### 4.5.90 subtheme

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>subtheme</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Namespace</b>   | imkl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Definition</b>  | Classification of the subtheme of an object.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b> | <p>This property should reference a value in one of the following codelists:</p> <ul style="list-style-type: none"><li>• ElectricitySubthemeValue</li><li>• OilGasChemicalsSubthemeValue</li><li>• SewerSubthemeValue</li><li>• TelecommunicationsSubthemeValue</li><li>• ThermalSubthemeValue</li><li>• WaterSubthemeValue</li></ul> <p>There are different codelists depending on the type of utility network. The codelist that is used should correspond to the type of the <i>UtilityNetwork</i> the object belongs to.</p> <p>This property is allowed for <i>OilGasChemicalsPipe</i>, <i>SewerPipe</i>, <i>WaterPipe</i> and <i>ThermalPipe</i> objects, but is not allowed for <i>Pipe</i> objects.</p> |
| <b>Occurrence</b>  | StandardCoverageDetail, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Appurtenance, Connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

#### 4.5.91 technicalSpecification

|                    |                                                                           |
|--------------------|---------------------------------------------------------------------------|
| <b>Name</b>        | <b>technicalSpecification</b>                                             |
| <b>Namespace</b>   | imkl                                                                      |
| <b>Definition</b>  | Technical specifications of a <i>Cable</i> , <i>Pipe</i> or <i>Duct</i> . |
| <b>Type</b>        | gmd:PT_FreeText_PropertyType                                              |
| <b>Description</b> | Further specification of the <i>Cable</i> , <i>Pipe</i> or <i>Duct</i> .  |

|                   |                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------|
|                   | E.g.: “4-core cable.”                                                                                         |
| <b>Occurrence</b> | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct |
| <b>NilReason</b>  | No                                                                                                            |

#### 4.5.92 telecommunicationsCableMaterialType

|                    |                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>telecommunicationsCableMaterialType</b>                                                                  |
| <b>Namespace</b>   | INSPIRE us-net-tc                                                                                           |
| <b>Definition</b>  | Classification of the product transported by a <i>TelecommunicationsCable</i> .                             |
| <b>Type</b>        | gml:ReferenceType                                                                                           |
| <b>Description</b> | This property should reference a value in the <i>TelecommunicationsCableMaterialTypeIMKLValue</i> codelist. |
| <b>Occurrence</b>  | TelecommunicationsCable                                                                                     |
| <b>NilReason</b>   | No                                                                                                          |

#### 4.5.93 temperature

|                    |                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>temperature</b>                                                                                                                                                                       |
| <b>Namespace</b>   | imkl                                                                                                                                                                                     |
| <b>Definition</b>  | Temperature of the water in a <i>thermalPipe</i> expressed in a unit of measure (uom).                                                                                                   |
| <b>Type</b>        | gml:MeasureType                                                                                                                                                                          |
| <b>Description</b> | This property is of type gml:MeasureType and should have the following unit of measure: urn:ogc:def:uom:OGC::degC.<br>The unit of measure must be provided via the <i>uom</i> attribute. |
| <b>Occurrence</b>  | ThermalPipe                                                                                                                                                                              |
| <b>NilReason</b>   | No                                                                                                                                                                                       |

#### 4.5.94 text

|                   |                                  |
|-------------------|----------------------------------|
| <b>Name</b>       | <b>text</b>                      |
| <b>Namespace</b>  | imkl                             |
| <b>Definition</b> | Short description of the object. |
| <b>Type</b>       | gmd:PT_FreeText_PropertyType     |



|                    |                                                                                                                                                                                                                                                                   |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | The <i>text</i> property can be used to provide the text label that must be displayed for the <i>Annotation</i> .<br><br>The <i>text</i> property must be present for <i>Annotations</i> with annotationType <i>dimensioningLabel</i> or <i>annotationLabel</i> . |
| <b>Occurrence</b>  | Annotation                                                                                                                                                                                                                                                        |
| <b>NilReason</b>   | No                                                                                                                                                                                                                                                                |

#### 4.5.95 thematicId

|                   |                                       |
|-------------------|---------------------------------------|
| <b>Name</b>       | <b>thematicId</b>                     |
| <b>Namespace</b>  | INSPIRE act-core                      |
| <b>Definition</b> | Thematic Activity Complex identifier. |
| <b>Type</b>       | base2:ThematicIdentifierPropertyType  |
| <b>Occurrence</b> | ActivityComplex                       |
| <b>NilReason</b>  | No                                    |

#### 4.5.96 thermalProductType

|                    |                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>thermalProductType</b>                                                                  |
| <b>Namespace</b>   | INSPIRE us-net-th                                                                          |
| <b>Definition</b>  | Classification of the product transported by a <i>ThermalPipe</i> .                        |
| <b>Type</b>        | gml:ReferenceType                                                                          |
| <b>Description</b> | This property should reference a value in the <i>ThermalProductTypeIMKLValue</i> codelist. |
| <b>Occurrence</b>  | ThermalPipe                                                                                |
| <b>NilReason</b>   | No                                                                                         |

#### 4.5.97 towerHeight

|                    |                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>towerHeight</b>                                                                           |
| <b>Namespace</b>   | INSPIRE us-net-common                                                                        |
| <b>Definition</b>  | The height of the <i>Tower</i> .                                                             |
| <b>Type</b>        | gml:LengthType                                                                               |
| <b>Description</b> | This property is of type gml:MeasureType and can have any of the following units of measure: |

|                   |                                                                                                                                                                                                                      |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <ul style="list-style-type: none"> <li>urn:ogc:def:uom:OGC::mm</li> <li>urn:ogc:def:uom:OGC::cm</li> <li>urn:ogc:def:uom:OGC::m</li> </ul> <p>The unit of measure must be provided via the <i>uom</i> attribute.</p> |
| <b>Occurrence</b> | Tower                                                                                                                                                                                                                |
| <b>NilReason</b>  | No                                                                                                                                                                                                                   |

#### 4.5.98 utilityDeliveryType

|                    |                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>utilityDeliveryType</b>                                                                                                     |
| <b>Namespace</b>   | INSPIRE us-net-common                                                                                                          |
| <b>Definition</b>  | Kind of utility delivery network e.g. transport, distribution, collection ...                                                  |
| <b>Type</b>        | gml:ReferenceType                                                                                                              |
| <b>Description</b> | This property should reference a value in the <i>UtilityDeliveryTypeValue</i> or <i>UtilityDeliveryTypeIMKLValue</i> codelist. |
| <b>Occurrence</b>  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct                  |
| <b>NilReason</b>   | No                                                                                                                             |

#### 4.5.99 utilityFacilityReference

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>utilityFacilityReference</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Namespace</b>   | INSPIRE us-net-common                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Definition</b>  | Reference to a facility <i>ActivityComplex</i> that is linked (related) to the source object.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b> | <p>The <i>utilityFacilityReference</i> property is used to keep track of the <i>ActivityComplex</i> objects that are associated with the source object.</p> <p>For a <i>UtilityNetwork</i> object, this property is the inverse of the <i>inNetwork</i> property of the associated objects. For other objects, this property is the inverse of the <i>on</i> property of the associated objects.</p> <p>If an <i>ActivityComplex</i> is present it needs to be linked to from the <i>UtilityNetwork</i>. If the <i>ActivityComplex</i> is applicable to a <i>UtilityNetworkElement</i> it needs to be linked from these elements as well.</p> |
| <b>Occurrence</b>  | UtilityNetwork, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, UtilityLink                                                                                                                                                                                                                                                                                                                                                                                                                                           |



|                  |    |
|------------------|----|
| <b>NilReason</b> | No |
|------------------|----|

#### 4.5.100 utilityNetworkType

|                    |                                                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>utilityNetworkType</b>                                                                                                    |
| <b>Namespace</b>   | INSPIRE us-net-common                                                                                                        |
| <b>Definition</b>  | Classification of the type of a <i>UtilityNetwork</i> .                                                                      |
| <b>Type</b>        | gml:ReferenceType                                                                                                            |
| <b>Description</b> | This property should reference a value in the <i>UtilityNetworkTypeValue</i> or <i>UtilityNetworkTypeIMKLValue</i> codelist. |
| <b>Occurrence</b>  | UtilityNetwork                                                                                                               |
| <b>NilReason</b>   | No                                                                                                                           |

#### 4.5.101 validFrom

|                   |                                                                                                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>       | <b>validFrom</b>                                                                                                                                                                                     |
| <b>Namespace</b>  | INSPIRE us-net-common, INSPIRE act-core                                                                                                                                                              |
| <b>Definition</b> | The time when the object started to exist in the real world.                                                                                                                                         |
| <b>Type</b>       | dateTime                                                                                                                                                                                             |
| <b>Occurrence</b> | ActivityComplex, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, UtilityLink |
| <b>NilReason</b>  | Yes                                                                                                                                                                                                  |

#### 4.5.102 validTo

|                   |                                                                                                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>       | <b>validTo</b>                                                                                                                                                                                       |
| <b>Namespace</b>  | INSPIRE us-net-common, INSPIRE act-core                                                                                                                                                              |
| <b>Definition</b> | The time from which the object no longer exists in the real world.                                                                                                                                   |
| <b>Type</b>       | dateTime                                                                                                                                                                                             |
| <b>Occurrence</b> | ActivityComplex, ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, UtilityLink |
| <b>NilReason</b>  | No                                                                                                                                                                                                   |

#### 4.5.103 verticalPosition (imkl)

| Name        | verticalPosition (imkl)                                                                                                                                                                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                                                                                                                                                                                               |
| Definition  | The TAW/DNG level of an element or surface.                                                                                                                                                                                                                                                                                                        |
| Type        | gml:DirectPositionType                                                                                                                                                                                                                                                                                                                             |
| Description | The verticalPosition represents the TAW/DNG level of an element or surface.<br>The <i>srsName</i> attribute must be present and must be set to <a href="https://spatialreference.org/ref/epsg/5710/">https://spatialreference.org/ref/epsg/5710/</a> (Ostend height). The <i>srsDimension</i> attribute must also be present and must be set to 1. |
| Occurrence  | CoverageDetail, DepthDetail, ReferenceSurfaceType                                                                                                                                                                                                                                                                                                  |
| NilReason   | No                                                                                                                                                                                                                                                                                                                                                 |

#### 4.5.104 verticalPosition (us-net-common)

| Name        | verticalPosition (us-net-common)                                                                                                                                                    |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | INSPIRE us-net-common                                                                                                                                                               |
| Definition  | The vertical position of the utility object relative to ground.                                                                                                                     |
| Type        | gml:ReferenceType                                                                                                                                                                   |
| Description | This property should have a value in the <i>VerticalPositionValue</i> codelist.                                                                                                     |
| Occurrence  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole, UtilityLink |
| NilReason   | Yes                                                                                                                                                                                 |

#### 4.5.105 verticalPositionDetail

| Name        | verticalPositionDetail                                                                                                                                                                                                                                                            |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Namespace   | imkl                                                                                                                                                                                                                                                                              |
| Definition  | Reference to a <i>CoverageDetail</i> or <i>DepthDetail</i> object that is associated with the source object.                                                                                                                                                                      |
| Type        | gml:ReferenceType                                                                                                                                                                                                                                                                 |
| Description | The <i>verticalPositionDetail</i> property is used to keep track of the <i>CoverageDetail</i> and <i>DepthDetail</i> objects that are associated with any element within the <i>UtilityNetwork</i> . All <i>CoverageDetail</i> and <i>DepthDetail</i> objects that are related to |



|                   |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>any element within the <i>UtilityNetwork</i> must be referenced from the <i>UtilityNetwork</i> object itself.</p> <p>The object or objects representing the standard coverage for the network should not be listed here. These should be referenced using the <i>standardCoverageDetail</i> association.</p> <p>This property is the inverse of the <i>inNetwork</i> property of the associated objects.</p> |
| <b>Occurrence</b> | UtilityNetwork                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>NilReason</b>  | No                                                                                                                                                                                                                                                                                                                                                                                                              |

#### 4.5.106 verticalPositionSurvey

|                    |                                                                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>verticalPositionSurvey</b>                                                                                                                     |
| <b>Namespace</b>   | imkl                                                                                                                                              |
| <b>Definition</b>  | Additional information on how the vertical position was determined.                                                                               |
| <b>Type</b>        | SurveyType                                                                                                                                        |
| <b>Description</b> | The <i>verticalPositionSurvey</i> property is associated with the <i>verticalPosition</i> , <i>depth</i> or <i>height</i> property of the object. |
| <b>Occurrence</b>  | ReferenceSurfaceType, DepthDetail, CoverageDetail, StandardCoverageDetail                                                                         |
| <b>NilReason</b>   | No                                                                                                                                                |

#### 4.5.107 visibility

|                    |                                                                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>visibility</b>                                                                                                                                                      |
| <b>Namespace</b>   | imkl                                                                                                                                                                   |
| <b>Definition</b>  | Classification of the visibility of an object.                                                                                                                         |
| <b>Type</b>        | gml:ReferenceType                                                                                                                                                      |
| <b>Description</b> | This property should reference a value in the <i>VisibilityTypeValue</i> codelist.                                                                                     |
| <b>Occurrence</b>  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct, Appurtenance, Connection, Cabinet, Manhole, Tower, Pole |
| <b>NilReason</b>   | No                                                                                                                                                                     |

#### 4.5.108 warningType

|                  |                       |
|------------------|-----------------------|
| <b>Name</b>      | <b>warningType</b>    |
| <b>Namespace</b> | INSPIRE us-net-common |

|                    |                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | Kind of overground visible warning mechanism used to indicate an underground utility network element.           |
| <b>Type</b>        | gml:ReferenceType                                                                                               |
| <b>Description</b> | This property should reference a value in the <i>WarningTypeValue</i> or <i>WarningTypeIMKLValue</i> codelists. |
| <b>Occurrence</b>  | ElectricityCable, TelecommunicationsCable, Pipe, OilGasChemicalsPipe, SewerPipe, WaterPipe, ThermalPipe, Duct   |
| <b>NilReason</b>   | Yes                                                                                                             |

#### 4.5.109 waterType

|                    |                                                                               |
|--------------------|-------------------------------------------------------------------------------|
| <b>Name</b>        | <b>waterType</b>                                                              |
| <b>Namespace</b>   | INSPIRE us-net-wa                                                             |
| <b>Definition</b>  | Classification of the type of water transported by a <i>WaterPipe</i> .       |
| <b>Type</b>        | gml:ReferenceType                                                             |
| <b>Description</b> | This property should reference a value in the <i>WaterTypeValue</i> codelist. |
| <b>Occurrence</b>  | WaterPipe                                                                     |
| <b>NilReason</b>   | No                                                                            |

## 5 Codelists

### 5.1 Introduction

This chapter describes all codelists used in the context of IMKL 3. A distinction is made between:

- IMKL 3 codelists: These codelists have been specifically developed for IMKL.
  - The values in these codelist scan be adjusted based on proposals from the technical working group responsible for IMKL.
- INSPIRE codelists: These codelists are specific tot he INSPIRE domain.
  - The values in these codelist scan only be modified by the INSPIRE maintenance committee.
  - This document includes only the values used in the context of IMKL. The complete INSPIRE codelist scan be found on the INSPIRE website. The link to the INSPIRE website for each codelist is listed in section 5.4.

### 5.2 Codelist URIs

The codelists – and their values – described here each have a URI. The URI for the values of a codelist is structured as follows: [codelist URI]/[codelist value].

Some examples:

- IMKL 3 codelist *ConstructionTechniqueValue*:
  - The URI of the codelist is: <https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue>
  - The URI of the *openTrench* value is: <https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/openTrench>
- INSPIRE codelist *UtilityNetworkTypeValue*:
  - The URI of the codelist is: <http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue>
  - The URI of the *electricity* value is: <http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/electricity>

Chapter 8 contains an overview of the URIs for all codelist values.

### 5.3 IMKL codelists

#### 5.3.1 ActivityValue

| Name | ActivityValue |
|------|---------------|
|------|---------------|

|                    |                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | Classification of economic activity.                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b> | The classification of activities is based on the NACEBEL 2008 codes. The NACEBEL codes are available for download via the following URL: <a href="https://economie.fgov.be/sites/default/files/Files/Entreprises/KBO/Nacebel-2008-FR-NL-DE.xls">https://economie.fgov.be/sites/default/files/Files/Entreprises/KBO/Nacebel-2008-FR-NL-DE.xls</a><br>See section 4.5.2 for more information. |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-ActivityValue">https://vocab.belgif.be/auth/IMKL-ActivityValue</a>                                                                                                                                                                                                                                                                               |
| <b>Usage</b>       | activity                                                                                                                                                                                                                                                                                                                                                                                    |

### 5.3.2 AnnotationTypeValue

| Name               | AnnotationTypeValue                                                                                                       |                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>Definition</b>  | Classification of annotation types.                                                                                       |                                                         |
| <b>Description</b> | Codelist containing values for the <i>annotationType</i> property.                                                        |                                                         |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue">https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue</a> |                                                         |
| <b>Usage</b>       | annotationType                                                                                                            |                                                         |
| <b>Contents</b>    | <b>Value</b>                                                                                                              | <b>annotationLabel</b>                                  |
|                    | Description                                                                                                               | To be used to visualise a label in an annotation.       |
|                    | <b>Value</b>                                                                                                              | <b>annotationLine</b>                                   |
|                    | Description                                                                                                               | To be used to visualise a line in an annotation.        |
|                    | <b>Value</b>                                                                                                              | <b>arrow</b>                                            |
|                    | Description                                                                                                               | To be used to visualise an arrow in an annotation.      |
|                    | <b>Value</b>                                                                                                              | <b>dimensioningGuideline</b>                            |
|                    | Description                                                                                                               | To be used to visualise an auxiliary dimensioning line. |
|                    | <b>Value</b>                                                                                                              | <b>dimensioningLabel</b>                                |
|                    | Description                                                                                                               | To be used to visualise a dimensioning label.           |
|                    | <b>Value</b>                                                                                                              | <b>dimensioningLine</b>                                 |
|                    | Description                                                                                                               | To be used to visualise a dimensioning line.            |



### 5.3.3 ConstructionTechniqueValue

| Name        | ConstructionTechniqueValue                                                                                                              |                            |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Definition  | Classification of construction techniques.                                                                                              |                            |
| Description | Codelist containing values for the <i>constructionTechnique</i> property.                                                               |                            |
| URI         | <a href="https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue">https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue</a> |                            |
| Usage       | constructionTechnique                                                                                                                   |                            |
| Contents    | Value                                                                                                                                   | <b>culvert</b>             |
|             | Description                                                                                                                             | Culvert.                   |
|             | Value                                                                                                                                   | <b>directionalDrilling</b> |
|             | Description                                                                                                                             | Directional drilling.      |
|             | Value                                                                                                                                   | <b>openTrench</b>          |
|             | Description                                                                                                                             | Open trench.               |
|             | Value                                                                                                                                   | <b>other</b>               |
|             | Description                                                                                                                             | Other.                     |

### 5.3.4 ContainerTypeValue

| Name        | ContainerTypeValue                                                                                                      |                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Definition  | Classification of container types.                                                                                      |                                                                                   |
| Description | Codelist containing values for the <i>containerType</i> property.                                                       |                                                                                   |
| URI         | <a href="https://vocab.belgif.be/auth/IMKL-ContainerTypeValue">https://vocab.belgif.be/auth/IMKL-ContainerTypeValue</a> |                                                                                   |
| Usage       | containerType                                                                                                           |                                                                                   |
| Contents    | Value                                                                                                                   | <b>cableAndPipeGutter</b>                                                         |
|             | Description                                                                                                             | Accessible gutter embedded in engineering structures to protect cables and pipes. |
|             | Value                                                                                                                   | <b>jacketPipe</b>                                                                 |
|             | Description                                                                                                             | Underground pipe serving as a sheath to protect cables and pipes.                 |

### 5.3.5 DocumentMediaTypeValue

| Name | DocumentMediaTypeValue |
|------|------------------------|
|------|------------------------|

|                    |                                                                                                                                 |                |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>Definition</b>  | Classification of document media types.                                                                                         |                |
| <b>Description</b> | Codelist containing values for the <i>documentMediaType</i> property.                                                           |                |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue">https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue</a> |                |
| <b>Usage</b>       | documentMediaType                                                                                                               |                |
| <b>Contents</b>    | <b>Value</b>                                                                                                                    | <b>JPEG</b>    |
|                    | Description                                                                                                                     | JPEG document. |
|                    | <b>Value</b>                                                                                                                    | <b>PDF</b>     |
|                    | Description                                                                                                                     | PDF document.  |
|                    | <b>Value</b>                                                                                                                    | <b>PNG</b>     |
|                    | Description                                                                                                                     | PNG document.  |
|                    | <b>Value</b>                                                                                                                    | <b>TIFF</b>    |
|                    | Description                                                                                                                     | TIFF document. |

### 5.3.6 DocumentTypeValue

|                    |                                                                                                                       |                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>DocumentTypeValue</b>                                                                                              |                                                                                                                                                             |
| <b>Definition</b>  | Classification of document types.                                                                                     |                                                                                                                                                             |
| <b>Description</b> | Codelist containing values for the <i>documentType</i> property.                                                      |                                                                                                                                                             |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-DocumentTypeValue">https://vocab.belgif.be/auth/IMKL-DocumentTypeValue</a> |                                                                                                                                                             |
| <b>Usage</b>       | documentType                                                                                                          |                                                                                                                                                             |
| <b>Contents</b>    | <b>Value</b>                                                                                                          | <b>crossSection</b>                                                                                                                                         |
|                    | Description                                                                                                           | Document containing a cross section.                                                                                                                        |
|                    | <b>Value</b>                                                                                                          | <b>detailedPlan</b>                                                                                                                                         |
|                    | Description                                                                                                           | Document containing a detailed plan.<br><br>The purpose of a detailed plan is to provide additional information that cannot be specified elsewhere in IMKL. |
|                    | <b>Value</b>                                                                                                          | <b>directionalDrilling</b>                                                                                                                                  |
|                    | Description                                                                                                           | Document containing information on a directional drilling.                                                                                                  |
|                    | <b>Value</b>                                                                                                          | <b>longitudinalSection</b>                                                                                                                                  |



|  |              |                                             |
|--|--------------|---------------------------------------------|
|  | Description  | Document containing a longitudinal section. |
|  | <b>Value</b> | <b>other</b>                                |
|  | Description  | Other type of document                      |
|  | <b>Value</b> | <b>precaution</b>                           |
|  | Description  | Document containing precautions.            |

### 5.3.7 ElectricityAppurtenanceIMKLValue

|                    |                                                                                                                                                             |                          |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Name</b>        | <b>ElectricityAppurtenanceIMKLValue</b>                                                                                                                     |                          |
| <b>Definition</b>  | Classification of electricity appurtenances.                                                                                                                |                          |
| <b>Description</b> | Codelist containing values for the <i>appurtenanceType</i> property.                                                                                        |                          |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-ElectricityAppurtenanceTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-ElectricityAppurtenanceTypeIMKLValue</a> |                          |
| <b>Usage</b>       | appurtenanceType                                                                                                                                            |                          |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                                | <b>grounding</b>         |
|                    | Description                                                                                                                                                 | Grounding.               |
|                    | <b>Value</b>                                                                                                                                                | <b>marker</b>            |
|                    | Description                                                                                                                                                 | Marker or ground beacon. |
|                    | <b>Value</b>                                                                                                                                                | <b>sleeve</b>            |
|                    | Description                                                                                                                                                 | Sleeve.                  |

### 5.3.8 ElectricitySubthemeValue

|                    |                                                                                                                                     |                                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>ElectricitySubthemeValue</b>                                                                                                     |                                                                                                                                                                       |
| <b>Definition</b>  | Classification of electricity subthemes.                                                                                            |                                                                                                                                                                       |
| <b>Description</b> | Codelist containing values for the <i>subtheme</i> property.                                                                        |                                                                                                                                                                       |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue</a> |                                                                                                                                                                       |
| <b>Usage</b>       | subtheme                                                                                                                            |                                                                                                                                                                       |
| <b>Contents</b>    | <b>Value</b>                                                                                                                        | <b>electricityCathodicProtection</b>                                                                                                                                  |
|                    | Description                                                                                                                         | Cables for the protection of metals against electrochemical corrosion. Connections between measurement poles and measurement points are not covered by this subtheme. |

|  |              |                                                                                                                     |
|--|--------------|---------------------------------------------------------------------------------------------------------------------|
|  | <b>Value</b> | <b>electricityDistributionHighVoltage</b>                                                                           |
|  | Description  | 1-36kV                                                                                                              |
|  | <b>Value</b> | <b>electricityDistributionLowVoltage</b>                                                                            |
|  | Description  | < 1kV                                                                                                               |
|  | <b>Value</b> | <b>electricityPublicLighting</b>                                                                                    |
|  | Description  | E.g. road lighting, illuminated signs                                                                               |
|  | <b>Value</b> | <b>electricityTrafficEnforcementSystems</b>                                                                         |
|  | Description  | E.g. red light and speed cameras, changeable signage such as 'zone 30', lane signs, calamity routes, smog signs,... |
|  | <b>Value</b> | <b>electricityTrafficLights</b>                                                                                     |
|  | Description  | E.g. cables used to control traffic lights                                                                          |
|  | <b>Value</b> | <b>electricityTransport</b>                                                                                         |
|  | Description  | > 70kV                                                                                                              |
|  | <b>Value</b> | <b>electricityTransportLocal</b>                                                                                    |
|  | Description  | =< 70kV                                                                                                             |

### 5.3.9 MaterialTypeValue

| Name               | MaterialTypeValue                                                                                                     |                              |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Definition</b>  | Classification of material types.                                                                                     |                              |
| <b>Description</b> | Codelist containing values for the <i>materialType</i> property.                                                      |                              |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue</a> |                              |
| <b>Usage</b>       | materialType                                                                                                          |                              |
| <b>Contents</b>    | <b>Value</b>                                                                                                          | <b>brickwork</b>             |
|                    | Description                                                                                                           | Brickwork.                   |
|                    | <b>Value</b>                                                                                                          | <b>concrete</b>              |
|                    | Description                                                                                                           | Concrete.                    |
|                    | <b>Value</b>                                                                                                          | <b>crossLinkPolyethylene</b> |
|                    | Description                                                                                                           | Cross-linked polyethylene.   |
|                    | <b>Value</b>                                                                                                          | <b>ductileCastIron</b>       |



|  |             |                                      |
|--|-------------|--------------------------------------|
|  | Description | Ductile cast iron.                   |
|  | Value       | <b>ductileCastIronBlutop</b>         |
|  | Description | Ductile cast iron Blutop.            |
|  | Value       | <b>fiberCement</b>                   |
|  | Description | Fiber cement.                        |
|  | Value       | <b>galvanisedSteel</b>               |
|  | Description | Galvanised steel.                    |
|  | Value       | <b>glassFiberReinforcedPolyester</b> |
|  | Description | Fiber-reinforced polyester.          |
|  | Value       | <b>grayCastIron</b>                  |
|  | Description | Gray cast iron.                      |
|  | Value       | <b>jute</b>                          |
|  | Description | Jute.                                |
|  | Value       | <b>lead</b>                          |
|  | Description | Lead.                                |
|  | Value       | <b>other</b>                         |
|  | Description | Other.                               |
|  | Value       | <b>polyethylene</b>                  |
|  | Description | Polyehtylene.                        |
|  | Value       | <b>polyethyleneHighDensity</b>       |
|  | Description | High density polyethylene.           |
|  | Value       | <b>polyethyleneSafetyLine</b>        |
|  | Description | Polyethylene SafeteLine              |
|  | Value       | <b>polypropylene</b>                 |
|  | Description | Polypropylene.                       |
|  | Value       | <b>polypropyleneSLA</b>              |
|  | Description | Polypropylene SLA.                   |
|  | Value       | <b>prestressedConcrete</b>           |
|  | Description | Prestressed concrete.                |

|  |              |                       |
|--|--------------|-----------------------|
|  | <b>Value</b> | <b>pvc</b>            |
|  | Description  | PVC.                  |
|  | <b>Value</b> | <b>sideroCement</b>   |
|  | Description  | Sidero cement.        |
|  | <b>Value</b> | <b>stainlessSteel</b> |
|  | Description  | Stainless steel.      |
|  | <b>Value</b> | <b>steel</b>          |
|  | Description  | Steel.                |
|  | <b>Value</b> | <b>stoneware</b>      |
|  | Description  | Stoneware.            |
|  | <b>Value</b> | <b>sulfurConcrete</b> |
|  | Description  | Sulfur concrete.      |
|  | <b>Value</b> | <b>unknown</b>        |
|  | Description  | Unknown.              |

### 5.3.10 OilGasChemicalsAppurtenanceTypeIMKLValue

| Name               | OilGasChemicalsAppurtenanceTypeIMKLValue                                                                                                                            |                                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| <b>Definition</b>  | Classification of oil, gas, chemicals appurtenances.                                                                                                                |                                       |
| <b>Description</b> | Codelist containing values for the appurtenanceType property.                                                                                                       |                                       |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue</a> |                                       |
| <b>Usage</b>       | appurtenanceType                                                                                                                                                    |                                       |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                                        | <b>adapter</b>                        |
|                    | Description                                                                                                                                                         | Adapter.                              |
|                    | <b>Value</b>                                                                                                                                                        | <b>airBeacon</b>                      |
|                    | Description                                                                                                                                                         | Air beacon.                           |
|                    | <b>Value</b>                                                                                                                                                        | <b>blowHole</b>                       |
|                    | Description                                                                                                                                                         | Blowhole.                             |
|                    | <b>Value</b>                                                                                                                                                        | <b>cathodicProtectionInstallation</b> |
|                    | Description                                                                                                                                                         | Cathodic protection installation.     |



|  |              |                                           |
|--|--------------|-------------------------------------------|
|  | <b>Value</b> | <b>cathodicProtectionMeasurementPoint</b> |
|  | Description  | Cathodic protection measurement point.    |
|  | <b>Value</b> | <b>endCap</b>                             |
|  | Description  | End cap.                                  |
|  | <b>Value</b> | <b>flange</b>                             |
|  | Description  | Flange.                                   |
|  | <b>Value</b> | <b>measurementPoint</b>                   |
|  | Description  | Measurement point.                        |
|  | <b>Value</b> | <b>siphon</b>                             |
|  | Description  | Siphon.                                   |
|  | <b>Value</b> | <b>sleeve</b>                             |
|  | Description  | Sleeve.                                   |
|  | <b>Value</b> | <b>sluice</b>                             |
|  | Description  | Sluice.                                   |
|  | <b>Value</b> | <b>stoppleFitting</b>                     |
|  | Description  | Stoppie fitting.                          |
|  | <b>Value</b> | <b>valve</b>                              |
|  | Description  | Valve.                                    |

### 5.3.11 OilGasChemicalsProductTypeIMKLValue

|                    |                                                                                                                                                           |                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <b>Name</b>        | <b>OilGasChemicalsProductTypeIMKLValue</b>                                                                                                                |                                               |
| <b>Definition</b>  | Classification of oil, gas, chemicals product types.                                                                                                      |                                               |
| <b>Description</b> | Codelist containing values for the oilGasChemicalsProductType property.                                                                                   |                                               |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue</a> |                                               |
| <b>Usage</b>       | oilGasChemicalsProductType                                                                                                                                |                                               |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                              | <b>acetone</b>                                |
|                    | Description                                                                                                                                               | Acetone (CH <sub>3</sub> COCH <sub>3</sub> ). |
|                    | <b>Value</b>                                                                                                                                              | <b>air</b>                                    |
|                    | Description                                                                                                                                               | Air.                                          |

|  |              |                             |
|--|--------------|-----------------------------|
|  | <b>Value</b> | <b>argon</b>                |
|  | Description  | Argon (AR).                 |
|  | <b>Value</b> | <b>bioGas</b>               |
|  | Description  | Bio gas.                    |
|  | <b>Value</b> | <b>butadiene1_2</b>         |
|  | Description  | Butadiene 1,2 (C4H6).       |
|  | <b>Value</b> | <b>butadiene1_3</b>         |
|  | Description  | Butadiene 1,3 (C4H6).       |
|  | <b>Value</b> | <b>butane</b>               |
|  | Description  | Butane (C4H10).             |
|  | <b>Value</b> | <b>carbonDioxide</b>        |
|  | Description  | Carbon dioxide (CO2).       |
|  | <b>Value</b> | <b>carbonMonoxide</b>       |
|  | Description  | Carbon monoxide (CO).       |
|  | <b>Value</b> | <b>chlorine</b>             |
|  | Description  | Chlorine (C12).             |
|  | <b>Value</b> | <b>concrete</b>             |
|  | Description  | Concrete.                   |
|  | <b>Value</b> | <b>crude</b>                |
|  | Description  | Crude.                      |
|  | <b>Value</b> | <b>dichloroethane</b>       |
|  | Description  | Dichloroethane (C2H4Cl2).   |
|  | <b>Value</b> | <b>diesel</b>               |
|  | Description  | Diesel.                     |
|  | <b>Value</b> | <b>empty</b>                |
|  | Description  | Empty.                      |
|  | <b>Value</b> | <b>ethylene</b>             |
|  | Description  | Ethylene (C2H4).            |
|  | <b>Value</b> | <b>gasFabricationOfCocs</b> |



|  |             |                                                  |
|--|-------------|--------------------------------------------------|
|  | Description | Gas fabrication of Cocs.                         |
|  | Value       | <b>gasHFx</b>                                    |
|  | Description | Gas HFx.                                         |
|  | Value       | <b>gasoil</b>                                    |
|  | Description | Gasoil.                                          |
|  | Value       | <b>hydrogen</b>                                  |
|  | Description | Hydrogen (H2).                                   |
|  | Value       | <b>isobutane</b>                                 |
|  | Description | Isobutane (C4H10).                               |
|  | Value       | <b>JET-A1</b>                                    |
|  | Description | Jet-A1.                                          |
|  | Value       | <b>kerosene</b>                                  |
|  | Description | Kerosine.                                        |
|  | Value       | <b>liquidAmmonia</b>                             |
|  | Description | Liquid ammonia (NH3).                            |
|  | Value       | <b>liquidHydrocarbon</b>                         |
|  | Description | Liquid hydrocarbon (CnHm).                       |
|  | Value       | <b>multiProduct</b>                              |
|  | Description | Object capable of transporting various products. |
|  | Value       | <b>MVC</b>                                       |
|  | Description | Monovinyll chloride (C2H3Cl).                    |
|  | Value       | <b>naturalGas</b>                                |
|  | Description | Natural gas (Methane - CH4).                     |
|  | Value       | <b>nitrogen</b>                                  |
|  | Description | Nitrogen (N2).                                   |
|  | Value       | <b>oxygen</b>                                    |
|  | Description | Oxygen (O2).                                     |
|  | Value       | <b>phenol</b>                                    |

|  |             |                                            |
|--|-------------|--------------------------------------------|
|  | Description | Phenol (C <sub>6</sub> H <sub>5</sub> OH). |
|  | Value       | <b>propane</b>                             |
|  | Description | Propane (C <sub>3</sub> H <sub>8</sub> ).  |
|  | Value       | <b>propylene</b>                           |
|  | Description | Propylene.                                 |
|  | Value       | <b>saltWater</b>                           |
|  | Description | Salt water.                                |
|  | Value       | <b>sand</b>                                |
|  | Description | Sand.                                      |
|  | Value       | <b>saumur</b>                              |
|  | Description | Saumur, brine.                             |
|  | Value       | <b>tetrachloroide</b>                      |
|  | Description | Tetrachloroide (Cl <sub>4</sub> ).         |
|  | Value       | <b>unknown</b>                             |
|  | Description | Unknown.                                   |
|  | Value       | <b>water</b>                               |
|  | Description | Water.                                     |

### 5.3.12 OilGasChemicalsSubthemeValue

| Name               | OilGasChemicalsSubthemeValue                                                                                                                |                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | Classification of oil, gas, chemicals subthemes.                                                                                            |                                                                                                         |
| <b>Description</b> | Codelist containing values for the <i>subtheme</i> property.                                                                                |                                                                                                         |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue</a> |                                                                                                         |
| <b>Usage</b>       | subtheme                                                                                                                                    |                                                                                                         |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                | <b>naturalGasDistributionLowPressure</b>                                                                |
|                    | Description                                                                                                                                 | Pipe whose highest permissible operating pressure does not exceed 0.1 kgf/cm <sup>2</sup> (98.07 mbar). |
|                    | <b>Value</b>                                                                                                                                | <b>naturalGasDistributionMediumPressure</b>                                                             |
|                    | Description                                                                                                                                 | Pipe whose highest allowable operating pressure exceeds 0.1 kgf/cm <sup>2</sup> (98.07                  |



|  |              |                                                                                                                |
|--|--------------|----------------------------------------------------------------------------------------------------------------|
|  |              | mbar), without exceeding 15 kgf/cm <sup>2</sup> (14.71 bar).                                                   |
|  | <b>Value</b> | <b>naturalGasTransport</b>                                                                                     |
|  | Description  | Natural gas transmission network - installations subject to law 12/04/65.                                      |
|  | <b>Value</b> | <b>oilGasChemicalsTransport</b>                                                                                |
|  | Description  | Transmission network for transporting products other than natural gas - installations subject to law 12/04/65. |

### 5.3.13 ProtectedAreaTypeValue

| Name               | ProtectedAreaTypeValue                                                                                                          |                                                                                          |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Definition</b>  | Classification of protected area types.                                                                                         |                                                                                          |
| <b>Description</b> | Codelist containing values for the <i>protectedAreaType</i> property.                                                           |                                                                                          |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue">https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue</a> |                                                                                          |
| <b>Usage</b>       | protectedAreaType                                                                                                               |                                                                                          |
| <b>Contents</b>    | <b>Value</b>                                                                                                                    | <b>drinkingWaterExtractionArea</b>                                                       |
|                    | Description                                                                                                                     | Area in which a water company extracts groundwater for the production of drinking water. |
|                    | <b>Value</b>                                                                                                                    | <b>geothermalInstallation</b>                                                            |
|                    | Description                                                                                                                     | Area in which a large geothermal plant occurs.                                           |
|                    | <b>Value</b>                                                                                                                    | <b>infiltrationArea</b>                                                                  |
|                    | Description                                                                                                                     | Area intended for the infiltration of water into the soil.                               |
|                    | <b>Value</b>                                                                                                                    | <b>otherProtectedArea</b>                                                                |
|                    | Description                                                                                                                     | Area protected for another reason.                                                       |
|                    | <b>Value</b>                                                                                                                    | <b>undergroundGasStorage</b>                                                             |
|                    | Description                                                                                                                     | Area used for underground gas storage.                                                   |

### 5.3.14 ReferenceSurfaceTypeValue

| Name | ReferenceSurfaceTypeValue |
|------|---------------------------|
|------|---------------------------|

|                    |                                                                                                                                       |                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <b>Definition</b>  | Classification of surface types.                                                                                                      |                     |
| <b>Description</b> | Codelist containing values for the <i>type</i> property of reference surfaces.                                                        |                     |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-ReferenceSurfaceTypeValue">https://vocab.belgif.be/auth/IMKL-ReferenceSurfaceTypeValue</a> |                     |
| <b>Usage</b>       | referenceSurfaceType                                                                                                                  |                     |
| <b>Contents</b>    | <b>Value</b>                                                                                                                          | <b>surfaceLevel</b> |
|                    | Description                                                                                                                           | The surface level.  |

### 5.3.15 SewerAppurtenanceTypeIMKLValue

| Name               | SewerAppurtenanceTypeIMKLValue                                                                                                                  |                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Definition</b>  | Classification of sewer appurtenances.                                                                                                          |                                           |
| <b>Description</b> | Codelist containing values for the <i>appurtenanceType</i> property.                                                                            |                                           |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue</a> |                                           |
| <b>Usage</b>       | appurtenanceType                                                                                                                                |                                           |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                    | <b>cathodicProtectionInstallation</b>     |
|                    | Description                                                                                                                                     | Installation of cathodic protection.      |
|                    | <b>Value</b>                                                                                                                                    | <b>cathodicProtectionMeasurementPoint</b> |
|                    | Description                                                                                                                                     | Cathodic protection measurement point.    |
|                    | <b>Value</b>                                                                                                                                    | <b>deliveryPoint</b>                      |
|                    | Description                                                                                                                                     | Delivery point.                           |
|                    | <b>Value</b>                                                                                                                                    | <b>effluent</b>                           |
|                    | Description                                                                                                                                     | Effluent from a treatment plant.          |
|                    | <b>Value</b>                                                                                                                                    | <b>infiltrationStructure</b>              |
|                    | Description                                                                                                                                     | Structure for the infiltration of water.  |
|                    | <b>Value</b>                                                                                                                                    | <b>inlet</b>                              |
|                    | Description                                                                                                                                     | Inlet.                                    |
|                    | <b>Value</b>                                                                                                                                    | <b>measurementPoint</b>                   |
|                    | Description                                                                                                                                     | Measurement point.                        |
|                    | <b>Value</b>                                                                                                                                    | <b>other</b>                              |
|                    | Description                                                                                                                                     | Other.                                    |



|  |              |                            |
|--|--------------|----------------------------|
|  | <b>Value</b> | <b>overflow</b>            |
|  | Description  | Overflow.                  |
|  | <b>Value</b> | <b>treatmentSystem</b>     |
|  | Description  | Treatment system or plant. |

### 5.3.16 SewerSubthemeValue

| Name        | SewerSubthemeValue                                                                                                      |                                                                                                                                |
|-------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Definition  | Classification of sewer subthemes.                                                                                      |                                                                                                                                |
| Description | Codelist containing values for the <i>subtheme</i> property.                                                            |                                                                                                                                |
| URI         | <a href="https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue">https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue</a> |                                                                                                                                |
| Usage       | subtheme                                                                                                                |                                                                                                                                |
| Contents    | <b>Value</b>                                                                                                            | <b>sewageWasteWaterGravitationalPipe</b>                                                                                       |
|             | Description                                                                                                             | Gravitational piping of wastewater and mixed water.                                                                            |
|             | <b>Value</b>                                                                                                            | <b>sewageWasteWaterPressurePipe</b>                                                                                            |
|             | Description                                                                                                             | Wastewater and mixed water pressure pipes.                                                                                     |
|             | <b>Value</b>                                                                                                            | <b>waterDrainageArchedWaterways</b>                                                                                            |
|             | Description                                                                                                             | Piped-in sections of catalogued watercourses.                                                                                  |
|             | <b>Value</b>                                                                                                            | <b>waterDrainagePipedCanal</b>                                                                                                 |
|             | Description                                                                                                             | Piped-in canals that are not constructed according to code, often localised arches, may also have pollution connected to them. |
|             | <b>Value</b>                                                                                                            | <b>waterDrainageSurfaceWaterGravitationalPipe</b>                                                                              |
|             | Description                                                                                                             | Gravitational piping of rainwater (constructed according to code).                                                             |
|             | <b>Value</b>                                                                                                            | <b>waterDrainageSurfaceWaterPressurePipe</b>                                                                                   |
|             | Description                                                                                                             | Rainwater pressure pipes (constructed according to code).                                                                      |
|             |                                                                                                                         |                                                                                                                                |
|             |                                                                                                                         |                                                                                                                                |
|             |                                                                                                                         |                                                                                                                                |
|             |                                                                                                                         |                                                                                                                                |

### 5.3.17 SurveyMethodValue

| Name       | SurveyMethodValue                 |
|------------|-----------------------------------|
| Definition | Classification of survey methods. |

|                    |                                                                                                                       |                                     |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <b>Description</b> | Codelist containing values for the <i>method</i> property.                                                            |                                     |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue</a> |                                     |
| <b>Usage</b>       | method                                                                                                                |                                     |
| <b>Contents</b>    | <b>Value</b>                                                                                                          | <b>digitizedPlan</b>                |
|                    | Description                                                                                                           | Digitized plan.                     |
|                    | <b>Value</b>                                                                                                          | <b>gnss</b>                         |
|                    | Description                                                                                                           | Global Navigation Satellite System. |
|                    | <b>Value</b>                                                                                                          | <b>lidar</b>                        |
|                    | Description                                                                                                           | Light Detection And Ranging.        |
|                    | <b>Value</b>                                                                                                          | <b>measuringTape</b>                |
|                    | Description                                                                                                           | Measuring tape.                     |
|                    | <b>Value</b>                                                                                                          | <b>measuringWheel</b>               |
|                    | Description                                                                                                           | Measuring wheel.                    |
|                    | <b>Value</b>                                                                                                          | <b>photogrammetry</b>               |
|                    | Description                                                                                                           | Photogrammetry.                     |
|                    | <b>Value</b>                                                                                                          | <b>sketch</b>                       |
|                    | Description                                                                                                           | Sketch.                             |
|                    | <b>Value</b>                                                                                                          | <b>terrestrial</b>                  |
|                    | Description                                                                                                           | Terrestrial.                        |
|                    | <b>Value</b>                                                                                                          | <b>totalStation</b>                 |
|                    | Description                                                                                                           | Total station.                      |
|                    | <b>Value</b>                                                                                                          | <b>triangulation</b>                |
|                    | Description                                                                                                           | Triangulation.                      |

### 5.3.18 TelecommunicationsAppurtenanceTypeIMKLValue

|                    |                                                                                                                                                                           |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>TelecommunicationsAppurtenanceTypeIMKLValue</b>                                                                                                                        |
| <b>Definition</b>  | Classification of telecommunication appurtenances.                                                                                                                        |
| <b>Description</b> | Codelist containing values for the <i>appurtenanceType</i> property.                                                                                                      |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue</a> |



|                 |                  |                                                                                      |
|-----------------|------------------|--------------------------------------------------------------------------------------|
| <b>Usage</b>    | appurtenanceType |                                                                                      |
| <b>Contents</b> | <b>Value</b>     | <b>amplifier</b>                                                                     |
|                 | Description      | Device for upgrading the signal for distribution and trunk line over long distances. |
|                 | <b>Value</b>     | <b>spliceClosure</b>                                                                 |
|                 | Description      | Splice closure.                                                                      |
|                 | <b>Value</b>     | <b>splitter</b>                                                                      |
|                 | Description      | Device to split the signal in two or three directions.                               |
|                 | <b>Value</b>     | <b>termination</b>                                                                   |
|                 | Description      | Home connection, split point on cable.                                               |

### 5.3.19 TelecommunicationsCableMaterialTypeIMKLValue

|                    |                                                                                                                                                                             |                      |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>Name</b>        | TelecommunicationsCableMaterialTypeIMKLValue                                                                                                                                |                      |
| <b>Definition</b>  | Classification of telecommunication cable materials.                                                                                                                        |                      |
| <b>Description</b> | Codelist containing values for the <i>telecommunicationsCableMaterialType</i> property.                                                                                     |                      |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue</a> |                      |
| <b>Usage</b>       | telecommunicationsCableMaterialType                                                                                                                                         |                      |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                                                | <b>coaxial</b>       |
|                    | Description                                                                                                                                                                 | Coaxial cable.       |
|                    | <b>Value</b>                                                                                                                                                                | <b>opticalFiber</b>  |
|                    | Description                                                                                                                                                                 | Optical fibre cable. |
|                    | <b>Value</b>                                                                                                                                                                | <b>other</b>         |
|                    | Description                                                                                                                                                                 | Other.               |
|                    | <b>Value</b>                                                                                                                                                                | <b>twistedPair</b>   |
|                    | Description                                                                                                                                                                 | Twisted pair.        |

### 5.3.20 TelecommunicationsSubthemeValue

|             |                                 |
|-------------|---------------------------------|
| <b>Name</b> | TelecommunicationsSubthemeValue |
|-------------|---------------------------------|

|                    |                                                                                                                                                   |                                                                                                               |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | Classification of telecommunication subthemes.                                                                                                    |                                                                                                               |
| <b>Description</b> | Codelist containing values for the <i>subtheme</i> property.                                                                                      |                                                                                                               |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsSubthemeValue">https://vocab.belgif.be/auth/IMKL-TelecommunicationsSubthemeValue</a> |                                                                                                               |
| <b>Usage</b>       | subtheme                                                                                                                                          |                                                                                                               |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                      | <b>electronicCommunication</b>                                                                                |
|                    | Description                                                                                                                                       | E.g. cables used to convey data.                                                                              |
|                    | <b>Value</b>                                                                                                                                      | <b>telecommunicationDistribution</b>                                                                          |
|                    | Description                                                                                                                                       | Cabling for local distribution of radio, TV, data and telephone signals up to the user's connection point(s). |
|                    | <b>Value</b>                                                                                                                                      | <b>telecommunicationMainline</b>                                                                              |
|                    | Description                                                                                                                                       | Cabling carrying radio, TV, data and telephone signals over long distances to the distribution network.       |

### 5.3.21 ThermalAppurtenanceTypeIMKLValue

|                    |                                                                                                                                                     |                                           |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Name</b>        | ThermalAppurtenanceTypeIMKLValue                                                                                                                    |                                           |
| <b>Definition</b>  | Classification of thermal appurtenances.                                                                                                            |                                           |
| <b>Description</b> | Codelist containing values for the <i>appurtenanceType</i> property.                                                                                |                                           |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue</a> |                                           |
| <b>Usage</b>       | appurtenanceType                                                                                                                                    |                                           |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                        | <b>adapter</b>                            |
|                    | Description                                                                                                                                         | Adapter.                                  |
|                    | <b>Value</b>                                                                                                                                        | <b>adapterSingleDualPipe</b>              |
|                    | Description                                                                                                                                         | Adapter single dual pipe.                 |
|                    | <b>Value</b>                                                                                                                                        | <b>endCap</b>                             |
|                    | Description                                                                                                                                         | End cap.                                  |
|                    | <b>Value</b>                                                                                                                                        | <b>cathodicProtectionInstallation</b>     |
|                    | Description                                                                                                                                         | Cathodic protection installation.         |
|                    | <b>Value</b>                                                                                                                                        | <b>cathodicProtectionMeasurementPoint</b> |
|                    | Description                                                                                                                                         | Cathodic protection measurement point.    |



|  |              |                                      |
|--|--------------|--------------------------------------|
|  | <b>Value</b> | <b>condensateWell</b>                |
|  | Description  | Condensate well.                     |
|  | <b>Value</b> | <b>deliveryPoint</b>                 |
|  | Description  | Delivery point.                      |
|  | <b>Value</b> | <b>dilatationJoint</b>               |
|  | Description  | Dilatation joint.                    |
|  | <b>Value</b> | <b>flange</b>                        |
|  | Description  | Flange.                              |
|  | <b>Value</b> | <b>leakdetectionInstallation</b>     |
|  | Description  | Leak detection installation.         |
|  | <b>Value</b> | <b>leakdetectionMeasurementPoint</b> |
|  | Description  | Leak detection measurement point.    |
|  | <b>Value</b> | <b>measurementPoint</b>              |
|  | Description  | Measurement point.                   |
|  | <b>Value</b> | <b>siphon</b>                        |
|  | Description  | Siphon.                              |
|  | <b>Value</b> | <b>sleeve</b>                        |
|  | Description  | Sleeve.                              |
|  | <b>Value</b> | <b>sluice</b>                        |
|  | Description  | Sluice.                              |
|  | <b>Value</b> | <b>valve</b>                         |
|  | Description  | Valve.                               |

### 5.3.22 ThermalProductTypeIMKLValue

|                    |                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>ThermalProductTypeIMKLValue</b>                                                                                                        |
| <b>Definition</b>  | Classification of thermal products.                                                                                                       |
| <b>Description</b> | Codelist containing values for the <i>thermalProductType</i> property.                                                                    |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue</a> |
| <b>Usage</b>       | thermalProductType                                                                                                                        |

|                 |              |                                 |
|-----------------|--------------|---------------------------------|
| <b>Contents</b> | <b>Value</b> | <b>condensate</b>               |
|                 | Description  | Condensate from a thermal pipe. |
|                 | <b>Value</b> | <b>coolingWater</b>             |
|                 | Description  | Cooling water.                  |
|                 | <b>Value</b> | <b>heatingSteam</b>             |
|                 | Description  | Heating steam.                  |
|                 | <b>Value</b> | <b>heatingWater</b>             |
|                 | Description  | Heating water.                  |

### 5.3.23 ThermalSubthemeValue

|                    |                                                                                                                             |                         |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Name</b>        | <b>ThermalSubthemeValue</b>                                                                                                 |                         |
| <b>Definition</b>  | Classification of thermal subthemes.                                                                                        |                         |
| <b>Description</b> | Codelist containing values for the <i>subtheme</i> property.                                                                |                         |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue">https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue</a> |                         |
| <b>Usage</b>       | subtheme                                                                                                                    |                         |
| <b>Contents</b>    | <b>Value</b>                                                                                                                | <b>heatDistribution</b> |
|                    | Description                                                                                                                 | Heat distribution.      |
|                    | <b>Value</b>                                                                                                                | <b>heatTransport</b>    |
|                    | Description                                                                                                                 | Heat transport.         |
|                    | <b>Value</b>                                                                                                                | <b>steamCondensate</b>  |
|                    | Description                                                                                                                 | Steam condensate.       |
|                    | <b>Value</b>                                                                                                                | <b>steamTransport</b>   |
|                    | Description                                                                                                                 | Steam transport.        |

### 5.3.24 UtilityDeliveryTypeIMKLValue

|                    |                                                                                                                                             |  |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Name</b>        | <b>UtilityDeliveryTypeIMKLValue</b>                                                                                                         |  |
| <b>Definition</b>  | Classification of utility delivery types.                                                                                                   |  |
| <b>Description</b> | Codelist containing values for the <i>utilityDeliveryType</i> property.                                                                     |  |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-UtilityDeliveryTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-UtilityDeliveryTypeIMKLValue</a> |  |
| <b>Usage</b>       | utilityDeliveryType                                                                                                                         |  |



| Contents | Value       | connection                                                       |
|----------|-------------|------------------------------------------------------------------|
|          | Description | Connection linking the distribution network to the end customer. |

### 5.3.25 UtilityNetworkTypeIMKLValue

| Name        | UtilityNetworkTypeIMKLValue                                                                                                               |                                                                                                                                                                                                                    |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Definition  | Classification of utility network types.                                                                                                  |                                                                                                                                                                                                                    |
| Description | Codelist containing values for the <i>utilityNetworkType</i> property.                                                                    |                                                                                                                                                                                                                    |
| URI         | <a href="https://vocab.belgif.be/auth/IMKL-UtilityNetworkTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-UtilityNetworkTypeIMKLValue</a> |                                                                                                                                                                                                                    |
| Usage       | utilityNetworkType                                                                                                                        |                                                                                                                                                                                                                    |
| Contents    | Value                                                                                                                                     | crossTheme                                                                                                                                                                                                         |
|             | Description                                                                                                                               | Mixed Networks. For use in case of, for example, a <i>UtilityNetwork</i> with empty <i>Duct</i> and <i>Pipe</i> objects or for <i>Duct</i> and <i>Pipe</i> objects containing cables or pipes of different themes. |

### 5.3.26 VisibilityTypeValue

| Name        | VisibilityTypeValue                                                                                                       |                           |
|-------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Definition  | Classification of visibility types.                                                                                       |                           |
| Description | Codelist containing values for the <i>visibility</i> property.                                                            |                           |
| URI         | <a href="https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue">https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue</a> |                           |
| Usage       | visibility                                                                                                                |                           |
| Contents    | Value                                                                                                                     | notVisibleAboveGround     |
|             | Description                                                                                                               | Not visible above ground. |
|             | Value                                                                                                                     | visibleAboveGround        |
|             | Description                                                                                                               | Visible above ground.     |

### 5.3.27 WarningTypeIMKLValue

| Name        | WarningTypeIMKLValue                                            |  |
|-------------|-----------------------------------------------------------------|--|
| Definition  | Classification of warning types.                                |  |
| Description | Codelist containing values for the <i>warningType</i> property. |  |

|                 |                                                                                                                             |                                                                                                      |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>URI</b>      | <a href="https://vocab.belgif.be/auth/IMKL-WarningTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-WarningTypeIMKLValue</a> |                                                                                                      |
| <b>Usage</b>    | warningType                                                                                                                 |                                                                                                      |
| <b>Contents</b> | <b>Value</b>                                                                                                                | <b>geotextile</b>                                                                                    |
|                 | Description                                                                                                                 | Geotextile.                                                                                          |
|                 | <b>Value</b>                                                                                                                | <b>protectivePlate</b>                                                                               |
|                 | Description                                                                                                                 | A series of underground protective plates to cover cables or pipelines. (e.g. plastic sheet plates). |

### 5.3.28 WaterAppurtenanceTypeIMKLValue

|                    |                                                                                                                                                 |                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Name</b>        | <b>WaterAppurtenanceTypeIMKLValue</b>                                                                                                           |                                           |
| <b>Definition</b>  | Classification of water appurtenances.                                                                                                          |                                           |
| <b>Description</b> | Codelist containing values for the <i>appurtenanceType</i> property.                                                                            |                                           |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue">https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue</a> |                                           |
| <b>Usage</b>       | appurtenanceType                                                                                                                                |                                           |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                    | <b>cathodicProtectionInstallation</b>     |
|                    | Description                                                                                                                                     | Cathodic protection installation.         |
|                    | <b>Value</b>                                                                                                                                    | <b>cathodicProtectionMeasurementPoint</b> |
|                    | Description                                                                                                                                     | Cathodic protection measurement point.    |
|                    | <b>Value</b>                                                                                                                                    | <b>connectionValve</b>                    |
|                    | Description                                                                                                                                     | Connection valve.                         |
|                    | <b>Value</b>                                                                                                                                    | <b>deliveryPoint</b>                      |
|                    | Description                                                                                                                                     | Delivery point.                           |
|                    | <b>Value</b>                                                                                                                                    | <b>drinkingWaterExtractionPoint</b>       |
|                    | Description                                                                                                                                     | Extraction point for drinking water.      |
|                    | <b>Value</b>                                                                                                                                    | <b>measurementPoint</b>                   |
|                    | Description                                                                                                                                     | Measurement point.                        |

### 5.3.29 WaterSubthemeValue

|                   |                                    |
|-------------------|------------------------------------|
| <b>Name</b>       | <b>WaterSubthemeValue</b>          |
| <b>Definition</b> | Classification of water subthemes. |



|                    |                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | Codelist containing values for the <i>subtheme</i> property.                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>URI</b>         | <a href="https://vocab.belgif.be/auth/IMKL-WaterSubthemeValue">https://vocab.belgif.be/auth/IMKL-WaterSubthemeValue</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Usage</b>       | subtheme                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Contents</b>    | <b>Value</b>                                                                                                            | <b>drinkingWaterDistribution</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                    | Description                                                                                                             | Regardless of its diameter, the main purpose of a distribution pipeline is to provide local distribution of drinking water by distributing the supplied water directly to a large number of individual household and non-household final customers.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                    | <b>Value</b>                                                                                                            | <b>drinkingWaterSupply</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                    | Description                                                                                                             | <p>A supply pipeline, irrespective of its diameter, has one of the following purposes :</p> <ul style="list-style-type: none"> <li>• The supply of demarcated distribution areas, whether they are of a domestic, industrial or agricultural nature or a mixture thereof;</li> <li>• The security connections between and within distribution areas, with the aim of ensuring the supplied capacities of these distribution areas;</li> <li>• The transport of drinking water between water production centres and between the water extractions and these water distribution centres;</li> <li>• The transport of drinking water to large customers (port areas, a large company, an airport,...)</li> </ul> |

## 5.4 INSPIRE codelists

### 5.4.1 ConditionOfFacilityValue

|             |                                 |
|-------------|---------------------------------|
| <b>Name</b> | <b>ConditionOfFacilityValue</b> |
|-------------|---------------------------------|

|                    |                                                                                                                                           |                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Definition</b>  | The status of a facility with regards to its completion and use.                                                                          |                                                                                                                                                       |
| <b>Description</b> | Codelist containing values for the <i>currentStatus</i> property.                                                                         |                                                                                                                                                       |
| <b>URI</b>         | <a href="http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue">http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue</a> |                                                                                                                                                       |
| <b>Usage</b>       | currentStatus                                                                                                                             |                                                                                                                                                       |
| <b>Contents</b>    | <b>Value</b>                                                                                                                              | <b>disused</b>                                                                                                                                        |
|                    | Description                                                                                                                               | The facility is no longer used, but is not being or has not been decommissioned.                                                                      |
|                    | <b>Value</b>                                                                                                                              | <b>functional</b>                                                                                                                                     |
|                    | Description                                                                                                                               | The facility is functional.                                                                                                                           |
|                    | <b>Value</b>                                                                                                                              | <b>projected</b>                                                                                                                                      |
|                    | Description                                                                                                                               | The facility is being designed. Construction has not yet started.                                                                                     |
|                    | <b>Value</b>                                                                                                                              | <b>underConstruction</b>                                                                                                                              |
|                    | Description                                                                                                                               | The facility is under construction and not yet functional. This applies only to the initial construction of the facility and not to maintenance work. |

## 5.4.2 ElectricityAppurtenanceTypeValue

|                    |                                                                                                                                                           |                                                                                                                                                                                         |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>ElectricityAppurtenanceTypeValue</b>                                                                                                                   |                                                                                                                                                                                         |
| <b>Definition</b>  | Classification of electricity appurtenances.                                                                                                              |                                                                                                                                                                                         |
| <b>Description</b> | Codelist containing values for the <i>appurtenanceType</i> property.                                                                                      |                                                                                                                                                                                         |
| <b>URI</b>         | <a href="http://inspire.ec.europa.eu/codelist/ElectricityAppurtenanceTypeValue">http://inspire.ec.europa.eu/codelist/ElectricityAppurtenanceTypeValue</a> |                                                                                                                                                                                         |
| <b>Usage</b>       | appurtenanceType                                                                                                                                          |                                                                                                                                                                                         |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                              | <b>deliveryPoint</b>                                                                                                                                                                    |
|                    | Description                                                                                                                                               | Point the electric power is being delivered to.                                                                                                                                         |
|                    | <b>Value</b>                                                                                                                                              | <b>streetLight</b>                                                                                                                                                                      |
|                    | Description                                                                                                                                               | A street light (or lamppost, street lamp, light standard, or lamp standard) is a raised source of light on the edge of a road, which is turned on or lit at a certain time every night. |



### 5.4.3 nilReason

| Name        | nilReason                                                                                                                                                                                                                        |                                                                                      |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Definition  | Reason why no value is provided for a property.                                                                                                                                                                                  |                                                                                      |
| Description | Codelist containing values for the <i>nilReason</i> attribute.<br>The <i>nilReason</i> is an exception compared to other codelists. Its value is not provided via a URI but as a direct value of the <i>nilReason</i> attribute. |                                                                                      |
| URI         | Not applicable                                                                                                                                                                                                                   |                                                                                      |
| Usage       | All properties where a nilReason is allowed (section 4.5).                                                                                                                                                                       |                                                                                      |
| Contents    | Value                                                                                                                                                                                                                            | <b>inapplicable</b>                                                                  |
|             | Description                                                                                                                                                                                                                      | There is no value.                                                                   |
|             | Value                                                                                                                                                                                                                            | <b>missing</b>                                                                       |
|             | Description                                                                                                                                                                                                                      | The correct value is not readily available, however a correct value probably exists. |
|             | Value                                                                                                                                                                                                                            | <b>template</b>                                                                      |
|             | Description                                                                                                                                                                                                                      | The value will be available later.                                                   |
|             | Value                                                                                                                                                                                                                            | <b>unknown</b>                                                                       |
|             | Description                                                                                                                                                                                                                      | The correct value is not known.                                                      |
|             | Value                                                                                                                                                                                                                            | <b>withheld</b>                                                                      |
|             | Description                                                                                                                                                                                                                      | The value is not divulged.                                                           |
|             |                                                                                                                                                                                                                                  |                                                                                      |
|             |                                                                                                                                                                                                                                  |                                                                                      |

### 5.4.4 OilGasChemicalsAppurtenanceTypeValue

| Name        | OilGasChemicalsAppurtenanceTypeValue                                                                                                                              |                      |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Definition  | Classification of oil, gas, chemicals appurtenances.                                                                                                              |                      |
| Description | Codelist containing values for the <i>appurtenanceType</i> property.                                                                                              |                      |
| URI         | <a href="http://inspire.ec.europa.eu/codelist/OilGasChemicalsAppurtenanceTypeValue">http://inspire.ec.europa.eu/codelist/OilGasChemicalsAppurtenanceTypeValue</a> |                      |
| Usage       | appurtenanceType                                                                                                                                                  |                      |
| Contents    | Value                                                                                                                                                             | <b>deliveryPoint</b> |
|             | Description                                                                                                                                                       | Delivery point.      |
|             | Value                                                                                                                                                             | <b>marker</b>        |

|  |              |                                            |
|--|--------------|--------------------------------------------|
|  | Description  | Marker.                                    |
|  | <b>Value</b> | <b>oilGasChemicalsNode</b>                 |
|  | Description  | Node in an oil, gas and chemicals network. |

#### 5.4.5 SewerAppurtenanceTypeValue

| Name               | SewerAppurtenanceTypeValue                                                                                                                    |                           |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Definition</b>  | Classification of sewer appurtenances.                                                                                                        |                           |
| <b>Description</b> | Codelist containing values for the <i>appurtenanceType</i> property.                                                                          |                           |
| <b>URI</b>         | <a href="http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue">http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue</a> |                           |
| <b>Usage</b>       | appurtenanceType                                                                                                                              |                           |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                  | <b>catchBasin</b>         |
|                    | Description                                                                                                                                   | Catch basin.              |
|                    | <b>Value</b>                                                                                                                                  | <b>dischargeStructure</b> |
|                    | Description                                                                                                                                   | Discharge structure.      |
|                    | <b>Value</b>                                                                                                                                  | <b>pump</b>               |
|                    | Description                                                                                                                                   | Pump.                     |
|                    | <b>Value</b>                                                                                                                                  | <b>sewerNode</b>          |
|                    | Description                                                                                                                                   | Node in a sewer network.  |
|                    | <b>Value</b>                                                                                                                                  | <b>tideGate</b>           |
|                    | Description                                                                                                                                   | Tide gate.                |

#### 5.4.6 SewerWaterTypeValue

| Name               | SewerWaterTypeValue                                                                                                             |                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Definition</b>  | Classification of sewer water types.                                                                                            |                       |
| <b>Description</b> | Codelist containing values for the <i>sewerWaterType</i> property.                                                              |                       |
| <b>URI</b>         | <a href="http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue">http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue</a> |                       |
| <b>Usage</b>       | sewerWaterType                                                                                                                  |                       |
| <b>Contents</b>    | <b>Value</b>                                                                                                                    | <b>combined</b>       |
|                    | Description                                                                                                                     | Combined sewer water. |



|  |              |                        |
|--|--------------|------------------------|
|  | <b>Value</b> | <b>reclaimed</b>       |
|  | Description  | Reclaimed sewer water. |
|  | <b>Value</b> | <b>sanitary</b>        |
|  | Description  | Sanitary sewer water.  |
|  | <b>Value</b> | <b>storm</b>           |
|  | Description  | Storm sewer water.     |

#### 5.4.7 UtilityDeliveryTypeValue

|                    |                                                                                                                                           |                                                                                                                                                                                  |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>UtilityDeliveryTypeValue</b>                                                                                                           |                                                                                                                                                                                  |
| <b>Definition</b>  | Classification of utility delivery types.                                                                                                 |                                                                                                                                                                                  |
| <b>Description</b> | Codelist containing values for the <i>utilityDeliveryType</i> property.                                                                   |                                                                                                                                                                                  |
| <b>URI</b>         | <a href="http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue">http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue</a> |                                                                                                                                                                                  |
| <b>Usage</b>       | utilityDeliveryType                                                                                                                       |                                                                                                                                                                                  |
| <b>Contents</b>    | <b>Value</b>                                                                                                                              | <b>collection</b>                                                                                                                                                                |
|                    | Description                                                                                                                               | Description of a type of utility network delivering its utility product via collection (e.g. for sewer utility networks, collecting sewer water from customers)                  |
|                    | <b>Value</b>                                                                                                                              | <b>distribution</b>                                                                                                                                                              |
|                    | Description                                                                                                                               | Description of a type of utility network delivering its utility product via mainly local distribution (e.g. local distribution of electricity), connecting directly to consumers |
|                    | <b>Value</b>                                                                                                                              | <b>private</b>                                                                                                                                                                   |
|                    | Description                                                                                                                               | Description of a type of utility network delivering its utility product via a small private network (e.g. owned by a private company).                                           |
|                    | <b>Value</b>                                                                                                                              | <b>transport</b>                                                                                                                                                                 |
|                    | Description                                                                                                                               | Description of a type of utility network delivering its utility product via a large transport network (e.g. to convey oil-gas-chemicals products over larger distances).         |

#### 5.4.8 UtilityNetworkTypeValue

| Name        | UtilityNetworkTypeValue                                                                                                                 |                                |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Definition  | Classification of utility network types.                                                                                                |                                |
| Description | Codelist containing values for the <i>utilityNetworkType</i> property.                                                                  |                                |
| URI         | <a href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue">http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue</a> |                                |
| Usage       | utilityNetworkType                                                                                                                      |                                |
| Contents    | Value                                                                                                                                   | <b>electricity</b>             |
|             | Description                                                                                                                             | Electricity networks.          |
|             | Value                                                                                                                                   | <b>oilGasChemical</b>          |
|             | Description                                                                                                                             | Oil, gas or chemical networks. |
|             | Value                                                                                                                                   | <b>sewer</b>                   |
|             | Description                                                                                                                             | Sewer networks.                |
|             | Value                                                                                                                                   | <b>telecommunications</b>      |
|             | Description                                                                                                                             | Telecommunications networks.   |
|             | Value                                                                                                                                   | <b>thermal</b>                 |
|             | Description                                                                                                                             | Thermal networks.              |
|             | Value                                                                                                                                   | <b>water</b>                   |
|             | Description                                                                                                                             | Water networks.                |

#### 5.4.9 VerticalPositionValue

| Name        | VerticalPositionValue                                                                                                               |                                              |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Definition  | The relative vertical position of a spatial object.                                                                                 |                                              |
| Description | Codelist containing values for the <i>verticalPosition</i> property.                                                                |                                              |
| URI         | <a href="http://inspire.ec.europa.eu/codelist/VerticalPositionValue">http://inspire.ec.europa.eu/codelist/VerticalPositionValue</a> |                                              |
| Usage       | verticalPosition                                                                                                                    |                                              |
| Contents    | Value                                                                                                                               | <b>onGroundSurface</b>                       |
|             | Description                                                                                                                         | The spatial object is on ground level.       |
|             | Value                                                                                                                               | <b>suspendedOrElevated</b>                   |
|             | Description                                                                                                                         | The spatial object is suspended or elevated. |



|  |              |                                    |
|--|--------------|------------------------------------|
|  | <b>Value</b> | <b>underground</b>                 |
|  | Description  | The spatial object is underground. |

#### 5.4.10 WarningTypeValue

|                    |                                                                                                                           |                                                                                                                                                                        |
|--------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>        | <b>WarningTypeValue</b>                                                                                                   |                                                                                                                                                                        |
| <b>Definition</b>  | Classification of warning types.                                                                                          |                                                                                                                                                                        |
| <b>Description</b> | Codelist containing values for the <i>warningType</i> property.                                                           |                                                                                                                                                                        |
| <b>URI</b>         | <a href="http://inspire.ec.europa.eu/codelist/WarningTypeValue">http://inspire.ec.europa.eu/codelist/WarningTypeValue</a> |                                                                                                                                                                        |
| <b>Usage</b>       | warningType                                                                                                               |                                                                                                                                                                        |
| <b>Contents</b>    | <b>Value</b>                                                                                                              | <b>concretePaving</b>                                                                                                                                                  |
|                    | Description                                                                                                               | A set or paving of pavers or tiles in concrete material covering cables or pipes.                                                                                      |
|                    | <b>Value</b>                                                                                                              | <b>net</b>                                                                                                                                                             |
|                    | Description                                                                                                               | Warning net for protection of cables and pipes.                                                                                                                        |
|                    | <b>Value</b>                                                                                                              | <b>tape</b>                                                                                                                                                            |
|                    | Description                                                                                                               | Caution tape (also known as warning tape) is a resilient plastic tape of a signal colour or highly contrasting colour combination (such as yellow-black or red-white). |

#### 5.4.11 WaterAppurtenanceTypeValue

|                    |                                                                                                                                               |                        |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| <b>Name</b>        | <b>WaterAppurtenanceTypeValue</b>                                                                                                             |                        |
| <b>Definition</b>  | Classification of water appurtenances.                                                                                                        |                        |
| <b>Description</b> | Codelist containing values for the <i>appurtenanceType</i> property.                                                                          |                        |
| <b>URI</b>         | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue</a> |                        |
| <b>Usage</b>       | appurtenanceType                                                                                                                              |                        |
| <b>Contents</b>    | <b>Value</b>                                                                                                                                  | <b>airRelieveValve</b> |
|                    | Description                                                                                                                                   | Air relieve valve.     |
|                    | <b>Value</b>                                                                                                                                  | <b>checkValve</b>      |
|                    | Description                                                                                                                                   | Check valve.           |

|  |              |                           |
|--|--------------|---------------------------|
|  | <b>Value</b> | <b>fireHydrant</b>        |
|  | Description  | Fire hydrant.             |
|  | <b>Value</b> | <b>fountain</b>           |
|  | Description  | Fountain.                 |
|  | <b>Value</b> | <b>hydrant</b>            |
|  | Description  | Hydrant.                  |
|  | <b>Value</b> | <b>meter</b>              |
|  | Description  | Meter.                    |
|  | <b>Value</b> | <b>pressureController</b> |
|  | Description  | Pressure controller.      |
|  | <b>Value</b> | <b>pump</b>               |
|  | Description  | Pump.                     |
|  | <b>Value</b> | <b>systemValve</b>        |
|  | Description  | System valve.             |
|  | <b>Value</b> | <b>thrustProtection</b>   |
|  | Description  | Thrust protection.        |
|  | <b>Value</b> | <b>waterExhaustPoint</b>  |
|  | Description  | Water exhaust point.      |

#### 5.4.12 WaterTypeValue

|                    |                                                                                                                       |                |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|----------------|
| <b>Name</b>        | <b>WaterTypeValue</b>                                                                                                 |                |
| <b>Definition</b>  | Classification of water types.                                                                                        |                |
| <b>Description</b> | Codelist containing values for the <i>waterType</i> property.                                                         |                |
| <b>URI</b>         | <a href="http://inspire.ec.europa.eu/codelist/WaterTypeValue">http://inspire.ec.europa.eu/codelist/WaterTypeValue</a> |                |
| <b>Usage</b>       | waterType                                                                                                             |                |
| <b>Contents</b>    | <b>Value</b>                                                                                                          | <b>potable</b> |
|                    | Description                                                                                                           | Potable water. |
|                    | <b>Value</b>                                                                                                          | <b>raw</b>     |
|                    | Description                                                                                                           | Raw water.     |



|  |              |                |
|--|--------------|----------------|
|  | <b>Value</b> | <b>salt</b>    |
|  | Description  | Salt water.    |
|  | <b>Value</b> | <b>treated</b> |
|  | Description  | Treated water. |

## 6 Getting started

### 6.1 Introduction

This chapter contains several tips and tricks to assist in creating XML files according to the IMKL 3 standard. For more detailed examples, we refer to the sample files available online (<https://github.com/belgif/ICEGthema-imkl>).

### 6.2 IMKL namespace and dependencies

#### 6.2.1 IMKL 3 namespace

The namespace for the IMKL 3 schema is:

```
https://vocab.belgif.be/ns/imkl/3.0
```

The XSD is available for download at the following URL:

```
https://vocab.belgif.be/ns/imkl/3.0/imkl_3_0.xsd
```

#### 6.2.2 Schema imports

To be able to use the IMKL 3 XSD and other required XSDs, they must be defined in the XML that is generated to represent the UtilityNetwork. This can be done as demonstrated in the example below. Notice the declaration of the *imkl* namespace using the URIs as specified above. Schemas that are not used can be removed from the import.

Example of namespace declaration:

```
<gml:FeatureCollection
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:act-core="http://inspire.ec.europa.eu/schemas/act-core/4.0"
  xmlns:us-net-common="http://inspire.ec.europa.eu/schemas/us-net-common/4.0"
  xmlns:us-net-el="http://inspire.ec.europa.eu/schemas/us-net-el/4.0"
  xmlns:us-net-tc="http://inspire.ec.europa.eu/schemas/us-net-tc/4.0"
  xmlns:us-net-ogc="http://inspire.ec.europa.eu/schemas/us-net-ogc/4.0"
  xmlns:us-net-sw="http://inspire.ec.europa.eu/schemas/us-net-sw/4.0"
  xmlns:us-net-wa="http://inspire.ec.europa.eu/schemas/us-net-wa/4.0"
  xmlns:us-net-th="http://inspire.ec.europa.eu/schemas/us-net-th/4.0"
  xmlns:net="http://inspire.ec.europa.eu/schemas/net/4.0"
  xmlns:base="http://inspire.ec.europa.eu/schemas/base/3.3"
  xmlns:base2="http://inspire.ec.europa.eu/schemas/base2/2.0"
  xmlns:imkl="https://vocab.belgif.be/ns/imkl/3.0"
```



```
xsi:schemaLocation="https://vocab.belgif.be/ns/imkl/3.0
https://vocab.belgif.be/ns/imkl/3.0/imkl_3_0.xsd"
xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:gmd="http://www.isotc211.org/2005/gmd">
```

## 6.3 CDATA tags

In IMKL 3.0 documents, the use of CDATA tags is not allowed.

## 6.4 Language

In IMKL 3, the English language is used for all items specified in the data model (e.g. objects, properties, codelist values). However, various elements allow for the specification of free text, such as the disclaimer, labels, descriptions or the colour of cables or pipes. For these properties it is required to indicate the language of the free text in these elements. The supported languages are German (#de), English (#en), French (#fr), or Dutch (#nl). For these language-specific free text fields it is also possible to provide text in multiple languages (see the example below).

### Example of appearance and colour:

```
<imkl:appearance>
  <imkl:colour>
    <gmd:PT_FreeText>
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#en">
          White
        </gmd:LocalisedCharacterString>
      </gmd:textGroup>
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#nl">
          Wit
        </gmd:LocalisedCharacterString>
      </gmd:textGroup>
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#fr">
          Blanc
        </gmd:LocalisedCharacterString>
      </gmd:textGroup>
    </gmd:PT_FreeText>
  </imkl:colour>
</imkl:appearance>
```

Example of description:

```

<imkl:description>
  <gmd:PT_FreeText>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#en">This is an
example</gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#nl">Dit is een
voorbeeld</gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#fr">Voici un
exemple</gmd:LocalisedCharacterString>
    </gmd:textGroup>
  </gmd:PT_FreeText>
</imkl:description>

```

This representation follows the existing method for displaying text in multiple languages, as defined in the INSPIRE XSDs.

Example of disclaimer:

```

<us-net-common:disclaimer>
  <gmd:PT_FreeText>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#en">Example</gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#nl">Voorbeeld</gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#fr">Exemple</gmd:LocalisedCharacterString>
    </gmd:textGroup>
  </gmd:PT_FreeText>
</us-net-common:disclaimer>

```



## 6.5 Order of elements

The XSD schema of IMKL 3 defines which elements can appear per object and specifies the order of these elements. In general, elements that are inherited from the INSPIRE model come first. Next are the elements that are shared by multiple objects. Elements that are specific for a single object come last. This ordering allows for the reuse of common elements through groups (e.g. `imkl:UtilityNodeContainerGroup`) which simplifies the XSD.

For the correct order of elements, please refer to the XSD schema itself or to the IMKL 3 data dictionary in chapter 4. These resources provide detailed information on the sequence of elements required for each object.

## 6.6 nilReason

For certain properties, it is not mandatory to provide a value. If a property is optional, it can be omitted. However, for mandatory properties, this is not allowed, and it is required to specify why no valid value was provided. The following things are required for this:

1. The `xsi:nil` attribute must be provided with a *true* value.
2. The `nilReason` attribute must be provided with a value from the *nilReason* codelist (section 5.4.3).

Which properties allow for a `nilReason` to be provided is detailed in section 4.5.

Example of a *method* element with a *nilReason*:

```
<imkl:method nilReason="unknown" xsi:nil="true" />
```

## 6.7 Using codelists in IMKL and referencing other objects

### 6.7.1 Using codelists in IMKL

In IMKL, referencing the value of a codelist is done through the `xlink:href` attribute of the element. The value of this attribute corresponds to the URI of the codelist value.

Some examples:

*appurtenanceType* of an *Appurtenance* object:

```
<us-net-common:appurtenanceType  
  xlink:href="http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/sewerNode"  
/>
```

*utilityNetworkType* of a *UtilityNetwork* object:

```
<us-net-common:utilityNetworkType
  xlink:href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/sewer" />
```

subtheme of a SewerPipe object:

```
<imkl:subtheme
  xlink:href="https://vocab.belgif.be/auth/IMKL-
  SewerSubthemeValue/sewageWasteWaterPressurePipe" />
```

An exception to this rule is the *us-net-common:verticalPosition* property. In this case, *xlink:href* is not used. Instead, the value is provided directly as the value of the XML element.

verticalPosition of a UtilityNetworkElement:

```
<us-net-common:verticalPosition>onGroundSurface</us-net-common:verticalPosition>
```

## 6.7.2 Referencing other objects

In various sections of IMKL, it is necessary to include references to other IMKL objects, such as when listing all elements of a *UtilityNetwork* (via the *elements* property). This is achieved in the same manner as referencing codelist values, by utilizing the *xlink:href* attribute.

The URI for the referenced object is structured as follows (the *versionId* is optional and can be omitted):

[namespace]/[object type]/[object namespace]:[object localId]:[versionId]

*UtilityLink* objects are in the *us-net-common* namespace and need to be referenced like this:

```
<net:elements xlink:href="http://inspire.ec.europa.eu/schemas/us-net-
common/4.0/UtilityLink/telecom-be:001" />
```

All other objects are in the *imkl* namespace. For example, referencing an *Appurtenance* object with a namespace of *telecom-be* and a *localId* of *001*, from a *UtilityNetwork*, is done like this:

```
<net:elements xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/telecom-
be:001" />
```

## 6.8 Geometry

### 6.8.1 Overview

When representing geometries in IMKL 3, the following rules apply:

- The coordinate reference system to be used is Lambert2008.
- Z-coordinates are allowed (2.5D), although their inclusion alongside XY-coordinates is optional.



- The `srsDimension` attribute is mandatory.

These changes are further explained in sections 6.8.2 and 6.8.3.

## 6.8.2 Coordinate reference system

In IMKL 3, Lambert2008 (EPSG:3812) is used as the coordinate reference system for all geometries.

To specify the correct coordinate reference system, use the `srsName` attribute.

```
srsName="http://spatialreference.org/ref/epsg/3812/"
```

## 6.8.3 2.5D and `srsDimension`

IMKL 3 supports the inclusion of 2.5D coordinates. This means Z-coordinates can be provided when available. The value of the Z-coordinates should correspond with the TAW/DNG level (EPSG:5710). However, to provide depth information, it is recommended to include the *StandardCoverageDetail*, *DepthDetail* and *CoverageDetail* objects.

Note that only one Z-coordinate is required for every XY-coordinate pair. Therefore, in the context of IMKL 3 this is referred to as 2.5D rather than a true 3D representation of objects. The interpretation of the Z-coordinate should follow the same guidelines as those of the `verticalPosition` (section 6.10).

To differentiate between geometries specified in 2D and those in 2.5D, the `srsDimension` attribute must be added. For 2D coordinates, set `srsDimension` to 2. For 2.5D coordinates, set `srsDimension` to 3. Although the usage of 2.5D coordinates is optional, the `srsDimension` attribute itself is mandatory.

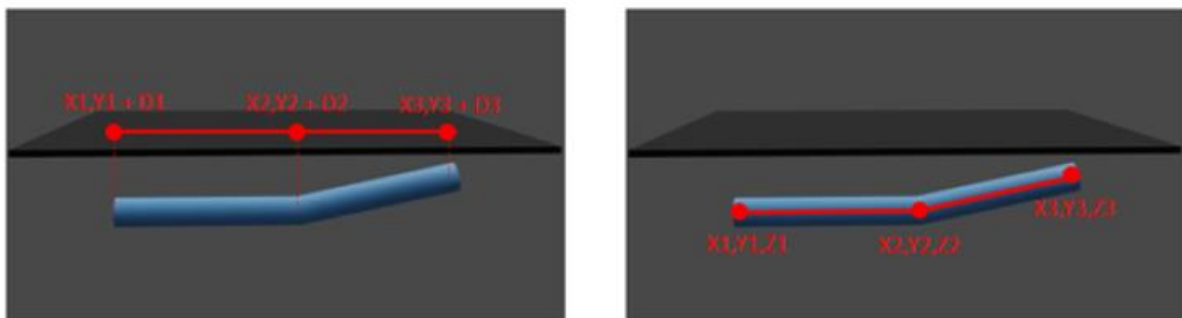


Figure 1 - 2D + depth (left) vs 2.5D (right)

### Example of 2D coordinates:

```
<net:centrelineGeometry>
  <gml:LineString srsName="http://spatialreference.org/ref/epsg/3812/" srsDimension="2">
    <gml:posList>603516 692178 603576 692157</gml:posList>
  </gml:LineString>
</net:centrelineGeometry>
```

### Example of 2.5D coordinates:

```
<net:centrelineGeometry>
  <gml:LineString srsName="http://spatialreference.org/ref/epsg/3812/" srsDimension="3">
    <gml:posList>603516 692178 20 603576 692157 20</gml:posList>
  </gml:LineString>
</net:centrelineGeometry>
```

Note that *srsDimension* with value 1 is also possible. This is the case when specifying a TAW/DNG level (Tweede Algemene Waterpassing / Deuxième Nivellement General). Here, EPSG:5710 is used. See section 6.10.2 for more information.

Example of a TAW/DNG level:

```
<imkl:verticalPosition srsName="http://spatialreference.org/ref/epsg/5710/"
srsDimension="1">22.02</imkl:verticalPosition>
```



## 6.9 Survey

In IMKL 3, elements of type *Survey* are used for objects where location, depth or vertical position information can be specified. This *Survey* element allows for the following data to be provided:

- **method:** Specifies the method used to determine the location, depth or vertical position. This element is mandatory but it can be empty and have a *nilReason*.
- **recordedBy:** Indicates the person or organization who conducted the survey. This element is optional.
- **date:** Specifies the date when the survey was conducted. This element is optional.
- **accuracy:** Provides the accuracy with which the location, depth or vertical position was determined. This element is mandatory but it can be empty and have a *nilReason*.

The *Survey* type is utilized in various places across IMKL 3. The name of the element varies depending on the object it applies to, ensuring clarity in interpretation. For example:

- *ActivityComplex* includes a *geometry* and a *geometrySurvey*. The *geometrySurvey* applies to the *geometry*.
- *ExtraPlan* has a *location* and a *locationSurvey*. The *locationSurvey* applies to the *location*.
- *DepthDetail* includes a *verticalPosition*, *depth* or *height* and a *verticalPositionSurvey*. The *verticalPositionSurvey* applies to either the *verticalPosition*, *depth* or *height*.

A *Survey* element is available for objects with a geometry, excluding *Annotations*. It is mandatory for all cables, pipes, ducts, appurtenances, towers, poles, cabinets and manholes. For other objects it is optional.

## 6.10 DepthDetail and CoverageDetail

### 6.10.1 DepthDetail vs CoverageDetail

In IMKL 3, a *DepthDetail* object should be used for elements with a point geometry. It can be used to represent both a relative depth as well as a TAW/DNG level. For elements with a point geometry the depth or vertical position information should be interpreted as the lowest point of the element.

Elements with a point geometry are:

- Appurtenance
- Connection
- Tower
- Pole
- Cabinet
- Manhole

A *CoverageDetail* object should be used for elements with a line geometry. For these elements the depth or vertical position information should be interpreted as the highest part of the element.

Elements with a line geometry (via the referenced *UtilityLinks*) are:

- ElectricityCable
- TelecommunicationsCable
- Pipe
- OilGasChemicalsPipe
- SewerPipe
- WaterPipe
- ThermalPipe
- Duct

Since *DepthDetail* is applicable only for elements with a point geometry, it is not possible to provide a *location* or *locationSurvey* together with the *DepthDetail*. On the other hand, it is required to provide a *location* and *locationSurvey* in the *CoverageDetail* object. Without a location it would not be clear to which location along the trajectory of the line the *CoverageDetail* information applies.

### 6.10.2 depth, height and verticalPosition

Every *DepthDetail* or *CoverageDetail* object should have exactly one of the following element:

- **depth:** The *depth* element represents the depth below the reference surface. A *uom* attribute must be included for this element.
- **height:** The *height* element is similar to the *depth*, but it represents a height above the reference surface. A *uom* attribute must be included for this element.
- **verticalPosition:** The *verticalPosition* element should be used to provide a TAW/DNG level. Note that the *srsName* and *srsDimension* attributes are required for this element.

Example of depth:

```
<imkl:depth uom="urn:ogc:def:uom:OGC::cm">100</imkl:depth>
```

Example of height:

```
<imkl:height uom="urn:ogc:def:uom:OGC::cm">100</imkl:height>
```

Example of verticalPosition:

```
<imkl:verticalPosition
  srsName="http://spatialreference.org/ref/epsg/5710/"
  srsDimension="1">21.65
</imkl:verticalPosition>
```

### 6.10.3 verticalPositionSurvey

Every *DepthDetail* and *CoverageDetail* object should have a *verticalPositionSurvey* element. This element is of type *Survey* and provides additional information on the *depth*, *height* or *verticalPosition*.



#### Example of verticalPositionSurvey:

```
<imkl:verticalPositionSurvey>
  <imkl:method nilReason="missing" xsi:nil="true" />
  <imkl:date>2001-12-17T09:30:47Z</imkl:date>
  <imkl:accuracy uom="urn:ogc:def:uom:OGC::cm">30</imkl:accuracy>
</imkl:verticalPositionSurvey>
```

### 6.10.4 referenceSurface

Every *DepthDetail* and *CoverageDetail* object has an element called *referenceSurface*. This element is mandatory and needs to have at least a *referenceSurfaceType* child element. This *referenceSurfaceType* element indicates the type of the reference surface. It should always be of type *surfaceLevel*.

Next to the *referenceSurfaceType* child element, the *referenceSurface* can have the following optional child elements:

- **verticalPosition:** The *verticalPosition* element can be used to indicate the TAW/DNG level of the reference surface at the given location. If no location is given for the reference surface, it is assumed that the location is the same as the location of the *UtilityNetworkElement* or *CoverageDetail* object itself.
- **verticalPositionSurvey:** The *verticalPositionSurvey* element is of type *Survey* and can be used to provide additional information on how the *verticalPosition* was determined. It can be used to provide for example the date the vertical position of the reference surface was determined.
- **location:** The *location* element can be used if the location where the TAW/DNG level of the reference surface was determined is not the same as that of the *UtilityNetworkElement* or *CoverageDetail* object it is linked to.
- **locationSurvey:** The *locationSurvey* element is of type *Survey* and can be used to provide additional information on how the location of the reference surface was determined.

#### Example of referenceSurface:

```
<imkl:referenceSurface>
  <imkl:referenceSurfaceType xlink:href="https://vocab.belgif.be/auth/IMKL-
ReferenceSurfaceTypeValue/surfaceLevel" />
  <imkl:verticalPosition srsName="http://spatialreference.org/ref/epsg/5710/"
  srsDimension="1">22.02</imkl:verticalPosition>
  <imkl:verticalPositionSurvey>
    <imkl:method nilReason="unknown" xsi:nil="true" />
    <imkl:date>2001-12-17T09:30:47Z</imkl:date>
    <imkl:accuracy uom="urn:ogc:def:uom:OGC::cm" nilReason="unknown"
xsi:nil="true"></imkl:accuracy>
```

```

    </imkl:verticalPositionSurvey>
  </imkl:referenceSurface>

```

### 6.10.5 Associations

A single *DepthDetail* or *CoverageDetail* object can be linked to multiple *UtilityNetworkElement* objects. If multiple *UtilityNetworkElement* objects have the same depth, height or vertical position information, the *DepthDetail* or *CoverageDetail* can be reused and needs to be provided only once. This means a *DepthDetail* or *CoverageDetail* object can have as many *on* elements as needed.

## 6.11 StandardCoverageDetail

The *StandardCoverageDetail* object can be used to provide one or more standard coverages for the *UtilityNetwork*. *StandardCoverageDetail* is similar to the *CoverageDetail* object, but with the following differences:

- Because a standard coverage is not limited to specific *UtilityNetworkElement* objects there is no need to provide a specific location. Hence, there is no option to add the *location* or *locationSurvey* elements.
- Because a standard coverage is not linked to specific *UtilityNetworkElement* objects there is no *on* association.
- There is an extra element called *subtheme*. If there are different standard coverages depending on the subtheme of *Cable*, *Pipe* objects, it is possible to provide multiple standard coverages for a single *UtilityNetwork*. Via the *subtheme* element you can specify for which subtheme(s) the standard coverage should be used. There should be at most one standard coverage per subtheme. There can also be at most one standard coverage without a subtheme per *UtilityNetwork*. The *StandardCoverageDetail* without subtheme will be used as the standard coverage for all *Cable*, *Pipe* or *Duct* objects that do not have a standard coverage for their subtheme or that do not have an element specific coverage detail. Note that *Duct* and generic *Pipe* objects cannot have a *subtheme*. For these objects a *StandardCoverageDetail* without subtheme needs to be provided (if applicable).

#### Example of StandardCoverageDetail:

```

<imkl:StandardCoverageDetail gml:id="ID_be8fc9cc-775f-4469-a8ce-bf1c892e5e14">
  <imkl:imklId>
    <base:Identifier>
      <base:localId>DD001</base:localId>
      <base:namespace>sewercom-be</base:namespace>
    </base:Identifier>
  </imkl:imklId>

```



```
</base:Identifier>
</imkl:imklId>
<imkl:beginLifespanVersion>2001-12-17T09:30:47Z</imkl:beginLifespanVersion>
<imkl:referenceSurface>
  <imkl:referenceSurfaceType xlink:href="https://vocab.belgif.be/auth/IMKL-
ReferenceSurfaceTypeValue/surfaceLevel" />
</imkl:referenceSurface>
<imkl:depth uom="urn:ogc:def:uom:OGC::cm">100</imkl:depth>
<imkl:verticalPositionSurvey>
  <imkl:method nilReason="missing" xsi:nil="true" />
  <imkl:date>2001-12-17T09:30:47Z</imkl:date>
  <imkl:accuracy uom="urn:ogc:def:uom:OGC::cm">30</imkl:accuracy>
</imkl:verticalPositionSurvey>
<imkl:inNetwork
  xlink:href=" https://vocab.belgif.be/ns/imkl/3.0/UtilityNetwork/sewercom-be:001" />
</imkl:StandardCoverageDetail>
```

## 6.12 Connection

*Connections* are a specific type of *Appurtenance*. They represent the connection of *Cable* or *Pipe* objects to a building or other physical object. Compared to *Appurtenance* objects, *Connection* objects include one additional, but optional, element called *address*. The *address* element includes the following child elements:

- **municipalityName:** The *municipalityName* element is mandatory. The *municipality* is a language-specific string.
- **streetName:** The *streetName* element is mandatory. The *streetName* is a language-specific string.
- **houseNumber:** The *houseNumber* element is optional. The *houseNumber* is a simple string.
- **postalCode:** The *postalCode* element is optional. The *postalCode* is a simple string.

A *Connection* object must have one of the following *appurtenanceTypes*:

- WaterAppurtenanceTypeIMKLValue – deliveryPoint
- ThermalAppurtenanceTypeIMKLValue – deliveryPoint
- ElectricityAppurtenanceTypeValue – deliveryPoint
- OilGasChemicalsAppurtenanceTypeValue – deliveryPoint
- TelecommunicationsAppurtenanceTypeIMKLValue – termination

- SewerAppurtenanceTypeIMKLValue – deliveryPoint

Example of an address:

```
<imkl:address>
  <imkl:municipalityName>
    <gmd:PT_FreeText>
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#fr">Gand</gmd:LocalisedCharacterString>
      </gmd:textGroup>
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#nl">Gent</gmd:LocalisedCharacterString>
      </gmd:textGroup>
    </gmd:PT_FreeText>
  </imkl:municipalityName>
  <imkl:streetName>
    <gmd:PT_FreeText>
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#nl">Koningin
Fabiolalaan</gmd:LocalisedCharacterString>
      </gmd:textGroup>
    </gmd:PT_FreeText>
  </imkl:streetName>
  <imkl:houseNumber>5</imkl:houseNumber>
  <imkl:postalCode>9000</imkl:postalCode>
</imkl:address>
```

## 7 Best practices

### 7.1 Introduction

This section outlines several best practices for providing specific information in IMKL 3. These recommendations aim to enhance clarity and consistency in data representation.

### 7.2 Contact information

Contact information should be provided via the *imkl:authorityRole* element of a *UtilityNetwork*. Contact information should only be provided via the designated fields (name, phone, email). The phone number should include the country code. The email address should be an actively monitored email address. Do not use a *noreply* address.

The purpose of this contact information is to give users the ability to reach out to someone who can answer technical questions about elements of the utility network.

### 7.3 Disclaimer

A disclaimer can be provided via the *us-net-common:disclaimer* element of a *UtilityNetwork*. Keep the disclaimer concise. Detailed disclaimers should be provided through an attached *Document* with the type *precaution* (section 7.7).

### 7.4 Utility Network Elements

Cables, Pipes and Ducts should be drawn as accurately as possible. The geometries should be provided via *UtilityLink* objects. All properties should be provided in IMKL via the designated objects and properties. This ensures that users can easily access this information. Do not assume that a user will always review attached *ExtraPlan* objects.

Appurtenances should be designated with the most appropriate *appurtenanceType*. Provide a clear description when the *other* type is used.

### 7.5 ActivityComplex

Use an *ActivityComplex* object for:

- Sites with a complex network of cables, pipes and ducts.
- Large underground structures that do not have their own IMKL object (e.g. an underground water container).

Clearly indicate the function of the *ActivityComplex* via the *function* element. Via the *function* element the activity and a description can be provided (section 4.4.4).

## 7.6 Depth and vertical position

Depth or vertical position information that deviates from the standard coverage should be provided via designated *DepthDetail* or *CoverageDetail* objects. This ensures that users can easily access this information. Do not assume that a user will always review attached *ExtraPlan* objects.

## 7.7 Precautions

A *UtilityNetwork* object can reference *Document* objects. These *Document* objects can include the safety precautions that need to be taken into account for elements within the *UtilityNetwork*. A *Document* object representing a precaution must have its *documentType* set to *precaution*. The *precaution* value is one of the options of the *DocumentTypeValue* codelist and should be used for this purpose. It should not be used for *ExtraPlans*.

Example of a “precaution” Document:

```
<gml:featureMember>
  <imkl:UtilityNetwork gml:id="ID_230dbcf3-4fbd-4118-9f57-b2f370f04107">
    ...
    <imkl:imklId>
      <base:Identifier>
        <base:localId>001</base:localId>
        <base:namespace>aquacom-be</base:namespace>
      </base:Identifier>
    </imkl:imklId>
    ...
    <imkl:documentation xlink:href="https://vocab.belgif.be/ns/imkl/3.0
/Document/aquacom-be:D001" />
  </imkl:UtilityNetwork>
</gml:featureMember>

<gml:featureMember>
  <imkl:Document gml:id="ID_5b5e7f28-c98d-4bfd-bf0f-33e5c3cbb9c8">
    <imkl:imklId>
      <base:Identifier>
        <base:localId>D001</base:localId>
        <base:namespace>aquacom-be</base:namespace>
      </base:Identifier>
    </imkl:imklId>
    <imkl:beginLifespanVersion>2001-12-17T09:30:47.0Z</imkl:beginLifespanVersion>
    <imkl:documentType xlink:href="https://vocab.belgif.be/auth/IMKL-
DocumentTypeValue/precaution" />
  </imkl:Document>
</gml:featureMember>
```



```
<imkl:documentLocation>Voorzorgsmaatregelen.pdf</imkl:documentLocation>
<imkl:documentMediaType xlink:href="https://vocab.belgif.be/auth/IMKL-
DocumentMediaTypeValue/PDF" />
<imkl:inNetwork xlink:href=" https://vocab.belgif.be/ns/imkl/3.0
/UtilityNetwork/aquacom-be:001" />
</imkl:Document>
</gml:featureMember>
```

## 7.8 ExtraPlan

Through *ExtraPlan* objects, it is possible to add additional information via attached documents. The purpose of an *ExtraPlan* is to provide information that cannot be included in any other way within IMKL. Cables, pipes, and other objects should primarily be included as objects in the IMKL XML document, with all mandatory properties. In other words, it is not intended for these objects to be provided solely via an *ExtraPlan*.

Documents containing safety instructions are not *ExtraPlans*. These documents should be provided as *Document* with the correct *documentType* (section 7.7).

## 7.9 Directional drillings

In IMKL 2.3, there was no direct method to indicate that a cable, pipe or duct was installed using directional drilling (*gestuurde boring*). The only method available was to add an *ExtraPlan* with the *extraPlanType* set to *gestuurdeBoring*.

In IMKL 3, the *constructionTechnique* element should be used to specify that a cable, pipe or duct is installed via a directional drilling by setting its value to *directionalDrilling*.

It is strongly recommended to include the *constructionTechnique* element with the correct value when the construction technique is known. This allows elements with a specific construction technique to be visualized distinctly so they can be easily identified when looking at the map.

The *DocumentTypeValue* codelist in IMKL 3 also includes the option *directionalDrilling*. This allows for the addition of *ExtraPlans* providing additional documentation for a directional drilling. For these *ExtraPlans* the *documentType* should be set to *directionalDrilling*. If the *ExtraPlan* contains information in addition to directional drilling information, use the type *directionalDrilling*. However, in this case, it is recommended to split the *ExtraPlan*.

An *ExtraPlan* with its *documentType* set to *directionalDrilling* must be linked to a cable, pipe or duct whose *constructionTechnique* is set to *directionalDrilling*. Having an *ExtraPlan* with a *documentType* of *directionalDrilling* linked to an object with a different *constructionTechnique* is not valid.

### Example of a directional drilling:

```
<gml:featureMember>
  <imkl:Duct gml:id="ID_83dd154b-a708-4d93-bbe0-173f46e896da">
    <net:beginLifespanVersion>2001-12-17T09:30:47.0Z</net:beginLifespanVersion>
    <net:inspireId>
```

```

    <base:Identifier>
      <base:localId>D001</base:localId>
      <base:namespace>telecom-be</base:namespace>
    </base:Identifier>
  </net:inspireId>
  ...
  <imkl:constructionTechnique
    xlink:href="https://vocab.belgif.be/auth/IMKL-
ConstructionTechniqueValue/directionalDrilling" />
  ...
</imkl:Duct>
</gml:featureMember>

```

If a *Cable* or *Pipe* is installed via a combination of *open trench* and *directional drilling* construction techniques, the following approach is recommended:

- Provide a single *Cable* or *Pipe* object representing the entire trajectory of the *Cable* or *Pipe*, and set its *constructionTechnique* to *openTrench*.
- For each section of the *Cable* or *Pipe* where directional drilling is used, provide a *Duct* object and set the *constructionTechnique* of this object to *directionalDrilling*. Link the *Cables* or *Pipes* passing through the directional drilling to these *Duct* objects via the *cables* or *pipes* element of the *Duct*.

An alternative method is to specify the *directional drilling* construction technique directly on the *Cable* or *Pipe* itself. However, if the construction technique is not the same for the entire *Cable* or *Pipe* (e.g., a combination of open trench and directional drilling), this requires splitting the *Cable* or *Pipe* into segments, so that each segment has the correct construction technique assigned.

Example of a *Cable* with a combination of *openTrench* and *directionalDrilling* techniques:

```

<imkl:TelecommunicationsCable>
  <net:inspireId>
    <base:Identifier>
      <base:localId>001</base:localId>
      <base:namespace>telecom-be</base:namespace>
    </base:Identifier>
  </net:inspireId>
  <net:link xlink:href="http://inspire.ec.europa.eu/schemas/us-net-
common/4.0/UtilityLink/electricitycom-be:002" />
  <imkl:constructionTechnique xlink:href="https://vocab.belgif.be/auth/IMKL-
ConstructionTechniqueValue/openTrench" />
</imkl:TelecommunicationsCable>

<imkl:Duct>

```



```
<net:inspireId>
  <base:Identifier>
    <base:localId>D001</base:localId>
    <base:namespace>electricitycom-be</base:namespace>
  </base:Identifier>
</net:inspireId>
<net:link xlink:href="http://inspire.ec.europa.eu/schemas/us-net-common/4.0
/UtilityLink/telecom-be:004" />
<us-net-common:cables xlink:href="
https://vocab.belgif.be/ns/imkl/3.0/TelecommunicationsCable/telecom-be:001" />
<imkl:constructionTechnique
  xlink:href="https://vocab.belgif.be/auth/IMKL-
ConstructionTechniqueValue/directionalDrilling" />
</imkl:Duct>
```

## 7.10 Measurement points and drinking water extraction points

In some utility networks, measurement locations play an important role in measuring or monitoring specific values, such as groundwater levels. These measurement points are typically vertical drillings.

In IMKL 3, the recommended way to represent these utility network elements is by including them as *Appurtenance* objects. The following information can be provided for each measurement point:

- **Location:** The location should be provided as a 2D or 2.5D point.
- **Depth:** The depth of the *Appurtenance* can be provided by adding a *depthDetail* element. As explained in section 6.10, this depth should be interpreted as the lowest point of the *Appurtenance* (the total depth of the vertical drilling in this case).
- **Height:** An optional *height* element can be included to provide information on the total height of the *Appurtenance*, for example if some part extends above the surface.

Note: The *height* element refers to the height of the object itself and does not indicate the vertical position of the object. Therefore, the height mentioned here is different from the height described in section 6.10.2.

- **Type:** The *appurtenanceType* element should be set to *measurementPoint*. This value is available in the following codelists: *OilGasChemicalsAppurtenanceTypeIMKLValue*, *SewerAppurtenanceTypeIMKLValue*, *WaterAppurtenanceTypeIMKLValue* and *ThermalAppurtenanceTypeIMKLValue*.

Extraction points for drinking water share similarities with measurement points, as both can be included as *Appurtenance* objects within IMKL 3. However, for these objects the *appurtenanceType* should be set to *drinkingWaterExtractionPoint*, which is available in the *WaterAppurtenanceTypeIMKLValue* codelist.

## 7.11 Connection lines

Connection lines are the lines that link the distribution network to the end customer. Since these lines are typically located on the customer's property, it can be useful to differentiate them from the network operator's distribution network. To facilitate this, a specific *utilityDeliveryType* is provided: *connection*. Note that the *connection* option is not part of the *UtilityDeliveryTypeValue* codelist from INSPIRE, but belongs to an IMKL-specific codelist: *UtilityDeliveryTypeIMKLValue*.

At the end of the connection line, a *Connection* object can be included to provide the address details of the connection.

## 7.12 Vaulted waterways

The recommended way to include underground, vaulted waterways in IMKL is as *SewerPipe* objects with the value *waterDrainageArchedWaterways* for the *subtheme* property. The property *sewerWaterType* should be given the value *storm*. The width of the vaulted waterways can be included via the *pipeDiameter* property.

## 7.13 Shared containers

A *Cable*, *Pipe*, or *Duct* from one utility operator is sometimes located inside a container (*Pipe* or *Duct*) of another utility operator. In such cases, the *Cable*, *Pipe*, or *Duct* will be specified in a different IMKL file than the one in which the container is specified. As a result, it is not possible to directly specify the relationship between *Cable*, *Pipe*, or *Duct* and its container in IMKL.

To indicate that a *Cable*, *Pipe*, or *Duct* is inside a container belonging to another utility operator, the *inSharedContainer* property can be added with the value *true*. This helps people understand that the *Cable*, *Pipe*, or *Duct* will not be immediately visible on-site, as it is enclosed within a *Pipe* or *Duct* of another utility operator.

If a *Cable*, *Pipe*, or *Duct* is not inside a container of another utility operator, the *inSharedContainer* property can either be omitted or set to *false*.

**Note:** If a *Cable*, *Pipe*, or *Duct* is inside a container belonging to the same utility operator, a clear relationship can be established in the IMKL file using the *cables*, *pipes*, or *ducts* properties within the *Pipe* or *Duct*. The *inSharedContainer* property does not need to be set to *true* in this case.

## 8 Codelist URIs

| Theme                             | URI                                                                                                                                                                             |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AnnotationTypeValue</b>        |                                                                                                                                                                                 |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/annotationLabel">https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/annotationLabel</a>                       |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/annotationLine">https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/annotationLine</a>                         |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/arrow">https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/arrow</a>                                           |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/dimensioningGuideline">https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/dimensioningGuideline</a>           |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/dimensioningLabel">https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/dimensioningLabel</a>                   |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/dimensioningLine">https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/dimensioningLine</a>                     |
| <b>ConditionOfFacilityValue</b>   |                                                                                                                                                                                 |
| common                            | <a href="http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/disused">http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/disused</a>                       |
| common                            | <a href="http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/functional">http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/functional</a>                 |
| common                            | <a href="http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/projected">http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/projected</a>                   |
| common                            | <a href="http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/underConstruction">http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/underConstruction</a>   |
| <b>ConstructionTechniqueValue</b> |                                                                                                                                                                                 |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/culvert">https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/culvert</a>                         |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/directionalDrilling">https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/directionalDrilling</a> |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/openTrench">https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/openTrench</a>                   |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/other">https://vocab.belgif.be/auth/IMKL-ConstructionTechniqueValue/other</a>                             |
| <b>ContainerTypeValue</b>         |                                                                                                                                                                                 |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-ContainerTypeValue/cableAndPipeGutter">https://vocab.belgif.be/auth/IMKL-ContainerTypeValue/cableAndPipeGutter</a>                   |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-ContainerTypeValue/jacketPipe">https://vocab.belgif.be/auth/IMKL-ContainerTypeValue/jacketPipe</a>                                   |
| <b>DocumentMediaTypeValue</b>     |                                                                                                                                                                                 |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/JPEG">https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/JPEG</a>                                       |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/PDF">https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/PDF</a>                                         |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/PNG">https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/PNG</a>                                         |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/TIFF">https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/TIFF</a>                                       |



| DocumentTypeValue                    |                                                                                                                                                                                                               |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/crossSection">https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/crossSection</a>                                                               |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/detailedPlan">https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/detailedPlan</a>                                                               |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/directionalDrilling">https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/directionalDrilling</a>                                                 |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/longitudinalSection">https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/longitudinalSection</a>                                                 |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/other">https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/other</a>                                                                             |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/precaution">https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/precaution</a>                                                                   |
| ElectricityAppurtenanceTypeIMKLValue |                                                                                                                                                                                                               |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricityAppurtenanceTypeIMKLValue/grounding">https://vocab.belgif.be/auth/IMKL-ElectricityAppurtenanceTypeIMKLValue/grounding</a>                               |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricityAppurtenanceTypeIMKLValue/marker">https://vocab.belgif.be/auth/IMKL-ElectricityAppurtenanceTypeIMKLValue/marker</a>                                     |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricityAppurtenanceTypeIMKLValue/sleeve">https://vocab.belgif.be/auth/IMKL-ElectricityAppurtenanceTypeIMKLValue/sleeve</a>                                     |
| ElectricityAppurtenanceTypeValue     |                                                                                                                                                                                                               |
| electricity                          | <a href="http://inspire.ec.europa.eu/codelist/ElectricityAppurtenanceTypeValue/deliveryPoint">http://inspire.ec.europa.eu/codelist/ElectricityAppurtenanceTypeValue/deliveryPoint</a>                         |
| electricity                          | <a href="http://inspire.ec.europa.eu/codelist/ElectricityAppurtenanceTypeValue/streetLight">http://inspire.ec.europa.eu/codelist/ElectricityAppurtenanceTypeValue/streetLight</a>                             |
| ElectricitySubthemeValue             |                                                                                                                                                                                                               |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityCathodicProtection">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityCathodicProtection</a>               |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityDistributionHighVoltage">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityDistributionHighVoltage</a>     |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityDistributionLowVoltage">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityDistributionLowVoltage</a>       |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityPublicLighting">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityPublicLighting</a>                       |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityTrafficEnforcementSystems">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityTrafficEnforcementSystems</a> |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityTrafficLights">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityTrafficLights</a>                         |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityTransport">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityTransport</a>                                 |
| electricity                          | <a href="https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityTransportLocal">https://vocab.belgif.be/auth/IMKL-ElectricitySubthemeValue/electricityTransportLocal</a>                       |
| MaterialTypeValue                    |                                                                                                                                                                                                               |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/brickwork">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/brickwork</a>                                                                     |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/concrete">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/concrete</a>                                                                       |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/crossLinkPolyethylene">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/crossLinkPolyethylene</a>                                             |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/ductileCastIron">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/ductileCastIron</a>                                                         |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/ductileCastIronBlutop">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/ductileCastIronBlutop</a>                                             |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/fiberCement">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/fiberCement</a>                                                                 |
| common                               | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/galvanisedSteel">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/galvanisedSteel</a>                                                         |



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|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/glassFiberReinforcedPolyester">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/glassFiberReinforcedPolyester</a>                                                         |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/grayCastIron">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/grayCastIron</a>                                                                                           |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/jute">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/jute</a>                                                                                                           |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/lead">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/lead</a>                                                                                                           |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/other">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/other</a>                                                                                                         |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polyethylene">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polyethylene</a>                                                                                           |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polyethyleneHighDensity">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polyethyleneHighDensity</a>                                                                     |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polyethyleneSafetyLine">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polyethyleneSafetyLine</a>                                                                       |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polypropylene">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polypropylene</a>                                                                                         |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polypropyleneSLA">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/polypropyleneSLA</a>                                                                                   |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/prestressedConcrete">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/prestressedConcrete</a>                                                                             |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/pvc">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/pvc</a>                                                                                                             |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/sideroCement">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/sideroCement</a>                                                                                           |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/stainlessSteel">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/stainlessSteel</a>                                                                                       |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/steel">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/steel</a>                                                                                                         |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/stoneware">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/stoneware</a>                                                                                                 |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/sulfurConcrete">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/sulfurConcrete</a>                                                                                       |
| common                                          | <a href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/unknown">https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/unknown</a>                                                                                                     |
| <b>OilGasChemicalsAppurtenanceTypeIMKLValue</b> |                                                                                                                                                                                                                                           |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/adapter">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/adapter</a>                                                       |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/airBeacon">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/airBeacon</a>                                                   |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/blowHole">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/blowHole</a>                                                     |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/cathodicProtectionInstallation">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/cathodicProtectionInstallation</a>         |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/cathodicProtectionMeasurementPoint">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/cathodicProtectionMeasurementPoint</a> |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/endCap">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/endCap</a>                                                         |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/flange">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/flange</a>                                                         |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/measurementPoint">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/measurementPoint</a>                                     |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/siphon">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/siphon</a>                                                         |
| oilGasChemicals                                 | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/sleeve">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeIMKLValue/sleeve</a>                                                         |



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|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeMKLValue/sluice">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeMKLValue/sluice</a>                           |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeMKLValue/stoppleFitting">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeMKLValue/stoppleFitting</a>           |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeMKLValue/valve">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsAppurtenanceTypeMKLValue/valve</a>                             |
| <b>OilGasChemicalsAppurtenanceTypeValue</b> |                                                                                                                                                                                                           |
| oilGasChemicals                             | <a href="http://inspire.ec.europa.eu/codelist/OilGasChemicalsAppurtenanceTypeValue/deliveryPoint">http://inspire.ec.europa.eu/codelist/OilGasChemicalsAppurtenanceTypeValue/deliveryPoint</a>             |
| oilGasChemicals                             | <a href="http://inspire.ec.europa.eu/codelist/OilGasChemicalsAppurtenanceTypeValue/marker">http://inspire.ec.europa.eu/codelist/OilGasChemicalsAppurtenanceTypeValue/marker</a>                           |
| oilGasChemicals                             | <a href="http://inspire.ec.europa.eu/codelist/OilGasChemicalsAppurtenanceTypeValue/oilGasChemicalsNode">http://inspire.ec.europa.eu/codelist/OilGasChemicalsAppurtenanceTypeValue/oilGasChemicalsNode</a> |
| <b>OilGasChemicalsProductTypeMKLValue</b>   |                                                                                                                                                                                                           |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/acetone">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/acetone</a>                                   |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/air">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/air</a>                                           |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/argon">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/argon</a>                                       |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/bioGas">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/bioGas</a>                                     |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/butadiene1_2">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/butadiene1_2</a>                         |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/butadiene1_3">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/butadiene1_3</a>                         |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/butane">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/butane</a>                                     |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/carbonDioxide">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/carbonDioxide</a>                       |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/carbonMonoxide">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/carbonMonoxide</a>                     |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/chlorine">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/chlorine</a>                                 |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/concrete">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/concrete</a>                                 |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/crude">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/crude</a>                                       |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/dichloroethane">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/dichloroethane</a>                     |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/diesel">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/diesel</a>                                     |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/empty">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/empty</a>                                       |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/ethylene">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/ethylene</a>                                 |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/gasFabricationOfCocs">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/gasFabricationOfCocs</a>         |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/gasHFx">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/gasHFx</a>                                     |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/gasoil">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/gasoil</a>                                     |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/hydrogen">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/hydrogen</a>                                 |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/isobutane">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/isobutane</a>                               |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/JET-A1">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/JET-A1</a>                                     |
| oilGasChemicals                             | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/kerosene">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeMKLValue/kerosene</a>                                 |



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|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/liquidAmmonia">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/liquidAmmonia</a>                                 |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/liquidHydrocarbon">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/liquidHydrocarbon</a>                         |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/multiProduct">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/multiProduct</a>                                   |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/MVC">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/MVC</a>                                                     |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/naturalGas">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/naturalGas</a>                                       |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/nitrogen">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/nitrogen</a>                                           |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/oxygen">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/oxygen</a>                                               |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/phenol">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/phenol</a>                                               |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/propane">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/propane</a>                                             |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/propylene">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/propylene</a>                                         |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/saltWater">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/saltWater</a>                                         |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/sand">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/sand</a>                                                   |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/saumur">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/saumur</a>                                               |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/tetrachloroide">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/tetrachloroide</a>                               |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/unknown">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/unknown</a>                                             |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/water">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsProductTypeIMKLValue/water</a>                                                 |
| <b>OilGasChemicalsSubthemeValue</b>   |                                                                                                                                                                                                                       |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue/naturalGasDistributionLowPressure">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue/naturalGasDistributionLowPressure</a>       |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue/naturalGasDistributionMediumPressure">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue/naturalGasDistributionMediumPressure</a> |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue/naturalGasTransport">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue/naturalGasTransport</a>                                   |
| oilGasChemicals                       | <a href="https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue/oilGasChemicalsTransport">https://vocab.belgif.be/auth/IMKL-OilGasChemicalsSubthemeValue/oilGasChemicalsTransport</a>                         |
| <b>ProtectedAreaTypeValue</b>         |                                                                                                                                                                                                                       |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/drinkingWaterExtractionArea">https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/drinkingWaterExtractionArea</a>                               |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/geothermalInstallation">https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/geothermalInstallation</a>                                         |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/infiltrationArea">https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/infiltrationArea</a>                                                     |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/otherProtectedArea">https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/otherProtectedArea</a>                                                 |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/undergroundGasStorage">https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/undergroundGasStorage</a>                                           |
| <b>ReferenceSurfaceTypeValue</b>      |                                                                                                                                                                                                                       |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-ReferenceSurfaceTypeValue/surfaceLevel">https://vocab.belgif.be/auth/IMKL-ReferenceSurfaceTypeValue/surfaceLevel</a>                                                       |
| <b>SewerAppurtenanceTypeIMKLValue</b> |                                                                                                                                                                                                                       |

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|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/cathodicProtectionInstallation">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/cathodicProtectionInstallation</a>         |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/cathodicProtectionMeasurementPoint">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/cathodicProtectionMeasurementPoint</a> |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/deliveryPoint">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/deliveryPoint</a>                                           |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/effluent">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/effluent</a>                                                     |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/infiltrationStructure">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/infiltrationStructure</a>                           |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/inlet">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/inlet</a>                                                           |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/measurementPoint">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/measurementPoint</a>                                     |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/other">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/other</a>                                                           |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/overflow">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/overflow</a>                                                     |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/treatmentSystem">https://vocab.belgif.be/auth/IMKL-SewerAppurtenanceTypeIMKLValue/treatmentSystem</a>                                       |
| <b>SewerAppurtenanceTypeValue</b> |                                                                                                                                                                                                                       |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/catchBasin">http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/catchBasin</a>                                                   |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/dischargeStructure">http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/dischargeStructure</a>                                   |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/pump">http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/pump</a>                                                               |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/sewerNode">http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/sewerNode</a>                                                     |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/tideGate">http://inspire.ec.europa.eu/codelist/SewerAppurtenanceTypeValue/tideGate</a>                                                       |
| <b>SewerSubthemeValue</b>         |                                                                                                                                                                                                                       |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/sewageWasteWaterGravitationalPipe">https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/sewageWasteWaterGravitationalPipe</a>                           |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/sewageWasteWaterPressurePipe">https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/sewageWasteWaterPressurePipe</a>                                     |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/waterDrainageArchedWaterways">https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/waterDrainageArchedWaterways</a>                                     |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/waterDrainagePipedCanal">https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/waterDrainagePipedCanal</a>                                               |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/waterDrainageSurfaceWaterGravitationalPipe">https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/waterDrainageSurfaceWaterGravitationalPipe</a>         |
| sewer                             | <a href="https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/waterDrainageSurfaceWaterPressurePipe">https://vocab.belgif.be/auth/IMKL-SewerSubthemeValue/waterDrainageSurfaceWaterPressurePipe</a>                   |
| <b>SewerWaterTypeValue</b>        |                                                                                                                                                                                                                       |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue/combined">http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue/combined</a>                                                                     |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue/reclaimed">http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue/reclaimed</a>                                                                   |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue/sanitary">http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue/sanitary</a>                                                                     |
| sewer                             | <a href="http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue/storm">http://inspire.ec.europa.eu/codelist/SewerWaterTypeValue/storm</a>                                                                           |
| <b>SurveyMethodValue</b>          |                                                                                                                                                                                                                       |
| common                            | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/digitizedPlan">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/digitizedPlan</a>                                                                     |



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|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/gnss">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/gnss</a>                                                                                           |
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/lidar">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/lidar</a>                                                                                         |
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/measuringTape">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/measuringTape</a>                                                                         |
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/measuringWheel">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/measuringWheel</a>                                                                       |
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/photogrammetry">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/photogrammetry</a>                                                                       |
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/sketch">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/sketch</a>                                                                                       |
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/terrestrial">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/terrestrial</a>                                                                             |
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/totalStation">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/totalStation</a>                                                                           |
| common                                              | <a href="https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/triangulation">https://vocab.belgif.be/auth/IMKL-SurveyMethodValue/triangulation</a>                                                                         |
| <b>TelecommunicationsAppurtenanceTypeIMKLValue</b>  |                                                                                                                                                                                                                           |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue/amplifier">https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue/amplifier</a>                             |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue/spliceClosure">https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue/spliceClosure</a>                     |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue/splitter">https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue/splitter</a>                               |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue/termination">https://vocab.belgif.be/auth/IMKL-TelecommunicationsAppurtenanceTypeIMKLValue/termination</a>                         |
| <b>TelecommunicationsCableMaterialTypeIMKLValue</b> |                                                                                                                                                                                                                           |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue/coaxial">https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue/coaxial</a>                               |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue/opticalFiber">https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue/opticalFiber</a>                     |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue/other">https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue/other</a>                                   |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue/twistedPair">https://vocab.belgif.be/auth/IMKL-TelecommunicationsCableMaterialTypeIMKLValue/twistedPair</a>                       |
| <b>TelecommunicationsSubthemeValue</b>              |                                                                                                                                                                                                                           |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsSubthemeValue/electronicCommunication">https://vocab.belgif.be/auth/IMKL-TelecommunicationsSubthemeValue/electronicCommunication</a>                         |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsSubthemeValue/telecommunicationDistribution">https://vocab.belgif.be/auth/IMKL-TelecommunicationsSubthemeValue/telecommunicationDistribution</a>             |
| telecommunications                                  | <a href="https://vocab.belgif.be/auth/IMKL-TelecommunicationsSubthemeValue/telecommunicationMainline">https://vocab.belgif.be/auth/IMKL-TelecommunicationsSubthemeValue/telecommunicationMainline</a>                     |
| <b>ThermalAppurtenanceTypeIMKLValue</b>             |                                                                                                                                                                                                                           |
| thermal                                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/adapter">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/adapter</a>                                                       |
| thermal                                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/adapterSingleDualPipe">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/adapterSingleDualPipe</a>                           |
| thermal                                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/endCap">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/endCap</a>                                                         |
| thermal                                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/cathodicProtectionInstallation">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/cathodicProtectionInstallation</a>         |
| thermal                                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/cathodicProtectionMeasurementPoint">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/cathodicProtectionMeasurementPoint</a> |
| thermal                                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/condensateWell">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/condensateWell</a>                                         |



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|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/deliveryPoint">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/deliveryPoint</a>                                 |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/dilatationJoint">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/dilatationJoint</a>                             |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/flange">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/flange</a>                                               |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/leakdetectionInstallation">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/leakdetectionInstallation</a>         |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/leakdetectionMeasurementPoint">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/leakdetectionMeasurementPoint</a> |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/measurementPoint">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/measurementPoint</a>                           |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/siphon">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/siphon</a>                                               |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/sleeve">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/sleeve</a>                                               |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/sluice">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/sluice</a>                                               |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/valve">https://vocab.belgif.be/auth/IMKL-ThermalAppurtenanceTypeIMKLValue/valve</a>                                                 |
| <b>ThermalProductTypeIMKLValue</b>  |                                                                                                                                                                                                                 |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue/condensate">https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue/condensate</a>                                                 |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue/coolingWater">https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue/coolingWater</a>                                             |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue/heatingSteam">https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue/heatingSteam</a>                                             |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue/heatingWater">https://vocab.belgif.be/auth/IMKL-ThermalProductTypeIMKLValue/heatingWater</a>                                             |
| <b>ThermalSubthemeValue</b>         |                                                                                                                                                                                                                 |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue/heatDistribution">https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue/heatDistribution</a>                                                   |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue/heatTransport">https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue/heatTransport</a>                                                         |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue/steamCondensate">https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue/steamCondensate</a>                                                     |
| thermal                             | <a href="https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue/steamTransport">https://vocab.belgif.be/auth/IMKL-ThermalSubthemeValue/steamTransport</a>                                                       |
| <b>UtilityDeliveryTypeIMKLValue</b> |                                                                                                                                                                                                                 |
| common                              | <a href="https://vocab.belgif.be/auth/IMKL-UtilityDeliveryTypeIMKLValue/connection">https://vocab.belgif.be/auth/IMKL-UtilityDeliveryTypeIMKLValue/connection</a>                                               |
| <b>UtilityDeliveryTypeValue</b>     |                                                                                                                                                                                                                 |
| common                              | <a href="http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue/collection">http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue/collection</a>                                                 |
| common                              | <a href="http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue/distribution">http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue/distribution</a>                                             |
| common                              | <a href="http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue/private">http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue/private</a>                                                       |
| common                              | <a href="http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue/transport">http://inspire.ec.europa.eu/codelist/UtilityDeliveryTypeValue/transport</a>                                                   |
| <b>UtilityNetworkTypeIMKLValue</b>  |                                                                                                                                                                                                                 |
| common                              | <a href="https://vocab.belgif.be/auth/IMKL-UtilityNetworkTypeIMKLValue/crossTheme">https://vocab.belgif.be/auth/IMKL-UtilityNetworkTypeIMKLValue/crossTheme</a>                                                 |
| <b>UtilityNetworkTypeValue</b>      |                                                                                                                                                                                                                 |
| common                              | <a href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/electricity">http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/electricity</a>                                                 |



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| common                                | <a href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/oilGasChemical">http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/oilGasChemical</a>                                                 |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/sewer">http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/sewer</a>                                                                   |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/telecommunications">http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/telecommunications</a>                                         |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/thermal">http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/thermal</a>                                                               |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/water">http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/water</a>                                                                   |
| <b>VerticalPositionValue</b>          |                                                                                                                                                                                                                       |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/VerticalPositionValue/onGroundSurface">http://inspire.ec.europa.eu/codelist/VerticalPositionValue/onGroundSurface</a>                                                   |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/VerticalPositionValue/suspendedOrElevated">http://inspire.ec.europa.eu/codelist/VerticalPositionValue/suspendedOrElevated</a>                                           |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/VerticalPositionValue/underground">http://inspire.ec.europa.eu/codelist/VerticalPositionValue/underground</a>                                                           |
| <b>VisibilityTypeValue</b>            |                                                                                                                                                                                                                       |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/notVisibleAboveGround">https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/notVisibleAboveGround</a>                                                 |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/visibleAboveGround">https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/visibleAboveGround</a>                                                       |
| <b>WarningTypeIMKLValue</b>           |                                                                                                                                                                                                                       |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-WarningTypeIMKLValue/geotextile">https://vocab.belgif.be/auth/IMKL-WarningTypeIMKLValue/geotextile</a>                                                                     |
| common                                | <a href="https://vocab.belgif.be/auth/IMKL-WarningTypeIMKLValue/protectivePlate">https://vocab.belgif.be/auth/IMKL-WarningTypeIMKLValue/protectivePlate</a>                                                           |
| <b>WarningTypeValue</b>               |                                                                                                                                                                                                                       |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/WarningTypeValue/concretePaving">http://inspire.ec.europa.eu/codelist/WarningTypeValue/concretePaving</a>                                                               |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/WarningTypeValue/net">http://inspire.ec.europa.eu/codelist/WarningTypeValue/net</a>                                                                                     |
| common                                | <a href="http://inspire.ec.europa.eu/codelist/WarningTypeValue/tape">http://inspire.ec.europa.eu/codelist/WarningTypeValue/tape</a>                                                                                   |
| <b>WaterAppurtenanceTypeIMKLValue</b> |                                                                                                                                                                                                                       |
| water                                 | <a href="https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/cathodicProtectionInstallation">https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/cathodicProtectionInstallation</a>         |
| water                                 | <a href="https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/cathodicProtectionMeasurementPoint">https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/cathodicProtectionMeasurementPoint</a> |
| water                                 | <a href="https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/connectionValve">https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/connectionValve</a>                                       |
| water                                 | <a href="https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/deliveryPoint">https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/deliveryPoint</a>                                           |
| water                                 | <a href="https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/drinkingWaterExtractionPoint">https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/drinkingWaterExtractionPoint</a>             |
| water                                 | <a href="https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/measurementPoint">https://vocab.belgif.be/auth/IMKL-WaterAppurtenanceTypeIMKLValue/measurementPoint</a>                                     |
| <b>WaterAppurtenanceTypeValue</b>     |                                                                                                                                                                                                                       |
| water                                 | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/airRelieveValve">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/airRelieveValve</a>                                         |
| water                                 | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/checkValve">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/checkValve</a>                                                   |
| water                                 | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/fireHydrant">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/fireHydrant</a>                                                 |



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|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/fountain">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/fountain</a>                     |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/hydrant">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/hydrant</a>                       |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/meter">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/meter</a>                           |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/pressureController">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/pressureController</a> |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/pump">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/pump</a>                             |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/systemValve">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/systemValve</a>               |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/thrustProtection">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/thrustProtection</a>     |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/waterExhaustPoint">http://inspire.ec.europa.eu/codelist/WaterAppurtenanceTypeValue/waterExhaustPoint</a>   |
| <b>WaterSubthemeValue</b> |                                                                                                                                                                                     |
| water                     | <a href="https://vocab.belgif.be/auth/IMKL-WaterSubthemeValue/drinkingWaterDistribution">https://vocab.belgif.be/auth/IMKL-WaterSubthemeValue/drinkingWaterDistribution</a>         |
| water                     | <a href="https://vocab.belgif.be/auth/IMKL-WaterSubthemeValue/drinkingWaterSupply">https://vocab.belgif.be/auth/IMKL-WaterSubthemeValue/drinkingWaterSupply</a>                     |
| <b>WaterTypeValue</b>     |                                                                                                                                                                                     |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterTypeValue/potable">http://inspire.ec.europa.eu/codelist/WaterTypeValue/potable</a>                                               |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterTypeValue/raw">http://inspire.ec.europa.eu/codelist/WaterTypeValue/raw</a>                                                       |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterTypeValue/salt">http://inspire.ec.europa.eu/codelist/WaterTypeValue/salt</a>                                                     |
| water                     | <a href="http://inspire.ec.europa.eu/codelist/WaterTypeValue/treated">http://inspire.ec.europa.eu/codelist/WaterTypeValue/treated</a>                                               |