athumi

Vlaams Datanutsbedrijf

IMKL Update 3.0
Workshop 7

15/10/2024

Practical arrangements

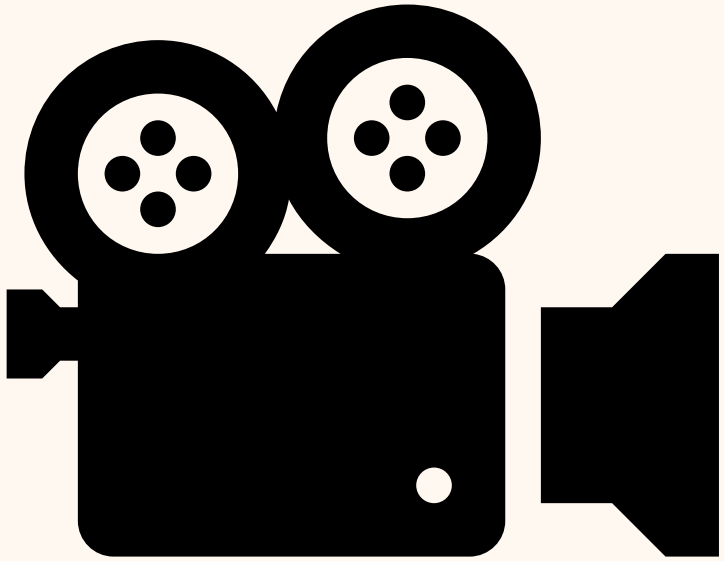
Sound of audience is **muted** by default

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

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

Leading language will be **English,** questions can be asked in mother tongue (NL/FR)

Recording?



Agenda

- State of affairs:
  - Actions since the previous workshop
  - Risk
- Overview of documentation
- Next steps

State of affairs

State of affairs

- **12/09/2024 until 15/10/2024:**
  - **Athumi:** Finalisation of implementation model and documentation
  - **All stakeholders:** Review of implementation model and documentation

- **Workshop of 26/09/2024:** Cancelled

- **Workshop 7 (15/10/2024):** Validation of the IMKL 3 implementation model

Risk

Due to the challenges in defining risk and the risks associated with unclear definitions or information, it has been decided to **remove risk** indications from IMKL 3.0.

We do want to emphasize the following:

- **For Utility Network Operators**:
  - It is important to provide accurate information about the utility network.
  - What fits within the IMKL data model (XML) should be provided in this format.
  - Additional information and safety instructions should be supplied as attachments.

- **When working on the field**:
  It is crucial to:
  - request information / contact the utility network operator if needed.
  - consult the information that is provided.
  - adhere to the safety instructions while on-site.

Documentation

Documentation

The following documents will become available on GitHub:

- IMKL 3 Datamodel.pdf
- IMKL3_ExtraRules_v1.xlsx
- IMKL3_Codelists.xlsx
- IMKL 2.3 to IMKL 3 migration guide.pdf
- IMKL 3 vs IMKL 2.3 - What, Why and How.pdf
- IMKL 3 Example files

Tip:
Download the recording of this workshop and revisit this section when you begin working with IMKL 3.

https://github.com/belgif/ICEGthema-imkl/tree/935806428553de0149065cfc940347e89a7ccdff/implementation

IMKL 3 Datamodel

- Complete documentation of the IMKL 3 datamodel (not in comparison with IMKL 2.3).
- Documentation of all objects and their properties.
- Documentation of all codelists.
- Includes tips to get started and best practices.

→ Use this document if you are starting with IMKL and are not yet familiar with IMKL 2.3.

IMKL 3 Datamodel

4.2.3 Appurtenance

4.2.3.1 Overview

Name	Appurtenance
Definition	Physical point-shaped part of the *UtilityNetwork*.
Description	An *Appurtenance* can stand alone as a *UtilityNode*, but is often mounted on a carrier (a *UtilityNodeContainer*). The *appurtenanceType* property describes the type of the *Appurtenance* and corresponds to the INSPIRE classification of the *Appurtenance*. For the use cases of IMKL, IMKL specific options are added to this classification. The *specificAppurtenanceType* property is not used for the use cases of IMKL.
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
endLifespanVersion	net	0..1	dateTime
inspireId	net	1	IdentifierPropertyType
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

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. un 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).

IMKL3_ExtraRules_v1

- Overview of the key information of the IMKL 3 data model.

→ Use this document as a quick reference guide when working with IMKL 3.

	A	B	C	D	E	F
1	**UtilityNetwork**					
2	**Property name**	**Origin**	**Domain**	**Cardinality**	**Type**	**Extra rules**
3	geographicalName	Network	INSPIRE GCM	0..*	attribute	No extra rules. Not visible in the viewer.
4	elements	Network	INSPIRE GCM	0..*	association	Mandatory when one or more elements are present. Empty networks are not allowed. Each network must contain at least 1 element, ActivityComplex, ProtectedArea, Document or Annotation.
5	utilityNetworkType	UtilityNetwork	INSPIRE US	1	attribute	Strict obligation in IMKL. Must be valid value in codelist.
6	authorityRole	UtilityNetwork	INSPIRE US	1..*	association	Strict obligation in IMKL. RelatedParty must be an empty object.
7	utilityFacilityReference	UtilityNetwork	INSPIRE US	0..*	association	Mandatory if one or more ActivityComplex objects are available. Empty networks are not allowed. Each network must contain at least 1 element, ActivityComplex, ProtectedArea, Document, ExtraPlan or Annotation.
8	disclaimer	UtilityNetwork	INSPIRE US	0..*	attribute	No extra rules.
9	networks	UtilityNetwork	INSPIRE US	0..*	association	No extra rules. Not visible in the viewer.
10	imklId	(self)	IMKL	1	attribute	Strict obligation in IMKL.
11	beginLifespanVersion	(self)	IMKL	1	attribute	Strict obligation in IMKL. Not visible in the viewer.
12	endLifespanVersion	(self)	IMKL	0..1	attribute	No extra rules. Not visible in the viewer.
13	label	(self)	IMKL	0..1	attribute	No extra rules. Not visible in the viewer.
14	description	(self)	IMKL	0..1	attribute	cdata tags are not allowed. Not visible in the viewer.
15	authorityRole	(self)	IMKL	1	attribute	Strict obligation in IMKL. nilReason not allowed.
16	name	authorityRole	IMKL	1	attribute	Strict obligation in IMKL. nilReason not allowed.
17	phone	authorityRole	IMKL	1	attribute	Strict obligation in IMKL. nilReason not allowed. The phone number should include the country code (e.g. +32 for Belgium).
18	email	authorityRole	IMKL	1	attribute	Strict obligation in IMKL. nilReason not allowed.
19	verticalPositionDetail	(self)	IMKL	0..*	association	Mandatory when one or more depth objects are present for any element within the UtilityNetwork.
20	standardCoverageDetail	(self)	IMKL	0..*	association	Mandatory if there are StandardCoverageDetail objects present that represent the standard coverage for the UtilityNetwork.
21	protectedArea	(self)	IMKL	0..*	association	Mandatory when one or more ProtectedArea objects are present. Empty networks are not allowed. Each network must contain at least 1 element, ActivityComplex, ProtectedArea, Document, ExtraPlan or Annotation.
22	documentation	(self)	IMKL	0..*	association	Mandatory when one or more Document objects are present. Empty networks are not allowed. Each network must contain at least 1 element, ActivityComplex, ProtectedArea, Document, ExtraPlan or Annotation.
23	annotation	(self)	IMKL	0..*	association	Mandatory when one or more Annotation objects are present. Empty networks are not allowed. Each network must contain at least 1 element, ActivityComplex, ProtectedArea, Document, ExtraPlan or Annotation.
24						

IMKL3_Codelists

- Overview of the use of all codelists.
- Overview of all codelist values and their URIs.
- Overview of the differences between IMKL 2.3 and IMKL 3 codelists.

→ Use this document in conjunction with the migration guide when converting existing IMKL 2.3 files.

IMKL3_Codelists

ElectricityCable	constructionTechnique	ConstructionTechniqueValue
ElectricityCable	currentStatus	ConditionOfFacilityValue
ElectricityCable	materialType	MaterialTypeValue
ElectricityCable	subtheme	ElectricitySubthemeValue
ElectricityCable	utilityDeliveryType	UtilityDeliveryTypeIMKLValue
ElectricityCable	utilityDeliveryType	UtilityDeliveryTypeValue
ElectricityCable	verticalPosition	VerticalPositionValue
ElectricityCable	visibility	VisibilityTypeValue
ElectricityCable	warningType	WarningTypeIMKLValue
ElectricityCable	warningType	WarningTypeValue
ExtraPlan	documentMediaType	DocumentMediaTypeValue
ExtraPlan	documentType	DocumentTypeValue
Manhole	currentStatus	ConditionOfFacilityValue
Manhole	verticalPosition	VerticalPositionValue
Manhole	visibility	VisibilityTypeValue

ProtectedAreaTypeValue	drinkwaterwingebied	drinkingWaterExtractionArea	Translated	https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/drinkingWaterExtractionArea
ProtectedAreaTypeValue	geothermischeInstallatie	geothermalInstallation	Translated	https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/geothermalInstallation
ProtectedAreaTypeValue	infiltratieGebied	infiltrationArea	New	https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/infiltrationArea
ProtectedAreaTypeValue	anderBeschermdGebied	otherProtectedArea	Translated	https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/otherProtectedArea
ProtectedAreaTypeValue	ondergrondseGasopslag	undergroundGasStorage	Translated	https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/undergroundGasStorage

IMKL 2.3 to IMKL 3 migration guide

- Guide to assist in converting an existing IMKL 2.3 file into a valid IMKL 3.0 file.

- Contains information only about **what is minimally necessary**.

- **New elements** that are optional in IMKL 3 **are not mentioned**.
  For example:
  - The option for 2.5D coordinates.
  - The option to specify a different standard coverage for each subtheme.
  - The option to link one DepthDetail object to multiple network elements.

→ Use this document to convert your existing IMKL 2.3 files as easily as possible.

IMKL 2.3 to IMKL 3 migration guide

2.10 isBovengrondsZichtbaar

Replace each `imkl:isBovengrondsZichtbaar` element with an `imkl:visibility` element. Replace the value of the element with a reference to a codelist value:

- The value `true` must be replaced with a reference to https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/visibleAboveGround.
- The value `false` must be replaced with a reference to https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/notVisibleAboveGround.

Example IMKL 2.3

```
<imkl:isBovengrondsZichtbaar>true</imkl:isBovengrondsZichtbaar>
<imkl:isBovengrondsZichtbaar>false</imkl:isBovengrondsZichtbaar>
```

Example IMKL 3

```
<imkl:visibility
    xlink:href="https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/visibleAboveGround"
/>
<imkl:visibility
    xlink:href="https://vocab.belgif.be/auth/IMKL-
VisibilityTypeValue/notVisibleAboveGround" />
```

3.6 eigenUtilityFacilityReference

Remove the `imkl:eigenUtilityFacilityReference` elements.

3.7 eigenExtraInformatie

Remove the `imkl:eigenExtraInformatie` elements.

3.8 heeftExtraTopografieen

Remove the `imkl:heeftExtraTopografieen` elements.

3.9 heeftBeschermdeGebieden

Replace each `imkl:heeftBeschermdeGebieden` element with an `imkl:protectedArea` element. In the URI, replace *BeschermdGebied* with *ProtectedArea*.

Example IMKL 2.3

```
<imkl:heeftBeschermdeGebieden
xlink:href="http://mir.agiv.be/data/IMKL/v2.3/BeschermdGebied/gascom-be:PA001"/>
```

Example IMKL 3

```
<imkl:protectedArea xlink:href="https://vocab.belgif.be/ns/imkl/3.0/ProtectedArea/gascom-
be:PA001" />
```

IMKL 3 vs IMKL 2.3 - What, Why and How

- Comprehensive comparison between IMKL 3 and IMKL 2.3.
- No step-by-step guide like the migration guide.
- Includes more explanation about the reasons for changes.
- Also provides details on the new optional features in IMKL 3.

→ Use this document to further optimize your converted IMKL 2.3 files.

IMKL 3 vs IMKL 2.3 - What, Why and How

2.6.3 2.5D and srsDimension

In IMKL 2.3, specifying z-coordinates was not allowed. IMKL 3 now supports the inclusion of 2.5D coordinates which means they can be provided when available for third-party use. However, the KLIP-viewer itself will not use z-coordinates. 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 (chapter 5).

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.

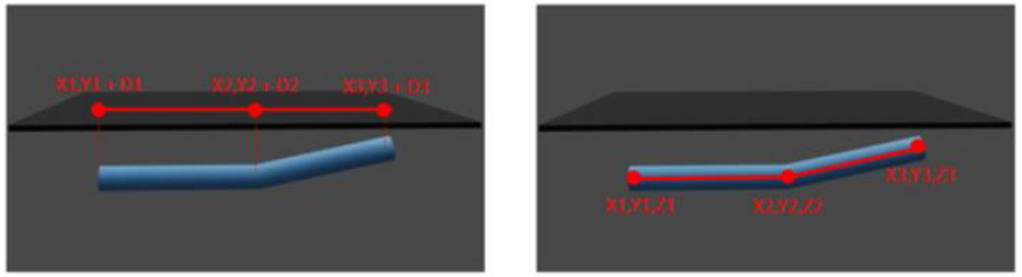


Figure 1 - 2D + depth (left) vs 2.5D (right)

6 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 elements 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 elements there is no `on` relationship. There is also no `heeftUtilityNetwork` element like there is in IMKL 2.3. The type of object already implies that the object is a standard coverage for the *UtilityNetwork*.
- There is an extra element called `subtheme`. If there are different standard coverages depending on the subtheme of cables, pipes or ducts, it is now 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 cables, pipes or ducts that do not have a standard coverage for their subtheme or that do not have an element specific coverage detail.

Example IMKL 3:

```
<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>
    <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 3 Example files

- Examples of valid IMKL 3 files per network type:
  Electricity, OilGasChemicals, Sewer, Telecom, Thermal, Water

- For each network type:
  - there is one simple base file.
  - there are files to demonstrate an additional concept on top of the base file (e.g. ActivityComplex, ExtraPlan, Annotation).

IMKL 3 Example files

- IMKL3_Electricity_ActivityComplex.xml
- IMKL3_Electricity_Connection.xml
- IMKL3_Electricity_Duct.xml
- IMKL3_Electricity_ExtraPlan_and_Annotation.xml
- IMKL3_Electricity_TopographicalElement.xml
- IMKL3_Electricity_VerticalPosition.xml
- IMKL3_Electricity_base.xml
- extraplan1.png

```
480     <gml:featureMember>
481         <imkl:UtilityNetwork gml:id="ID_230dbcf3-4fbd-4118-9f57-b2f370f04107">
482             <net:elements
483                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/ElectricityCable/electricitycom-be:001" />
484             <net:elements
485                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/ElectricityCable/electricitycom-be:002" />
486             <net:elements
487                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/UtilityLink/electricitycom-be:001" />
488             <net:elements
489                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/UtilityLink/electricitycom-be:002" />
490             <net:elements
491                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/UtilityLink/electricitycom-be:003" />
492             <net:elements
493                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/electricitycom-be:001:v2" />
494             <net:elements
495                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/electricitycom-be:002" />
496             <net:elements
497                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/electricitycom-be:003" />
498             <net:elements
499                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/electricitycom-be:004" />
500             <net:elements
501                 xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Manhole/electricitycom-be:M0001" />
502             <us-net-common:utilityNetworkType
503                 xlink:href="http://inspire.ec.europa.eu/codelist/UtilityNetworkTypeValue/electricity" />
504             <us-net-common:authorityRole>
505                 <base2:RelatedParty />
506             </us-net-common:authorityRole>
507             <us-net-common:disclaimer>
508                 <gmd:PT_FreeText>
509                     <gmd:textGroup>
510                         <gmd:LocalisedCharacterString locale="#en">If a utility network operator has
511                             a disclaimer that applies to the entire utility network, it can be
512                             posted here. All data in this sample package is fictitious, any
513                             resemblance to existing situations is purely coincidental.</gmd:LocalisedCharacterString>
514                     </gmd:textGroup>
515                     <gmd:textGroup>
516                         <gmd:LocalisedCharacterString locale="#nl">Als een KLB een disclaimer heeft
517                             die geldt voor heel het utility network dan kan die hier geplaatst
518                             worden. Alle data in dit voorbeeldpakket zijn fictief, elke gelijkenis
519                             met bestaande situaties is puur toeval.</gmd:LocalisedCharacterString>
520                     </gmd:textGroup>
521                 </gmd:PT_FreeText>
522             </us-net-common:disclaimer>
```

Next steps

Proposed planning release IMKL 3.0

KLIP | KLIM

Brussels Capital Region

Walloon Region

Analysis and developments for release IMKL 3.0 datamodel

Transition period for users

April ’28: decretal obligation

Analysis and developments towards transitioning to vectorized exchange

Transition period for users

2024 2025 2026 2027 2028

Beginning Q3: IMKL 3.0 datamodel available

Aug ’25: KLIM-CICC & KLIP platforms ready IMKL 3.0

IMKL 3.0 mandatory for users

IMKL 3.0 mandatory for users

Cooperation agreement signed

Ordinances for obligation vectorial exchange in Brussels and Wallonia signed

- Network administrators must have data available in Lambert 2008 by the time the statutory obligation applies
- Transition period for national stakeholders

Next steps

For now, no further actions are required from you regarding the development of the IMKL 3 data model.

We will keep you informed via email if:

- There are changes to the planning.
- Further adjustments to the IMKL 3.0 data model are necessary.
- We need your input.

Contact info

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