

# IMKL Update 3.0 Workshop 1

02/05/2024

# Practical arrangements

Sound of audience is  
**muted** by default



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

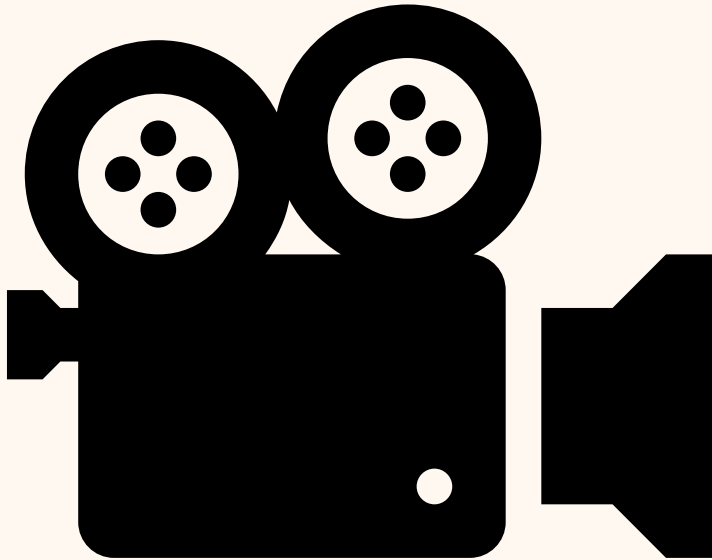


Questions, comments and suggestions can be shared via the chat function. Interaction is encouraged!



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

# Recording?



# Agenda

## Introduction to implementation trajectory

- Reason and context: KLIP & IMKL
- IMKL update
  - Why IMKL 3?
  - Impact for utility operators
  - Main differences between IMKL 2.3 and IMKL 3
- Next steps



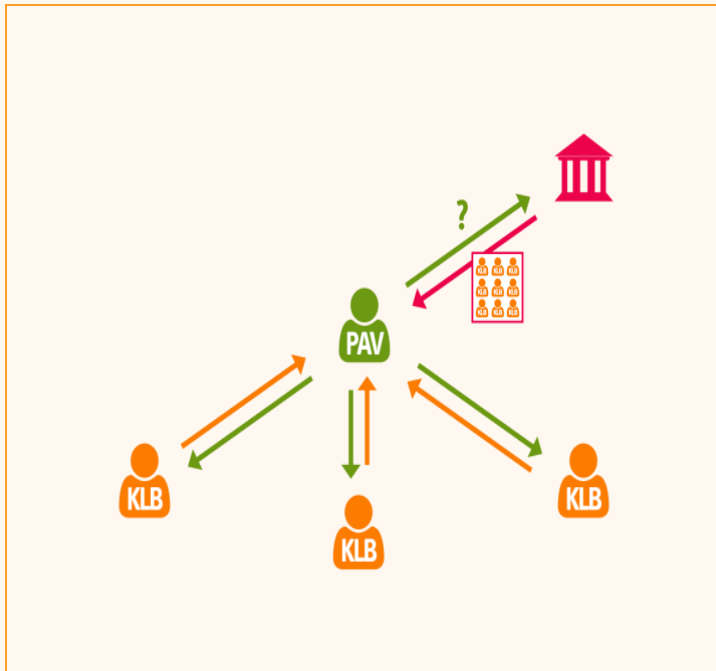


**Reason and context:**

**KLIP & IMKL**

## Historical context KLIP

## Before 2004

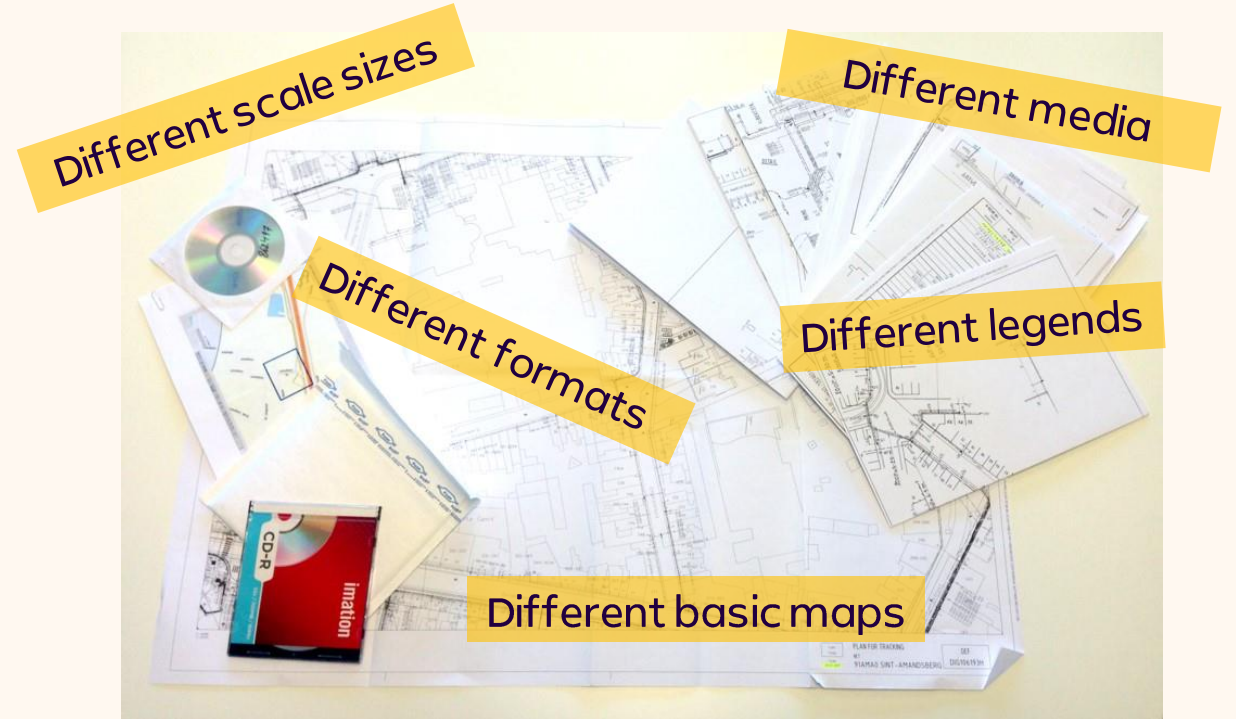
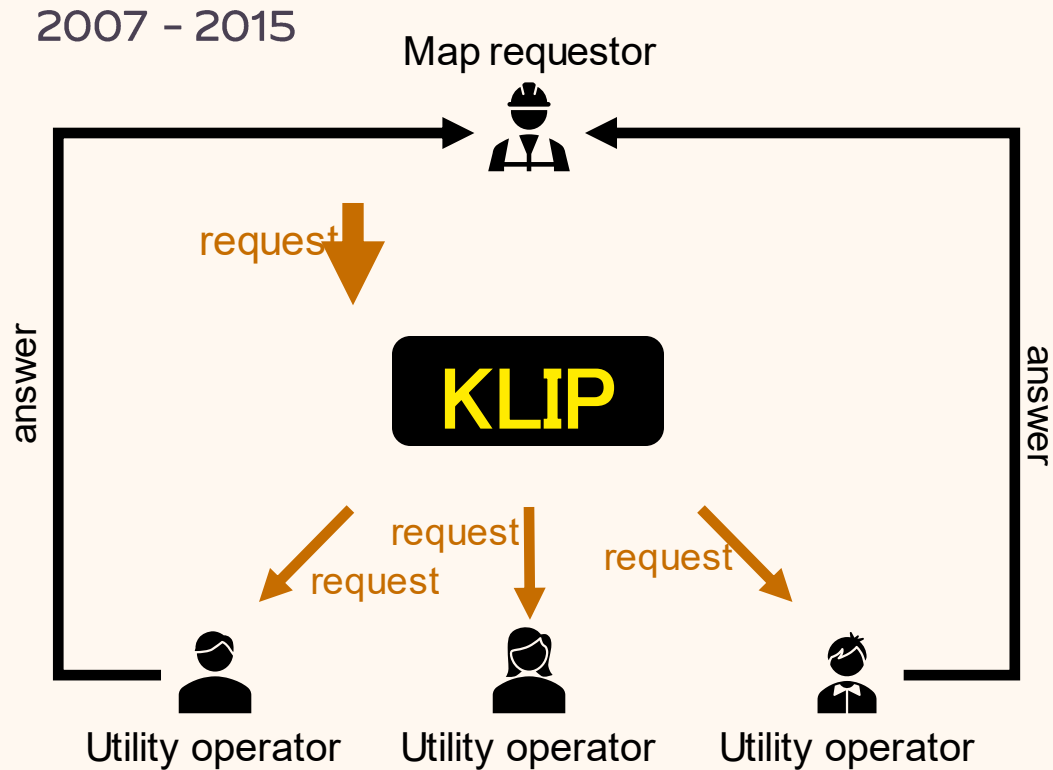




It went terribly  
wrong  
(Ghislenghien, 2004)



# KLIP Phase 1

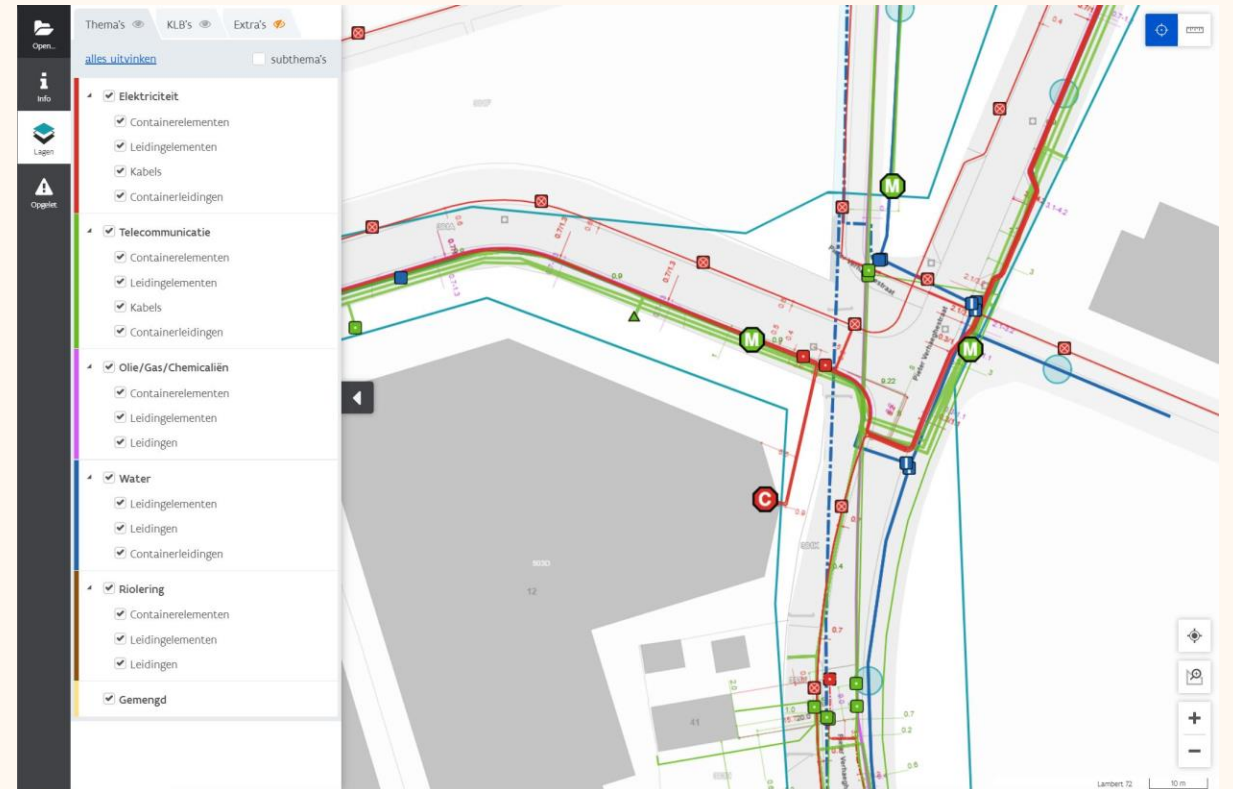
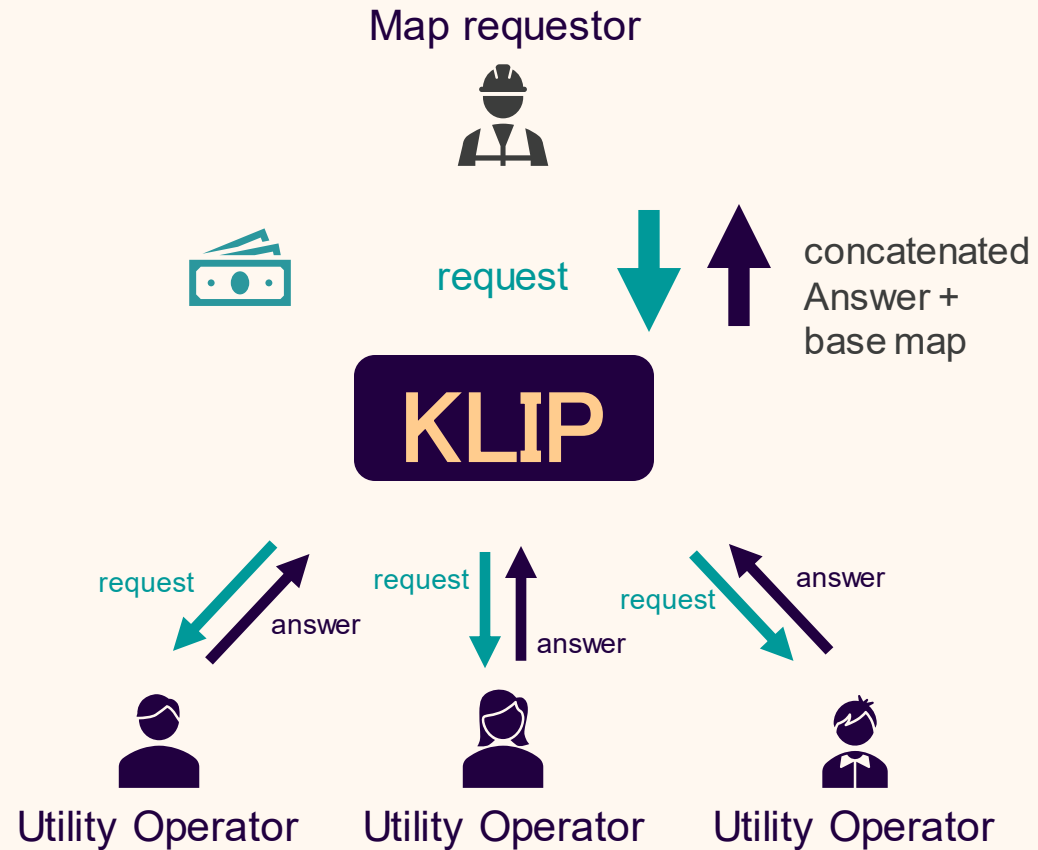


- Misinterpretation = risk of accidents
- Interpretation is time consuming



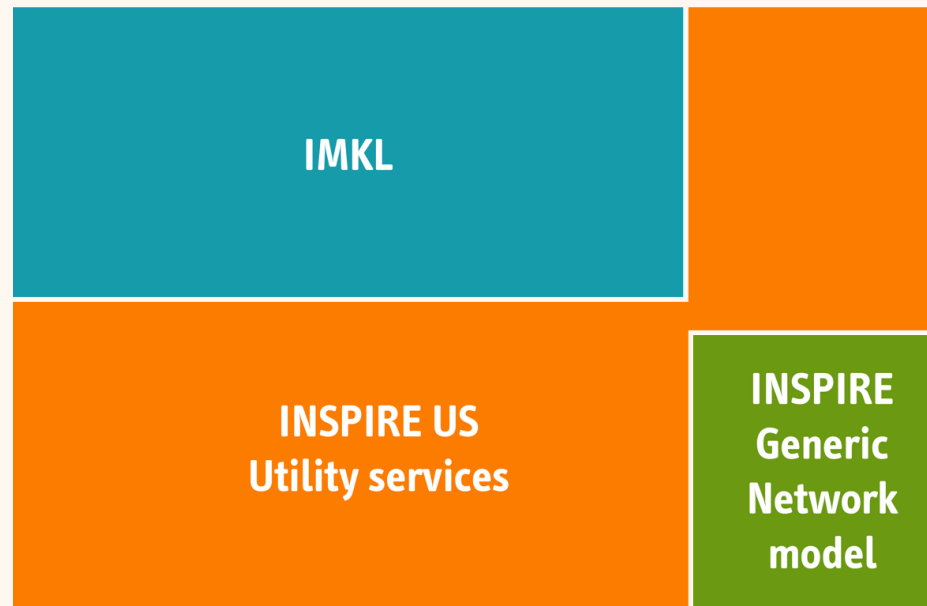
# KLIP Digital

2016 – Today



# IMKL

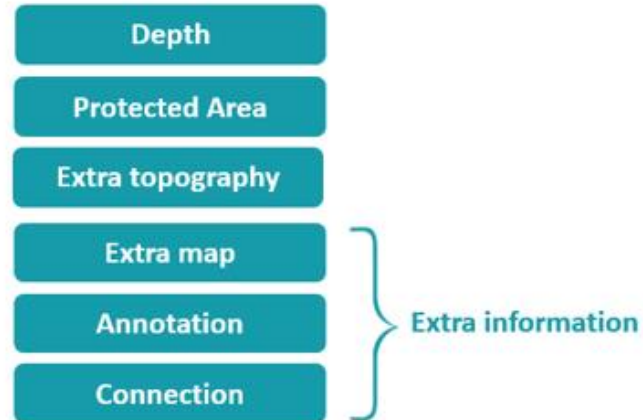
- Informatiemodel Kabels- en Leidingen (Information Model Cables and Pipes)
- Developed for 'KLIP Digital' in 2016
- Data model based on European standard: INSPIRE Utility Theme (INSPIRE US 3.0)
  - Extra addition: classifications, attributes en relations



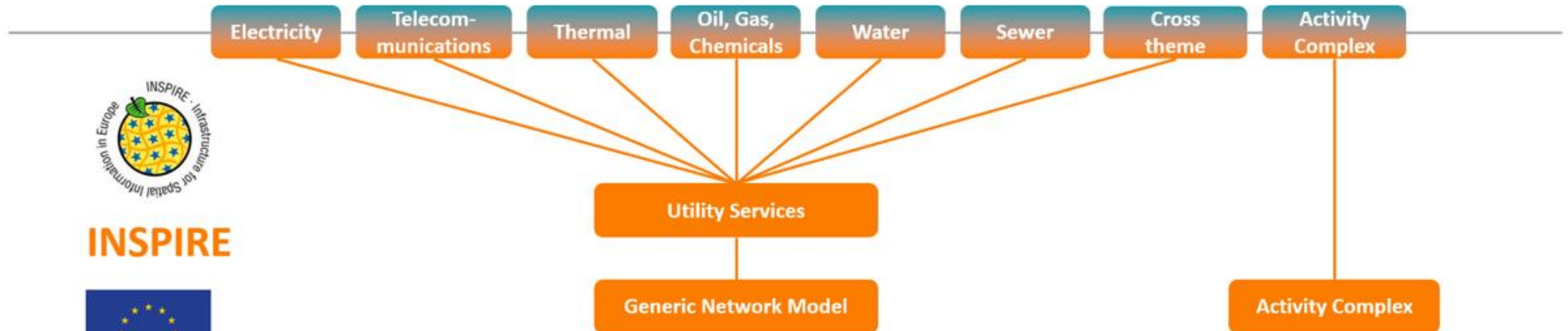
# IMKL-model



IMKL



+



INSPIRE





**IMKL update**

# Why oh why?

## Areas for improvement

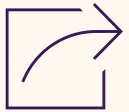
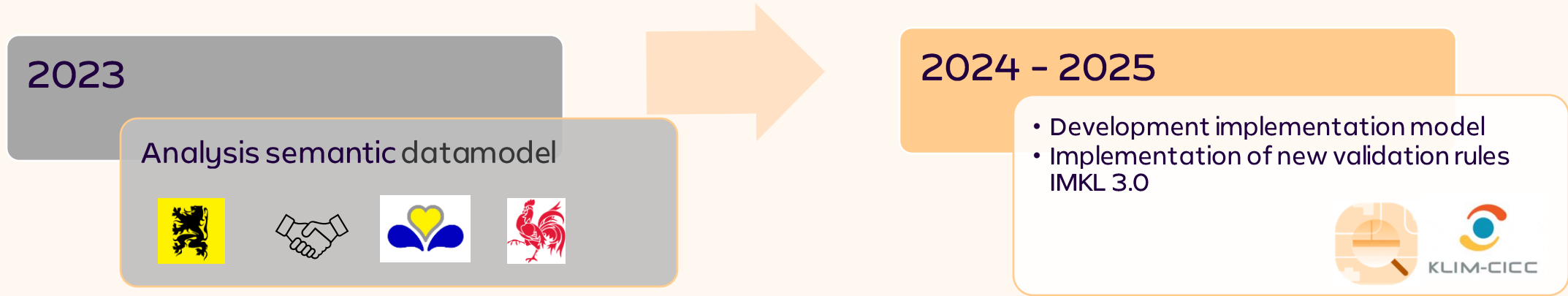
- Lambert 2008 coordinate system
- Z-coordinates
- Additional plans and precautions become documents
  - with or without linked geometry
- Directional drillings: provide uniform modelling to make directional drillings stand out more
- Different way of providing information on data quality
- More possibilities to display depth and height
- Annotations
  - Simplification of the number of types and how they are passed on
- Fixes
  - Correct typos in code list values and names of objects/attributes/associations
  - Adjust relationship depth object to cable/pipe from 1-1 to 1-n
  - Bugfix in thermal networks

## Interfederal standard → one language for the entire data model

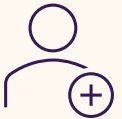
- No more mixing several languages (i.c. Dutch & English)
- English



# IMKL-update Timeline & ambitions



IMKL 3.0 will become a Flemish **OSLO data standard**



**Brussels** and **Wallonia** also aim to mandate the exchange of vector data



Goal: to turn the Flemish data standard into a **national standard**



Supported by **ICEG**



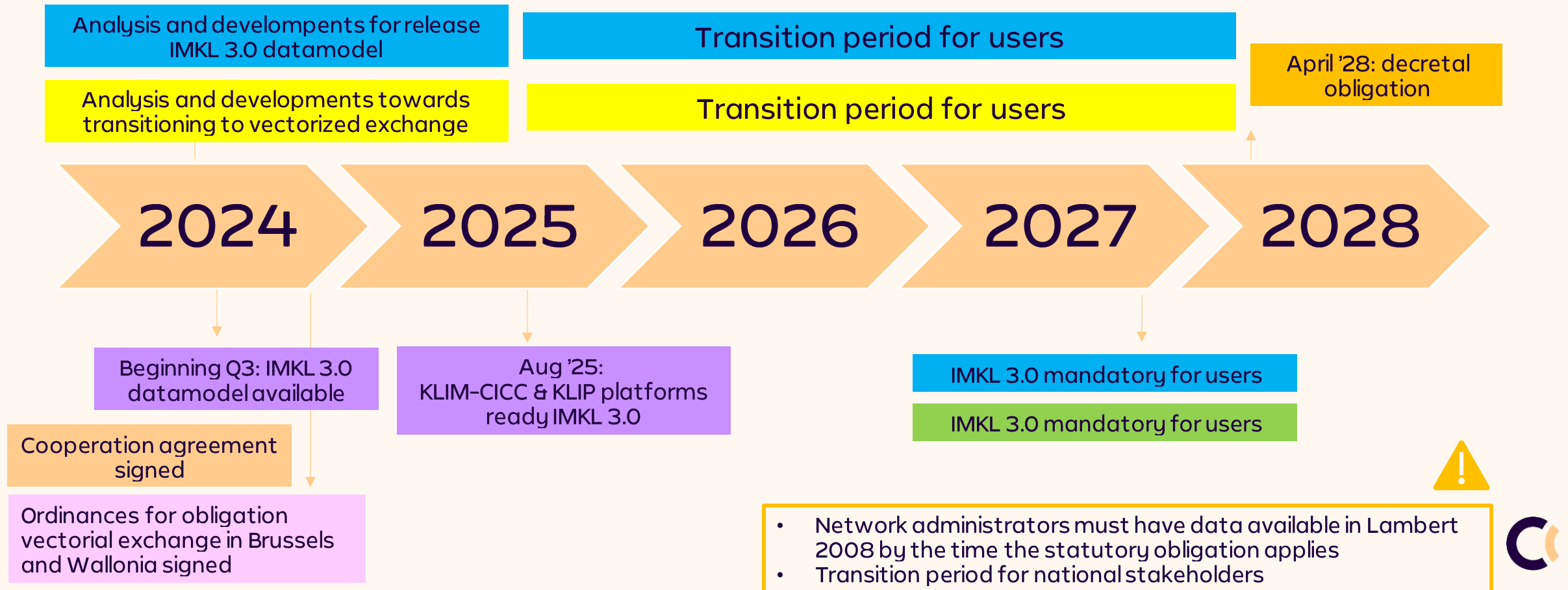
# Proposed planning release IMKL 3.0

KLIP

KLIM

Brussels Capital Region

Walloon Region



# Transition period



- Data architect
  - Implementation model IMKL 3.0 in XSD Schema
  - Mapping of differences between IMKL 2.3 and 3.0
  - Update symbology
- Developments
  - Validator
  - Compatible viewer
- 2 validators (IMKL 2.3 + IMKL 3.0)
- Viewer compatible for both versions
- Responses in IMKL 2.3 will no longer be accepted

Q1-Q2 2024

Q3 2024 -  
Q2 2025

Q3 2025 -  
Q3 2027

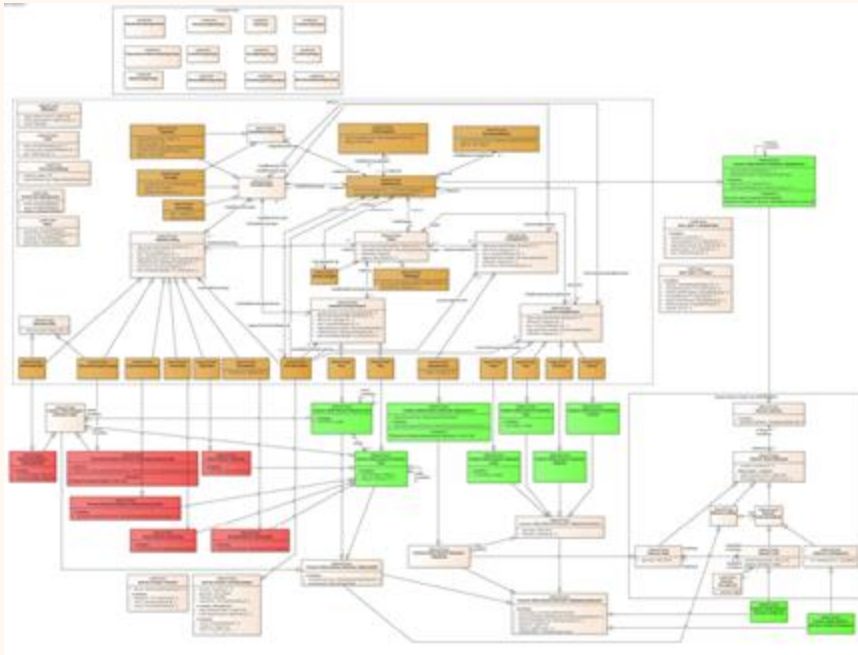
Q4 2027



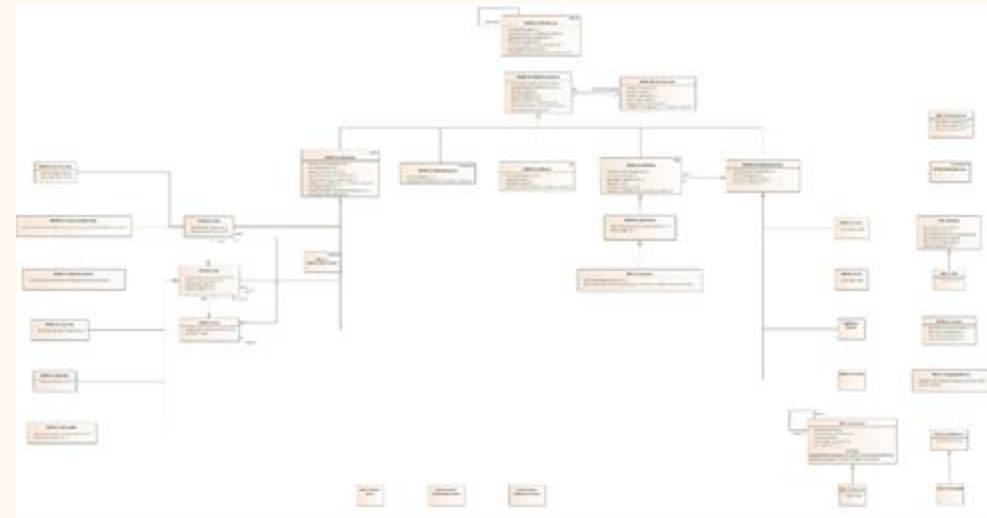


# Semantic model: From IMKL 2.3 to 3.0

From this



To this



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

# The IMKL 3 data model

The IMKL 3 data model is based on concepts from

- INSPIRE Utility Theme (Infrastructure for Spatial InfoRmation in the European Community)
- OSLO (Open Standards for Linking Organisations)

It is available in three languages:

- English: [https://belgif.github.io/thematic/models/cable-pipe/index\\_en.html](https://belgif.github.io/thematic/models/cable-pipe/index_en.html)
- Dutch: [https://belgif.github.io/thematic/models/cable-pipe/index\\_nl.html](https://belgif.github.io/thematic/models/cable-pipe/index_nl.html)
- French: [https://belgif.github.io/thematic/models/cable-pipe/index\\_fr.html](https://belgif.github.io/thematic/models/cable-pipe/index_fr.html)



# From a semantic model to implementation

The IMKL 3 data model describes the **what**:

- What are the entities, their properties and relationships that are relevant for KLIP?
- It ensures a shared agreement on the definitions of these concepts (e.g. Manhole, Mangat, Troud'Homme)

The implementation describes the **how**:

- How is the information exchanged between the operator, the platform and the map requestor?
- The exchange format for IMKL 3 is XML



# The IMKL 2.3 implementation

## XML

```
<gml:featureMember>
  <imkl:Manhole gml:id="ID_8eccae00-a0d4-46cb-b47c-d02b9313133f">
    <us-net-common:currentStatus
      xlink:href="http://inspire.ec.europa.eu/codelist/ConditionOfFacilityValue/functional" />
    <us-net-common:validFrom>2001-12-17T09:30:47.0Z</us-net-common:validFrom>
    <us-net-common:verticalPosition nilReason="missing" xsi:nil="true" />
    <us-net-common:geometry>
      <gml:Point gml:id="ID_f0806ddd-52e9-41f0-a9bb-855503100855">
        <srsName="http://spatialreference.org/ref/epsg/31370/">
          <gml:pos>103674.885 192127.454</gml:pos>
        </gml:Point>
      </us-net-common:geometry>
    <us-net-common:inspireId>
      <base:Identifier>
        <base:localId>M0001</base:localId>
        <base:namespace>Example-be</base:namespace>
      </base:Identifier>
    </us-net-common:inspireId>
    <imkl:liggingNauwkeurigheid
      xlink:href="http://mir.agiv.be/c1/IMKL/v2/NauwkeurigheidValue/tot30cm" />
    <imkl:isRisicovol>false</imkl:isRisicovol>
    <imkl:isBovengrondsZichtbaar>false</imkl:isBovengrondsZichtbaar>
    <imkl:kleur>bruin</imkl:kleur>
    <imkl:diepte xlink:href="http://mir.agiv.be/data/IMKL/v2.3/TAWDiepte/example-be:TAW002"></imkl:diepte>
    <imkl:inNetwork xlink:href="http://mir.agiv.be/data/IMKL/v2.3/UtilityNetwork/example-be:001" />
  </imkl:Manhole>
</gml:featureMember>
```

## XSD

```
<complexType name="ManholeType">
  <complexContent>
    <extension base="us-net-common:ManholeType">
      <sequence>
        <element name="label" minOccurs="0" />
        <element name="omschrijving" minOccurs="0" />
        <element name="taal" type="gml:ReferenceType" minOccurs="0">
          <annotation>
            <appinfo>
              <targetCodeList xmlns="http://www.opengis.net/gml/3.3/exr">TaalValue</targetCodeList>
            </appinfo>
          </annotation>
        </element>
        <element name="liggingNauwkeurigheid" type="gml:ReferenceType">
          <annotation>
            <appinfo>
              <targetCodeList xmlns="http://www.opengis.net/gml/3.3/exr">
                NauwkeurigheidValue</targetCodeList>
              </appinfo>
            </annotation>
          </element>
        <element name="orientatie" type="gml:MeasureType" minOccurs="0" />
        <element name="isRisicovol" type="boolean" minOccurs="0" />
        <element name="isBovengrondsZichtbaar" type="boolean" minOccurs="0" />
        <element name="kleur" minOccurs="0" />
        <element name="diepte" type="gml:ReferenceType" minOccurs="0">
          <annotation>
            <appinfo>
              <targetElement xmlns="http://www.opengis.net/gml/3.2">imkl:Diepte</targetElement>
              <reversePropertyName
                xmlns="http://www.opengis.net/gml/3.2">
                imkl:heeftContainerLeidingElement</reversePropertyName>
              </appinfo>
            </annotation>
          </element>
      </sequence>
    </extension>
  </complexContent>
</complexType>
```

# The IMKL 3 implementation

To minimize the impact and to ensure a smooth transition to IMKL 3:

- The format of choice for IMKL 3 will remain XML
- Workshops are organized to inform and to gather input and feedback
- Documentation will be provided (e.g. [Stappenplan IMKL 2.2 naar 2.3](#))



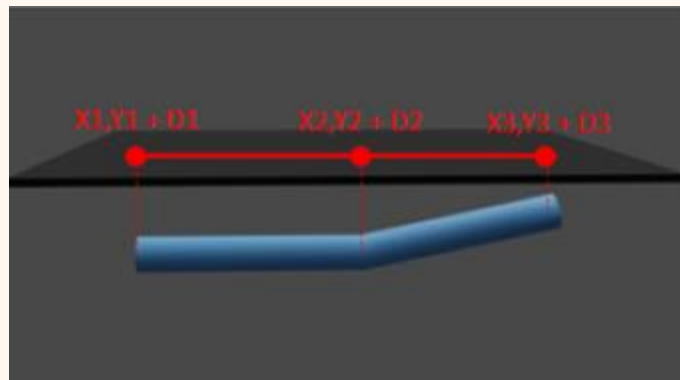
# Differences between IMKL 2.3 and IMKL 3

- Translation of all entities, properties and codelists to English
- Fixes:
  - Correct typos in code list values and names of objects/attributes/associations
  - Adjust relationship depth object to cable/pipe from 1-1 to 1-n
  - Bugfix in thermal networks
- Generalization of very specific attributes:
  - isRisicovol (Yes/No) → risk (Codelist)
  - isBovengrondsZichtbaar (Yes/No) → visibility (Codelist)
- Additional plans (*ExtraPlan*) and precautions (*Voorzorgsmaatregel*) become documents

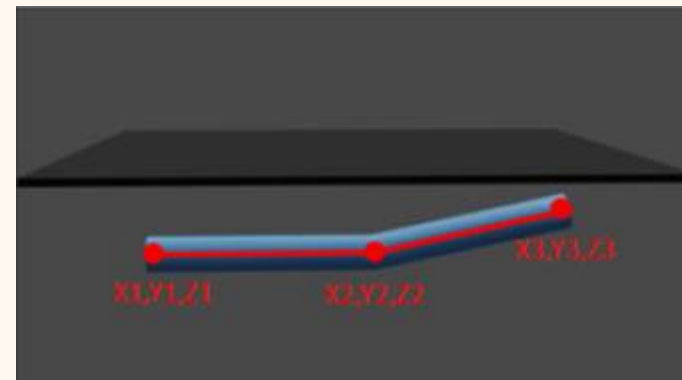


# Differences between IMKL 2.3 and IMKL 3

- Transition from the Lambert 72 coordinate system to Lambert 2008
- IMKL 3 will allow to provide Z coordinates



2D + depth

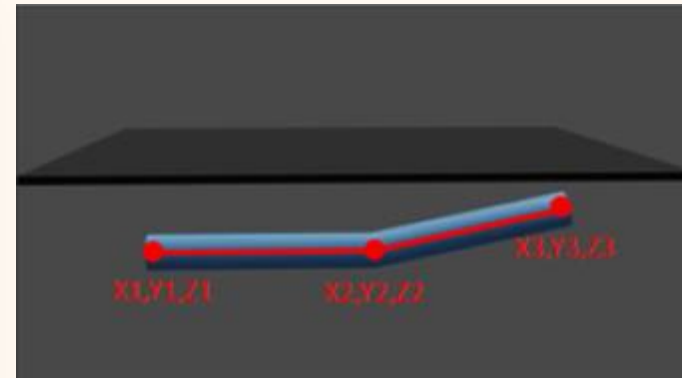


2,5D

# Differences between IMKL 2.3 and IMKL 3

- Transition from the Lambert 72 coordinate system to Lambert 2008
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```
<gml:featureMember>
  <imkl:Manhole gml:id="ID_8eccae00-a0d4-46cb-b47c-d02b9313133f">
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    <us-net-common:verticalPosition nilReason="missing" xsi:nil="true" />
    <us-net-common:geometry>
      <gml:Point gml:id="ID_f0806ddd-52e9-41f0-a9bb-855503100855">
        <srsName="http://spatialreference.org/ref/epsg/31370/">
          <gml:pos>103674.885 192127.454</gml:pos>
        </gml:Point>
      </us-net-common:geometry>
    </us-net-common:inspireId>
    <base:Identifier>
      <base:localId>M0001</base:localId>
      <base:namespace>Example-be</base:namespace>
    </base:Identifier>
    </us-net-common:inspireId>
    <imkl:liggingNauwkeurigheid
      xlink:href="http://mir.agiv.be/cl/IMKL/v2/NauwkeurigheidValue/tot30cm" />
    <imkl:isRisicovol>false</imkl:isRisicovol>
    <imkl:isBovengrondsZichtbaar>false</imkl:isBovengrondsZichtbaar>
    <imkl:kleur>bruin</imkl:kleur>
    <imkl:diepte xlink:href="http://mir.agiv.be/data/IMKL/v2.3/TAWDiepte/example-be:TAW002"></imkl:diepte>
    <imkl:inNetwork xlink:href="http://mir.agiv.be/data/IMKL/v2.3/UtilityNetwork/example-be:001" />
  </imkl:Manhole>
</gml:featureMember>
```



2,5D



# Differences between IMKL 2.3 and IMKL 3

- Option to provide more information on positional accuracy for each geometry.

(replacing *liggingNauwkeurigheid*, *diepteNauwkeurigheid*, *datumOpmetingDieptePeil* en *datumOpmetingMaaiveldPeil*)

«dataType» Survey
- method: Opmetingsmethode - recordedBy: Agent [0..1] - date: DateTime [0..1] - accuracy: PositioneleNauwkeurigheid [0..1]

# Documentation

[Belgif GitHub:](#)

- [Changelog](#): summarized overview of changes between IMKL 2.3 and 3.0
- [Technical report](#): summary of past working groups and context of changes





**Next steps**

# Next working groups

- 14/05/2024: Geometry
- 30/05/2024: Codelists, documents and plans
- 13/06/2024: To be defined
- 25/06/2024: To be defined
- 12/09/2024: To be defined



# Actions

Preparation for next working group (14/05/2024) – **input by 14/05/2024:**

- When will your organisation be ready for Lambert 2008?
- Does your organisation have 2.5D information (XYZ coordinates) and will it include the Z coordinate in the IMKL response?

Preparation for the third working group (30/05/2024) – **input by 17/05/2024:**

- Go over the list of currently available codelist values and
  - Indicate which values are still relevant for your organisation
  - Add values that are missing



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# Demo codelist



# Contact info

**Planning and organisation:**

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**Data model and implementation:**

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[liesbeth.rombouts@athumi.eu](mailto:liesbeth.rombouts@athumi.eu)

